John Loughran
Mary Lynn Hamilton *Editors*

International Handbook of Teacher Education

Volume 1

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John Loughran • Mary Lynn Hamilton
Editors

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Part I
Organisation and Structure of Teacher Education

This first Part of the International Handbook of Teacher Education is designed to introduce the major ideas associated with the organisation and structure of teacher education. The section offers an overview of many of the challenging and provocative issues associated with the way teacher education is structured and conducted as well as a consideration of some of the salient historical features and traditional influences on the nature of teacher education more generally. The section makes clear the important links between public perceptions of teaching and the way teacher education itself is perceived as a consequence, as well as examining many of the ways in which elements of teacher education are structured in an attempt to prepare pre-service teachers for their work as professional pedagogues. As is the case with the Handbook as a whole, there is a strong focus on the international literature in order to develop a holistic and well informed global view about the nature, structure and organisation of teacher education.

Chapter 1
Developing an Understanding of Teacher Education

John Loughran and Mary Lynn Hamilton

Introduction

Teacher education is a field of study that has increasingly come under scrutiny in recent times as the expectations for the teaching workforce and the hopes for advancement in school learning are so often tied to the perceived 'quality' of initial teacher education. It could reasonably be argued that such attribution is as a consequence of a particular conception of teaching and learning that ostensibly portrays them as existing in a direct 'cause and effect' short-term, immediately measureable, linear relationship. As a consequence, although perhaps not always stated as such, telling as teaching and listening as learning (Loughran, 2010) persist. As a consequence, school teaching and learning is simplistically portrayed as a 'banking model' (Freire, 1972), through which 'rate of return' and 'substantive interest' are linked to curriculum certainty delivered through transmissive teaching approaches (Barnes, 1976) designed to mitigate variability. Not only does such a situation cloud the reality of the nature of schooling but it also leads to confusion about that which is reasonable to expect of pre-service teacher education.

The real world of teaching and learning is ever evolving as the constantly changing relationship of teaching to learning and learning to teaching exists in a dynamic, symbiotic manner. In such a relationship, immediate, short term and direct impact is not the only – or necessarily the main – outcome (although it is perhaps the easiest to measure). Rather change occurs over time and is inevitably highly variable. However, as is consistently demonstrated in the research literature, the need for favourable conditions is essential for positive, meaningful and productive outcomes

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in student learning. Such conditions range across a diversity of areas that impact schooling including: school based management (Fullan & Watson, 2000); organisational leadership (Mulford & Silins, 2003); teacher professional learning (Groundwater-Smith & Mockler, 2009; Hoban, 2002); teacher efficacy (Tschannen-Morana & Barrb, 2004); and of particular importance in the digital age, pedagogical development through the use of ICTs (McConatha, Penny, Schugar, & Bolton, 2013). Yet despite all of this, teacher education continues to be viewed as not only the beginning, but also the end, in terms of how well 'trained' teachers are in relation to improving student learning. The implicit assumption being that prospective teachers should receive all the 'training' they need through their teacher education programme to not only prepare them for teaching, but also carry them for the rest of their career; a somewhat limited view of that which comprises the knowledge, skills and abilities of teaching that appears supported by simplistic views of what it means to learn to teach.

Learning to Teach

> Trying to teach is deeply unsettling and conflictive because experience itself … is a paradox, an unanticipated social relation, and a problem of interpretation. Practice here falls somewhere between a dress rehearsal and a daily performance. It is sometimes a real event, or only in its anticipation. But it also reaches into thinking about what has happened or what did not happen … Teachers feel an inordinate responsibility to single-handedly make students learn while they wonder how students are affecting and influencing them. They hope there is a direct relationship between teaching and learning. More often than not, this wish feels spoiled. The practice of teaching, because it is concocted from relations with others and occurs in structures that are not of one's own making is, first and foremost, an uncertain experience that one must learn to interpret and make significant. (Britzman, 2003, p. 3)

Unfortunately, as alluded to earlier, because the more dominant public view of teaching is that it exists in a linear and direct relationship with learning, what it means to learn to teach is enmeshed in a similar perception. Hence, it is not difficult to see why the view that good teacher education should be able to train students of teaching so that they are 'classroom ready' (TEMAG, 2014) persists. The very language of training tends to trivialize the importance of Britzman's points (above) about the challenges of learning to teach. In fact, by considering learning to teach as training, the problematic nature of practice that can unsettle students of teaching (Nilsson, 2009), the knowledge, skills, ability and experience essential to learning to recognize and respond to the dilemmas of practice (Cabaroglu, 2014; Wallace & Louden, 2002), and the need to become comfortable with uncertainty (Berry, 2007), make clear that learning to teach is far more about an educative experience rather than an approach to training. For students of teaching, making the shift from views of teaching based on delivering content through transmissive teaching, to learning to 'teach for understanding' is both challenging and rewarding:

> My practicum [school teaching experience] revealed to me the challenges of teaching and the continuous journey of improvement that can be undertaken as a teacher if one chooses to continually reflect and be critical of their own performance. I experienced first-hand that

> the seemingly easiest/most efficient way to teach is not always the best way to teach. To promote quality learning, teaching needs to be more than just the direct transmission of knowledge from the teacher's words/writing, to the student's head. Some of my best classes were those where I was furthest away from the spotlight as possible and where the students were the furthest away from being silent as possible. (Boughdady, 2015, p. 22)

The process of learning to teach is considerably more demanding, challenging and personally confronting for students of teaching when learning is genuinely the goal, in contrast to achieving a sense of satisfaction with the successful delivery of information. Yet, it is the notion of delivery of information that appears to dominate public expectations about that which students of teaching should be able to do as a consequence of completing a teacher preparation programme. It is not difficult to see how conceiving of teacher education as 'training to deliver' dramatically decreases the complexity of teacher education, simplifies the expectations of programme outcomes, and in so doing, inevitably reinforces the status quo of school education – the very thing that is so often sought to be impacted most by newly qualified teachers. The paradox is obvious: some of the most compelling issues related to the hopes and expectations for school teaching and learning that teacher education is 'charged with fixing', are reinforced when simplistic views of teaching and learning frame expectations of what it means to learn to teach.

Shulman (2007) elaborated the complexity of practice noting that there is no:

> simple, monolithic, unitary, and internally consistent set of actions called "practice", [to be] documented then mindlessly initiated in the design of programs … practice neither is nor ever has been monolithic. To take seriously the world of practice and the intelligence that guides it is to recognize the stunning range of practices that characterizes the work of educators. To interrogate both practice and the wisdom of practice is to confront … rich, nuanced, contextually varying worlds … To put it in the statistical terms, the wisdom of practice is of interest because of its variance, not its mean. We are inspired by its range not its median. (Shulman, 2007, p. 560)

Thus, as asserted by Shulman, if practice is so complex, then learning to teach must indeed entail considerably more than a training regime. Understanding and valuing that complexity is at the heart of uncovering quality in teacher education.

Schneider (2015), when considering the place of pedagogical content knowledge (PCK; a topic explored in more detail later in this chapter) in science teacher education in respect to a learning progressions framework offered insights into the nature of learning to teach (science) and what it might mean for understanding the development of knowledge as a teacher. She stated that:

> Ambitious teacher education aims beyond standards so that teachers will be able to use what they know in working on authentic problems of teaching. For teachers, it is important to have a notion of expertise that requires sophisticated thinking. Creating educative experiences intended to progress teachers' thinking over long periods of time is consistent with teachers developing as adaptive experts who evolve their core competencies and expand the breadth and depth of their expertise (Bransford, Derry, Berliner, Hammerness, & Beckett, 2005). Adaptive expertise requires relatively sophisticated ways of thinking about teaching to make intelligent, flexible, and adaptive decisions that are responsive … [we need to] prepare teachers for novel situations that cannot be predicted or comprehensively covered in teacher education. (pp. 164–165)

If teacher education is viewed as an environment in which the preparation of prospective teachers is focused on learning how to manage complex, changeable and uncertain situations on a daily basis, if professional growth through a teaching career is based on developing expertise in making informed decisions about practice in ways that are responsive to complex situations based on sophisticated knowledge and thinking, then teacher education most certainly places strong demands and high expectations on students of teaching – as well as their teacher educators. Inevitably then, and rightly so, theory and practice as the cornerstones of expertise attract serious attention.

Theory and Practice: Practice and Theory

A basic search of the literature throws up countless references to books, chapters, papers and presentations that examine the relationship between theory and practice and their influence on teaching. Arguments about the so called theory-practice gap continually recur throughout the literature and illustrate a persistent concern in teacher education about how theory and practice can (and should) inform one another in order to better shape understandings of teaching and learning.

Nuthall (2004) offered a thoughtful analysis as to why he considered that research has failed to bridge the theory-practice gap. He drew attention to the fact that research is often viewed as the prime ordinate focus with practice relegated to a secondary position as something to be studied, rather than as an important knowledge producing field in its own right. Nuthall was of the view (like many before him, see for example, Levin & O'Donnell, 1999), that there is a noticeable gap between research on effective teaching and teaching practice itself. His examination of the issues around theory and practice led to an exploration of the nature of expertise in teaching and how it might be better understood through theory. He concluded that:

> … researchers are still a long way from being able to produce the kind of evidence-based explanatory theory that has the potential to guide teachers' moment-by-moment decision making and provide a valid basis that enables them to learn from their daily experiences. Only when teachers understand the principles by which their actions shape the learning process going on in the minds of their students will they be able to ensure effective learning regardless of the abilities or cultural backgrounds of the students. (p. 301)

Constructing theory and practice as a dichotomy has been an issue for teacher education that has typically been played out in less than productive ways. Schools have been seen as the 'home' of practice and universities as the 'ivory towers' of theory thus creating a divide to be bridged rather than as different sites in which the development of knowledge and practice of teaching is different but complimentary.

From the perspective of students of teaching, the consequence of thinking along the lines of a theory-practice divide has often led to a view that time in school (practicum; school experience) is the most valued aspect of teacher education

(Ferrier-Kerr, 2009). Unfortunately, as students of teaching become teachers themselves and then supervisors of students of teaching, they often reinforce a view of the practicum as a 'rite of passage' (Graham, 2006) further reinforcing notions of a separation between theory and practice.

Sinner's (2012) case-study based around an intensive examination of the practicum by a student of teaching (Nathalie) illustrated how the theory-practice divide can unintentionally be reinforced and how difficult it can be to challenge the status quo; and that it is not necessarily the 'fault' of teacher education that the situation persists.

> Nathalie's narrative of becoming a teacher consistently focused on negotiating the spaces in-between what she perceived as opposing orientations of her university classroom and the field placement. These critical tensions were broadly conceived and interpreted by Nathalie as shifting between realms of traditional teacher training, where the structure of the field experience positions teacher training as a vocation, and teacher education as praxis at the university … Nathalie articulated throughout her practicum these differences in teacher education based on what is commonly referred to as the apprenticeship model of teacher training in the field, which in her experience was at times lacking in the scope and depth of inquiry encouraged in university classrooms … what she encountered in the field may be best described as a competency-based approach in which she as the pre-service teacher was expected to observe sponsors (expert teachers willing to provide hands-on training in a classroom), model the sponsor's actions, conform to the sponsor expectations and under their tutelage, progressively master practice. In contrast, Nathalie's university classroom encouraged an approach to teacher education rooted in inquiry, development of interdisciplinary perspectives, collaboration with students and teachers, and ongoing reflective writing and visual expression. At the university, pre-service teachers were directed to actively embrace creativity and responsiveness with a constructivist perspective in their emerging teacher practice. (p. 602)

Nathalie's experience raises another aspect of the practicum that influences perceptions of a theory-practice divide; the nature of supervision as a shaping factor in the way teaching is conceived. As Nathalie intimates (above), how a sponsor teacher approaches the role of supervision of students of teaching has a major impact on the way practice is understood and interpreted in the school setting. In many ways, Nathalie highlights how little has changed over the years from that which Zeichner (1990) noted as a range of obstacles inherent in the nature of the practicum. In particular, the uneven quality of practicum supervision, the hope that 'good teachers would do good things' with students of teaching, and the clear discrepancy between the framing of the role of the teacher as a reflective practitioner as opposed to a technician implementing government policy or mandated change. Hence teacher identity is both buffeted and shaped through a practicum in ways that are perhaps bounded by, or mediated through, the ways in which theory and practice are envisaged, applied and valued as students of teaching grow and develop through teacher education experiences and then progress into their early years of a teaching career.

The way in which teaching is conceptualized, and therefore how it might 'best be learnt', is not so much about a theory-practice divide but about differing (and sometimes contradictory) views, about the nature of teaching itself. Therefore, although teacher education programmes differ in their organisational structure and underlying intents, any mismatch between the expectations and pedagogical pur-

poses between those involved in the teaching of teaching more generally (whether that be university or school based; including differences within both sites) must inevitably lead to challenges for students of teaching in respect to that which they might need to do, how and why.

If learning to teach is perceived as a training regime with a script to follow, or as Nathalie experienced it, an apprenticeship model, then practice itself will be viewed very differently from that which might be understood when practice is conceived of as problematic; the learning of which is derived of inquiry, reflection and managing competing dilemmas, issues and concerns. As a consequence, theory and practice may inadvertently be portrayed differently – perhaps as separate and distinct through an apprenticeship model as opposed to dynamic and responsive through an inquiry stance (Cochran-Smith & Lytle, 2009) – thus creating a divide rather than facilitating complementarity. The perception then of a theory-practice divide as an outcome is clearly possible regardless of the site (university or school) and the nature of the teacher education programme. It could well be asserted then that the oft' bemoaned theory-practice divide is perhaps not so much an enduring problem created by teacher education per se, but a consequence of the way in which teaching is perceived and the ways in which learning about teaching is experienced. As the previous sections make clear, such learning is demanding when considered at the general level of pedagogy, it becomes all the more challenging when understood in terms of subject specialisation as highlighted in studies of pedagogical content knowledge (PCK).

Pedagogical Content Knowledge

When Shulman introduced pedagogical content knowledge as an important aspect of teachers' knowledge (Shulman, 1986, 1987), it resonated with researchers partly because it offered a new way of understanding teaching beyond the technical and partly because it offered a way of 'naming and framing' specialist knowledge of practice. Back then, it was also a powerful political response to perceptions of the time that could be seen as a public undervaluing of teachers' knowledge, skills and abilities. Sadly, the same could still be asserted today; not only about teaching but also of teacher education. Therefore, thinking about teacher education and the place of PCK in respect of learning about teaching offers a reminder about the sophisticated nature of practice and some of the reasons why learning to teach is far from simple (Loughran, 2015).

Studies that have examined the use of PCK as a focus for developing practice can assist students of teaching to see beyond simply aiming to collect a series of 'activities that work' (Appleton, 2002). In so doing, prospective teachers are able to develop a vision for their own professional learning as a consequence of learning how to teach particular content in a particular way for a particular reason with a group of students. Woolnough (2009), for example, found that when his science students of teaching framed their practice through a conceptualization of PCK, that

they became dissatisfied with transmissive approaches to teaching. His research illustrated how a focus on PCK encouraged his students of teaching to develop pedagogical purposes in teaching content that transcended the delivery of factual information as they sought to teach for understanding. Similarly, Hume and Berry (2011) found that scaffolding PCK development through teacher education led to qualitatively different teaching outcomes for students of teaching as they began to recognize and respond to such things as: articulating the big ideas underpinning the (science) content; reasons for students to learn about the (science) content; the difficulties students had with understanding particular content; and, knowledge of student thinking that influenced their approach to teaching. In essence, through the lens of PCK, students of teaching began to approach their teaching of science in a conceptual rather than propositional manner.

Conceptualising learning to teach through the lens of PCK has demonstrated that students of teaching readily grasp the complexity of practice and see the importance of explicitly linking teaching and learning in ways that can bring theory and practice together in a more meaningful relationship (Nilsson & Loughran, 2012), thus challenging views of a divide. Gess-Newsome (2015) described a model of Teacher Professional Knowledge and Skill (TPK&S) through which she noted that:

> PCK is both a knowledge base and a skill, recognizes the use of knowledge during and surrounding instruction, and establishes PCK and much of the related knowledge base as being grounded in the context of a specific topic and related to instruction to specific students and within a specific school context. The model of TPK&S also includes affect and its influence, for both teachers and students. (p. 39)

A model such as TPK&S most certainly highlights the complexity of teaching and reinforces why learning to teach is challenging and the folly of considering teacher education as a simple model of training teachers.

Teaching About Teaching

As the literature on Pedagogical Content Knowledge (PCK) clearly illustrates, the knowledge, skills and abilities of expert teachers comes to the fore when examined through the lens of PCK. Such expertise encapsulates a number of things, some of which include: the need to know subject matter sufficiently well to understand the difficulties associated with learning it; knowledge and ability to be able to construct a teaching approach that might help to ameliorate some of those learning concerns; and, to do be able to do so for a diverse range of learners in the same classroom at the same time. Clearly, the ability to do each (of the above) in a coherent, holistic and meaningful way in a teaching and learning situation is complex. So, if PCK sheds light on some of the sophisticated knowledge of practice that underpins expertise, then the expectations, needs and demands of teacher education as a beginning point for learning about such expertise offers opportunities to think more deeply about that which might be the basis for the teaching of teaching.

Through his argument about the important features essential to building a coherent and interconnected teacher education programme, Hoban (2005) described two purposes of teacher education that he considered needed to be recognized, and appropriately responded to, in structuring a meaningful teacher education programme; they were to:

(i) help preservice teachers to learn about teaching because a connected programme enables them to engage in building their own knowledge; and,
(ii) promote a point of view that teaching is a complex profession influenced by many interconnected factors. (Hoban, 2005, p. 2)

As Hoban (above) suggests, teacher education should be such that it is purposefully designed to create a pedagogic environment in which students of teaching experience, and are supported in further developing understandings of, and approaches to, teaching that challenge 'telling as teaching' and 'listening as learning'. If that is to be the case, then simply organising the teaching of teaching based on the simple delivery of information or the sharing of 'tips and tricks' of practice is far from acceptable (and should not be a 'default approach'). Challenging simplistic approaches to teacher education depends on a conceptualization of practice that is connected and coherent as well as reflective of the complex nature of teaching, it requires:

> … explicitly reframing teaching as a discipline [and] urg[ing] both the academic community and practitioners to consider the types of knowledge that underpin teaching, how knowledge of teaching develops, and the inherently problematic nature of teaching … These ideas stand in sharp contrast to popular notions of teaching often espoused by teacher candidates and the general public: that teachers require only subject-matter knowledge relevant to their course (e.g., physics, math, English, or history) and that teaching is a matter of transmitting knowledge from experts (teachers) to novices (students) … Most students learn, at least to some extent, the structures and rules that govern interactions in school, structures that Tyack and Tobin (1994, p. 454) called the "grammar of schooling." … The tacit messages that we tend to carry forward from our apprenticeships tend to encourage the idea that knowledge of teaching is acquired in an un-disciplined, whimsical fashion based on trial-and-error experiences in the classroom. (Bullock, 2009, pp. 291–292)

As Bullock suggests, the teaching of teaching should not be viewed as 'undisciplined or whimsical'; and those that do that teaching should be able to frame their knowledge and practice in ways that make explicit that which underpins their teaching. In so doing, teaching teaching might then encourage scrutiny, critique and debate by students of teaching as they 'see and feel' the problematic nature of teaching in their shared experiences of learning to teach. Doing so can be difficult though, for, as Grossman, Hammerness, and McDonald (2009) have suggested, the traditional approach to the organisation of teacher education (see for example, Korthagen, Kessels, Koster, Langerwarf, & Wubbels, 2001, as an apt description of the 'traditional teacher education programme') can militate against structuring the teaching of teaching in holistic and meaningful ways:

> [The] separation between methods courses and foundations courses, and their respective aims, is problematic for a variety of reasons. First and foremost, it contributes to the fragmentation that so many teacher educators have identified as problematic in teacher prepara-

> tion, in particular, the disconnection between theoretical knowledge and teachers' practical work in classrooms. Second, it relegates issues regarding the practices of teaching to particular courses rather than integrating them throughout teachers' professional preparation. Finally, in some ways it places the focus of learning to teach upon the conceptual underpinnings of teaching as opposed to the concrete practices new teachers may need to enact when they begin teaching – practice is not at the core of the curriculum. (p. 275)

Inevitably then, the ways in which teachers of teaching conceptualize their practice is crucial in shaping the nature of the learning experiences that students of teaching encounter in their teacher education programmes. That means that the very essence of teaching as being problematic lies at the heart of unpacking teaching in ways that might transcend 'telling as teaching' and 'listening as learning'. How a teacher educator transforms those ideas through their practice creates the foundations for quality in a teacher education programme; something that is made concrete through the manner in which practice is not only conceptualized but importantly, also modelled.

Principles of Practice

One way of understanding how teaching teaching is conceptualized at the individual (and personal) level is evident in the manner in which teacher educators articulate their of principles of practice. There are numerous examples across the research literature of interesting approaches to so doing, all of which demonstrate the importance of better aligning teaching intents and teaching actions in order to more positively impact the nature of learning about teaching (see for example, Berry, 2007; Brandenburg, 2008; Kroll et al., 2005; Russell, 1997; Senese, 2002). One example of principles that straddles both teaching and programme intents is that of Bullough (1997) who described 11 principles that he had come to articulate as important in shaping his teacher education practices within his teacher education context. They included:

1. *Teacher identity*: the need to begin by exploring the teaching self.
2. *Schooling and wider social contexts*: exploring teacher identity leads to studying the influence of context.
3. *Social philosophy*: the need to understand the aims of education in a democracy.
4. *Beliefs*: the centrality of respectfully challenging beliefs whilst still being supportive.
5. *Trusting environment*: the importance of articulating programme decisions.
6. *Responsibility for learning*: students of teaching have a choice whether or not to accept responsibility for their own learning.
7. *Approach to teaching*: there is no one best teaching style, quality judgements influence quality practice.
8. *Meaning making*: students of teaching make their own meaning of their teacher education experiences.

9. *Programme continuity*: opportunities must extend beyond sensible sequencing as students of teaching make their own sense of programme coherence.
10. *Language of learning*: part of being a professional is having and applying a language of learning.
11. *Self-evaluation*: teaching requires purposeful, ongoing data-driven self-evaluation.

As Bullough explained, there is great value in articulating principles of practice. His principles not only highlight the importance of seeing into one's own practice, they also illustrate how, in so doing, thoughtful alignment of purpose and practice can influence the messages inherent in a teacher education programme itself; thus challenging the limitations of programme structure and issues associated with such things as the theory-practice divide.

In extending his work on principles of practice, Bullough (2005) explained how teacher educators' sense of identity and the nature of their practice are inevitably enmeshed, thus further highlighting how important alignment of intent and action are in shaping learning opportunities for students of teaching through the practice of their teacher educators, "[From the] teacher educator position, questions of identity have profound importance for the kind and quality of professional communities that we form as well as the [teacher education] programmes we develop" (p. 238).

Teacher Educator Identity

There has been quite a flurry of work in recent times around teacher educator identity (see for example, Ben-Peretz, Kleeman, Reichenberg, & Shimoni, 2013; Boyd & Harris, 2011; Bullough, 2005; Davey, 2013; Murray & Kosnik, 2011; Sachs, 2005), all of which illustrates that being a teacher educator is much more than 'being a teacher teaching in a different context'. In fact, Murray and Male's (2005) research into teacher educator identity found that the transition from school teacher to teacher educator took at least 3 years.

It is not difficult to see why the transition from teacher to teacher educator can be so challenging for as Williams and Ritter (2010) explained:

> … on the construction of their teacher educator identities … This emerging body of research disrupts the assumption that competent school teachers automatically make competent teacher educators. Zeichner argued how the move from school teacher to teacher educator is not necessarily a seamless transition: Anyone who has ever worked with prospective teachers knows that although there are some similarities in teaching children and young adolescents and teaching adults, there are many important ways in which the two kinds of teaching differ and where one's expertise as a teacher does not necessarily translate into expertise as a mentor of teachers … teacher education may require certain knowledge, values and skills that distinguish it from teaching in other contexts, most notably in schools. The knowledge of pedagogy acquired through classroom teaching may not be sufficient for the task of teaching prospective teachers about teaching … [there is a] tension that exists between being considered an expert in one field (classroom teaching) and a novice in another (teacher education). (p. 82)

Becoming a teacher educator requires a recognition of the need to understand that although whilst being a school teacher, teaching is the main focus and major expectation of the role, in the transition to becoming a teacher education academic, that teaching is but one aspect of that role; research is at least equally important. For many beginning teacher educators, developing a research programme can be interpreted as something that competes with their teaching agenda; rather than the two existing in a complementary relationship.

The development of identity can be seen as all the more challenging for teacher educators when considered in light of the fact that, whilst coming to grips with what it means to be an academic, the university environment itself is also increasingly managerial and perfomativity based (Menter, 2011). Therefore, the dual demands of teaching and research may be experienced as expectations that, for many, are tied to standards, outputs and measures. As a consequence, scholarship may be misconstrued as a 'race for outputs' rather than as a way of defining quality in, and being research informed about, teaching teaching. Dinkleman (2011) was of the view that the idea of a teacher educator identity and how it develops is 'remarkably complex' and that changes in university expectations were experienced more and more as an 'audit culture' that inevitably impacts teacher educators' development and identity.

Whilst considering the impact of an audit culture on his own views of teacher educator identity and development, Dinkleman worked with Gee's (2001) model of identity. Gee proposed "four perspectives on identity, four interrelated ways of thinking about what and who we are: nature (identity by nature), institutional (identity by the positions we hold), discursive (identity by what we have done and in dialogue with others) and affinity (identity by allegiance to practices and perspectives of group affiliation)" (Dinkleman, 2011, p. 311).

In reflecting on his own identity formation in relation to the institutional perspective, Dinkleman (2011) highlighted the ongoing tension experienced by teacher educators as their "professional lives are split by two very distinctive activities, research and teaching … [and] questions remain about how realistic it is to expect teacher educators to develop research programmes on the practice of teacher education as a means to satisfy both research and teaching obligations … some part of teacher educator identity turns on the way faculty … respond to the challenge posed by the dual charge to both research and teach" (p. 314). However, despite the teaching and research related challenges raised by Dinkleman (and others), it seems reasonable to suggest that regardless of how the exepectations and demands are experienced, a noteable response should be clear in the manner of teaching in a teacher education programme. There should rightly be an expectation of quality teaching and learning about teaching, and so, researching practice clearly offers opportunities to develop an evidence base on which claims about practice might be based. Teaching in teacher education in ways that are commensurate with the practice students of teaching are encouraged to implement in their own classrooms does not seem to be too great an expectation. If so, then the ways in which practice is modelled by teacher educators must surely be a crucial aspect of quality in a teacher education programme.

Modelling Practice

> "Do as I say, not as I do" is a notoriously poor formula for getting people to act the way you want them to. Nonetheless, teacher education has largely followed that formula [for far too long] … student teachers … have sat through unnumbered hours of lectures on the virtues of educating children through democratic discussion. (Peck & Tucker, 1973, p. 955)

The idea of 'front loading' through teacher education in order to prepare students of teaching for how to act, despite the acknowledgement that it is a relatively pointless exercise, has continued through the ages and across programmes. It could well be that such front loading is related to an implicit sense of responsibility associated with a perceived teacher educator need to 'at least offer some helpful information' to students of teaching as it is about actually making a tangible difference in their subsequent practice.

By the same token, there is no shortage of views about, and pressure from schools, related to what it means for students of teaching to be 'prepared' for their forays into school teaching. Despite the obvious implications associated with what it means to 'learn to teach', the rhetoric does not always match the heightened expectations – and trepidations – associated with a pre-service teacher assuming responsibility for the day to day functioning of an experienced teacher's classroom.

Just as school teachers often feel responsible for their students' learning, so too teacher educators suffer similar pangs of responsibility for the practice of their students of teaching as they send them off into schools in the hope of doing more than 'just coping', or being socialized into, existing schooling practices (Zeichner & Gore, 1990). Although teacher educators most likely hope that in making the effort to forewarn their students of teaching about the intricacies, experiences, ideas, knowledge and skills inherent in being able to put teaching ideas into practice, the reality is that 'front loading' is more about delivering the curriculum than it is about enacting the intended learning.

Considering all that surrounds the notion of teacher preparation alluded to above, it seems reasonable to assert that modelling teaching as a way of creating opportunities for students of teaching to make sense of pedagogical practices and to support their professional learning is axiomatic. To be a learner through experiencing different teaching approaches and procedures, to have the opportunity to investigate and critique the quality of that learning, and in so doing, to be to personally be involved in making sense of the 'how and why' of particular teaching and learning practices has been noted as an important aspect of teaching teaching (Cheng, Tang, & Cheng, 2012; Loughran & Berry, 2005; Segall, 2002). For example, in exploring the use of a socioconstructivist pedagogy in Social Studies, Sullivan (2011) examined the efforts of a Social Studies teacher educator (Gómez) who chose to model the practice rather than deliver information about it through a lecture(s).

> Like many pre-service teachers, the participants were unfamiliar with socioconstructivism and had difficulty transferring it to their repertoire: "a major challenge for teacher educators is to help prospective teachers make a complex shift from common-sense to professional

> views of teaching" (Feiman Nemser & Buchman, 1986, p. 24) … Limited experience … sometimes caused the pre-service teachers to revert to teaching as they were taught, generally via transmission-oriented methods … [so] it was important to provide multiple relevant models for students to understand socioconstructivism for themselves and to emulate in their classrooms. Student engagement with each other and the course instructor was used as one means to model socioconstructivism, mitigate student apprehension of the new teaching and learning context, and to develop a democratic learning community … [in order to] "change the nature of the social studies from one of a search for truth, to one of a search for perspective" (Doolittle & Hicks, 2003, p. 77) … The use of classroom talk by the professor to model and support sociocontructivism and democratic principles were examined by *positioning*, a lens through which dialogue may be analysed to highlight particular features of talk used by speakers to situate others in facilitating their purpose within the conversation. (p. 25)

It is clear that regardless of whether or not there is an explicit modelling intention, all that teacher educators do models something. If students of teaching experience what they might consider to be poor teaching, then such practice has been modelled. Moreso, if the 'do what I say not what I do' mantra is an implicit message as a consequence of the way teaching of teaching is conducted, then it really only tends to confirm teaching as telling and learning as listening as underpinning pedagogy. Needless to say, that under such circumstances, there would be little incentive for students of teaching to act any differently on their entry to the profession; or if they did, it would be difficult to credit such an outcome to their teacher education programme. However, simply modelling 'good teaching' and expecting that to be replicated or mimicked by students of teaching has limitations; modelling must transcend superficial 'copy me' approaches to teaching teaching.

Pedagogically strong approaches to modelling teaching teaching is evident when teacher educators embrace the notion of explicating the pedagogical purposes underpinning practice. In so doing, students of teaching are given opportunities to access and critique the thinking that shapes the very teaching of teaching they experience; teacher education itself becomes the crucible in which teaching and about teaching comprise a purposefully shared experience. As a consequence, students of teaching are encouraged to better link their own learning about teaching with the pedagogical intentions inherent in those experiences and supported to reflect on them in terms of how they were created, shaped, enacted and articulated by their teacher educators.

The self-study literature has long been linked to notions of 'practicing what you preach' or 'walking the talk' (Bullough & Pinnegar, 2001; Clift, 2004; Crowe, 2010; Ham & Kane, 2004; Hamilton, Pinnegar, Russell, Loughran, & LaBoskey, 1998; LaBoskey, 2006; Tidwell, 2004). Whitehead (1993) in particular 'concretized' what it means to be confronted by not 'walking the talk' when he coined the phrase of being 'a living a contradiction'.

As the literature makes clear, many teacher educators have been attracted to self-study as an approach to researching their attempts to better align their actions and intents; in essence choosing to confront situations in which being a living contradiction might inadvertently exist as a default behaviour (Russell, 2000). Such studies offer powerful insights into modelling. For example, the work of Crowe and Berry

(2007) examined their efforts to help their students of teaching begin to learn to 'think like a teacher', that work was based on five important principles:

Principle One: Thinking like a teacher involves learning to see teaching from the viewpoint of the learner. Experiencing the role of learner is an important means of developing an understanding of the learner's perspective.
Principle Two: Prospective teachers need opportunities to see into the thinking like a teacher of experienced others.
Principle Three: Prospective teachers need opportunities to try out thinking like a teacher in order to develop their thinking like a teacher.
Principle Four: Prospective teachers need scaffolding (guidelines, questions, structures) to support them in the process as they begin thinking like a teacher.
Principle Five: Developing responsive relationships is at the heart of learning to think like a teacher and at the heart of supporting our students (relationship support). (p. 33)

Through a series of vignettes, Crowe and Berry demonstrate how they model their thinking in order to support their students of teaching in learning to think like a teacher. By using their own teacher education classrooms as purposeful teaching and learning environments they illustrate how they not only model 'good teaching' but do so in ways that invite their students of teaching to reflect upon their shared pedagogical experiences. Their approach is designed to highlight how their teaching of teaching has been structured, designed and implemented with the specific purpose of influencing the learning experiences of their students of teaching in ways designed to explicitly impact their thinking about, and subsequent practice of, classroom teaching.

In the first vignette, Crowe offers a window into her first session with her incoming students of teaching. Having conducted her session with them, she then 'unpacks' the teaching and learning publicly with them in order to give them access to her pedagogical reasoning and to draw attention to what they might have recognized and learnt – an attempt to make the early development of knowledge of teaching clear, strong and explicit. She concluded by stating that:

> As I return to my office, I think about their comments individually and as a whole. I begin to think to myself, "How much should I debrief on Thursday? Doug [student of teaching] brought up something I've never even thought to mention before; that's great … I also begin to think about some of the changes in my own thinking "like a teacher educator" working with new groups of prospective teachers over the past few years. I think about how little I used to bring into the first session. I remember the first time we did debriefing like the one I did today. I knew it needed to be done, but we certainly did not delve into as many of the complexities as we considered today. I decide, "I'll have to make sure to keep being explicit about this complexity. Over the last few years, that seems to be one area that takes them a long time to develop an understanding of. Perhaps, if I keep making that explicit in what they are experiencing, then they will be able to see it in their own teaching." I am excited … (p. 36)

It is the act of making purpose and practice clear and explicit that lies at the heart of modelling as a crucial element of a pedagogy of teacher education and a fundamental principle of modelling in teaching teaching (Loughran, 1996; Loughran & Berry, 2005).

Students of teaching need to be able to see into the thinking of their teacher educators in order to better understand how teaching intents and learning outcomes from pedagogical experiences can be interpreted by different learners as aligning, or being confused, or in some instances, being contradictory. Powerful learning about teaching is possible when the shared experiences of teaching and learning about teaching, drawn from their own teacher education classrooms, becomes the manna to feed the learning of students of teaching. Such teacher education practice can not only support, but also actively encourage, the development of the personal and professional knowledge of teaching that underpins expertise as a teacher.

Modelling in teacher education then is not about show-and-tell teaching and guided practice (Myers, 2002), it is about opening up for scrutiny the teaching and learning experiences in teacher education programmes, it is about making explicit the pedagogical purposes of teacher educators. Modelling creates an imperative for teacher educators to illustrate the importance of pedagogical reasoning, and to be able to demonstrate the value of articulating knowledge of practice. In so doing, modelling in teacher education can create new ways for students of teaching to see how to transform their teaching in ways that might foster meaningful learning for their future students.

If the description of modelling (above) is reasonable, then modelling in teacher education stands out as an important pedagogical tool for challenging transmissive approaches to teaching teaching. It is interesting to ponder then why it is not more commonly found in teacher education programmes or used as an indicator of quality in teacher preparation more generally.

In the Netherlands, Lunenberg, Korthagen, and Swennen (2007) conducted a small scale study into modelling teaching in teacher education. Sadly, despite the perception that teacher educators as exemplary models of teaching might exist, they found that:

> On the basis of the literature search and our exploratory study, there appears to be little or no recognition of modelling as a teaching method in teacher education. The findings of our study confirm the problems cited in the literature, namely that teacher educators apparently lack the knowledge and skills needed to use modelling in a productive way, to make their own teaching explicit, and to rethink the connection between their teacher education practices and public theory. Our study seems to indicate that such knowledge and skills do not automatically develop over the years: experience as a teacher educator does not necessarily lead to more or better modelling. (p. 597)

Lunenberg et al's study is interesting. They set out with a view that modelling was an important element of teacher educators' practice because they assumed it created a natural connection between teaching *and* learning about teaching. Yet, despite that which might be described as an expected signature pedagogy of teacher education (Shulman, 2005), modelling did not feature as an abiding element of mainstream teacher education in their study. A more concerted effort in relation to the practice of modelling, and concurrently researching that modelling, could present as one of the great opportunities for teacher education as the starting point for the development of the expert teachers of the future.

Conclusion

Teacher education is a field of study that has attracted a great deal of attention, not least because:

> … in the politics of teacher education is a simple paradox about our practice as teacher educators: Teaching (and by extension, teaching people how to teach) is an extraordinarily difficult form of professional practice that looks easy. Consider some of the elements that make it so difficult for people to learn how to teach effectively. First, teachers can succeed only by convincing students to cooperate with them; or to put it another way, students learn only if they are motivated do so so … Second, students are in the classroom against their will … Third, teaching involves a complex emotional relationship with students … Fourth, teachers have to practice their profession under conditions of isolation from fellow practitioners … Fifth, teachers have to function with a degree of uncertainty that is greater than any other profession … Finally, there is even uncertainty about who the client is … simultaneously meet[ing] the needs and demands of students, parents, and community … Unfortunately, however, neither teachers nor teacher educators get credit for the difficult circumstances under which they labor. (Labaree, 2005, pp. 188–189)

Just as teaching is superficially understood as easy (Labaree, 2000, 2005; Martin & Russell, 2009), teacher education similarly suffers from simplistic views about the nature of the work and the skills, knowledge and abilities that underpin scholarship in teaching teaching (Russell, 2007). As described at the outset in this chapter, the shift from transmissive teaching to teaching for understanding is a challenge that persists partly because teaching 'what' is easier than teaching 'how' and 'why'; regardless of whether that be in school or in a teacher education programme. That many consider teaching only in terms of what to teach exacerbates the situation and masks the understanding teaching as problematic (Downey, 2008).

In her systematic and rigorous study into the systemic changes in teacher education in New Zealand, Davey (2013) highlighted how the 'academization' of teacher education fundamentally impacted the way in which teaching teaching is interpreted, valued and understood. She illustrated how some highly capable teacher educators struggled to respond to the demands of academia because they valued their practice to the detriment of the development of their research. Difficulties consistently arose when theory and practice were seen as being in competition.

In pursuing scholarship of teacher education, theory and practice need to be viewed and practised as complimentary and informing. Doing so matters if teacher education is to be at the forefront of challenging a teaching as telling and learning as listening culture; and that would be an outcome that would truly warrant acclaim in terms of meaningful educational change.

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Chapter 2
The History of Initial Teacher Preparation in International Contexts

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This chapter examines the history of teacher education in five nations – South Africa, Singapore, Chile, Finland, and United States – representing different continents, histories, political structures, cultures, levels of wealth, and economies. The nations were selected, in fact, because of this variability; Table 2.1 shows how widely they differ on a number of indicators. We hope the chapter will generate discussions about the role teacher education has played in national development and what teacher educators in different nations might learn from each other.

For purposes of the chapter we should define what we mean by 'teacher' and 'education'. Teaching is as old as human history. "Before there was teacher education – or from one perspective, even teachers – there was teaching" (Warren, 1985, p. 5). Nevertheless, we will limit 'teacher' to mean a classroom instructor. Education *writ large* includes all the ways people learn, inside and outside of schools. LaBelle's (1982) widely-used heuristic divides education into informal, nonformal, and formal dimensions. Informal education is the lifelong experience of learning in every-

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Table 2.1 National demographic and education data

Country	Population in millions (2013)[a]	GDP ranking (2013)[a]	Poverty as % of population (2011)[a]	Per capita GNI (US $) (2013)[a]	Mean score on PISA (2012)[c]	Ranking on health and primary education pillar (2013)[d]
South Africa	53.98	33	45.5 %	$7190	NA	135
Singapore	5.4	36	NA	54,040	573	2
Chile	17.6	38	14.4	15,230	423	74
United States	316.1	1	14.5[b]	53,470	481	34
Finland	5.4	42	6[c] (2010a, 2010b)	48,820	519	1

[a]World Bank
[b]U.S. Census Bureau
[c]Organisation for Economic Cooperation and Development (OECD)
[d]The Global Competitiveness Report 2013–2014

day situations; nonformal education is intentional and/or programmatic learning outside of schools; and formal education consists of institutionalized, systematic, and hierarchically structured learning experiences in schools. In a holistic sense teacher education includes all of these. However, as Bekerman, Burbules, and Silberman-Keller (2006) argued, "formal education has long been the preferred daughter of educational theorizing" (p. 2). Accordingly, we concentrate on *formal* teacher education. In addition, we have limited ourselves to *initial* teacher preparation, even though this ignores the importance of inservice teacher education.

Our shared assumption is that *history matters*. With most nations today involved in education reform, policymakers and leaders create a sense of urgency about moving forward, rather than looking backward. Yet nearly every text on teacher education reform includes at least a brief history of the field as a prologue. Providing a historical context for a contemporary issue could serve at least three purposes (Placier, 1998). First, history can build a case for an *explanation* of a current situation. Decisions in the past may have institutionalized patterns of belief and practice that impede change today (Sarason, 1996). Second, history may provide evidence of *macro-micro linkages* across time and sites that locate a phenomenon in broader structural, cultural, demographic, and/or economic contexts. Teacher education has been and continues to be influenced by state/provincial, national and/or international trends. Finally, history may demonstrate that current teacher education reforms are *not entirely novel*. Revisiting an old policy or practice is rarely a process of rote repetition, however, as an old idea may be transformed in a new social context, and what may sound like the 'same' phenomenon may play out differently in different nations (Furlong, 2002). Another shared assumption is that historians construct history rather than merely reporting it (Finkelstein, 1992). Each author brings her/his own life history, education, role in teacher education, and theoretical perspective to the work.

The History of Initial Teacher Preparation in South Africa

In South Africa the history of education is best understood in the context of the history of institutionalized racism and segregation. We use the adjective 'institutionalized' deliberately. Education policies during apartheid were intended to exclude the majority of blacks, especially Africans, from accessing quality education.[1] Such policies created generations of blacks who would not have the skills to pursue employment opportunities leading to upward mobility. As a result the post-apartheid government faces a mammoth task of redressing past inequities. Even the most high-achieving schooling sector fails to produce the human capital the country's economy demands; and trends point in the wrong, rather than right, direction (Fedderke, de Kadt, & Luiz, 2000). Twenty years after the transition from apartheid to democracy, South African teacher education faces huge challenges.

Given these challenges, and the fact that South Africa remains one of the most unequal societies in the world (Statistics South Africa, 2013), writing about the country's history of teacher education is a difficult and highly contested exercise. We have structured our account around three periods: missionary education; apartheid; and, post-apartheid. South African historian of education Chisholm (2012) argues that "an historical approach can best provide insight into the complexity of both past and present. Periodizing and problematizing the concept of legacy is essential. This is as important for the apartheid as the post-apartheid period" (p. 83). In the Conclusion we examine recent interventions in teacher education intended to redress the damages of apartheid.

The Era of Missionary Education – 1910–1948

In sub-Saharan Africa formal education was originally the business of missionary societies, and these societies played a role in South African education until as late as 1953 (Seroto, 1999). Until the Union of South Africa was established in 1910, teacher training in the four colonies was the sole responsibility of missionary churches. Teacher education was incorporated into secondary schools, most of which were managed by missionary organizations that were part of the historic 'Scramble for Africa' (Chamberlain, 2013; Pakenham, 1991). The first formal teacher training college in South Africa was established in 1841 at Lovedale by the Glasgow Missionary Society (Lovedale Missionary Lovedale Missionary Institution, 1938, p. 158). Initially, Lovedale College admitted both black and white students and was regarded as 'multi-racial.' Shepherd (1971) explains that the

[1] In South Africa 'Black' and 'African' are related but not synonymous. "Black" may include Africans, Asians (South African Indians), and Colored (mixed race). But the term 'African' makes a statement about 'identity.' It refers to indigenous African peoples and is sometimes associated with certain physical characteristics that can be stereotypical. See Chapter 9, "African Identities" in Appiah (1993).

students at Lovedale attended the same classes and had their meals in the same dining hall, but sat at separate tables and slept in separate dormitories.

The aim of missionaries was similar throughout the world: to spread the Christian Gospel to 'heathen' populations. They set up institutions where teachers were trained to "inculcate the Christian religion and the practical lessons of cleanliness, industry and discipline" (Transvaal Education Department, 1912, p. 2). For example, Healdtown College, set up by the Wesleyan Methodist Missionary Society in 1867, based its teacher training on the "perception of public education as the training of the 'lower orders' in the habits of good order, respect for property and authority" (Hartshorne, 1992, p. 220). Teachers who taught their learners beyond these habits were regarded as a danger to colonial stability as well as the domination of the white settlers.

During this period state intervention in teacher education was limited. It was only in 1841 that the colonial government made grant-in-aid available for teacher education. In 1896, the Cape Colonial government decided to train black and white teachers separately. Invariably admission requirements at teacher training colleges were low. Until 1894, the admission requirement was standard 4 (grade 6), and by 1901 it was raised to standard 6 (grade 8) (Union of South Africa, Report of the Interdepartmental Committee on Native Education 1935–1936, p. 16).

The Era of Apartheid[2] Under the Afrikaner Nationalist Party – 1948–1994

In 1948 all missionary provision of education ceased when the Afrikaner Nationalist Party won the all-white general elections. The Nationalist Party was intent to make clear who was boss/*baas* in South Africa. While in exile in the 1970s–1980s I. B. Tabata (1980), president of both the Unity Movement of South Africa and the African People's Democratic Union of Southern Africa, argued that the Nationalist Party advocated "a policy of *baaskap* (literally boss-ship). Alternately its policy is known as apartheid, which prescribes a rigid demarcation between Whites and Non-Whites and sets a ceiling to the development of the Non-White population" (p. 11). Apartheid policies included The Prohibition of Mixed Marriages of 1949; The Group Areas Act of 1950, restricting ownership and occupation of land and appropriating land under Black ownership for Whites; and The Reservation of Separate Amenities Act of 1953, creating separate public accommodations (Christopher, 1995a, 1995b). With the Nationalist Party's ascension to power, "The government clamped down particularly harshly on teacher education for Africans … teacher education could only take place in the Department's education centers, and the Department did not recognize for purposes of employment the qualifications of teachers trained elsewhere" (Welch, 2002, p. 20).

[2] Apartheid literally means *apartness* (in Afrikaans) or *separateness* (in Dutch).

The history of teacher education in South Africa during apartheid is replete with evidence of institutionalized discrimination, segregation and intentional privileging of the white minority. Archival material attests to evidence that the government did not regard blacks as deserving of education that would give them equal life chances with their white counterparts. Welch (2002) showed that there were racially divided streams of teacher training, with only white teacher education conceived of as professional practice. She argued that "even when colleges were set up for black teacher education, the normal period of study was different for the different groups – 3- and then 4-year qualifications for white teachers, and 2- and then 3-year qualifications for black teachers" (p. 19). Two policies that particularly affected teacher education during apartheid were the Bantu[3] Education Act and the Christian National Education (CNE) policy.

The Bantu Education Act

Hale (2010) argued that "governmental control of black education (or 'training') soon became one of the principal social foundations of apartheid" (p. 11). This 1953 legislation forced mission stations and churches to cede control of education of blacks to a Department of Native Affairs. The Act was based on findings of the Union of South Africa (1951; Eiselen Commission). When the Commission started its work in 1949 there were 40 African training colleges in South Africa (Hartshorne, 1992). The Commission's criticisms of African teacher education included:

- Of 17,705 black teachers, 55 % had a lower teachers' certificate; 16.4 % had a higher primary certificate; 8.4 % had a senior certificate and professional qualification; and 19.9 % had no professional qualifications.
- College staff were inexperienced and lacked training.
- The curriculum was "overloaded." (Union of South Africa, Report of the Interdepartmental Committee on Native Education 1935–1936).

The Commission affirmed that there was no place for the *Bantu* child above the level of certain forms of labor (Giliomee, 2009; Van Heusden, 2009). Minister of Native Affairs Dr. H. Verwoerd argued that "until now he [the *Bantu* child] has been subjected to a school system which drew him away from his own community and misled him by showing him the green pastures of European society in which he is NOT ALLOWED TO GRAZE." He asked: "What is the use of teaching the *Bantu* child mathematics when it cannot use it in practice … that is quite absurd?" (Gool, 1966, p. 1). His position was that "well-educated blacks" should direct their "aspirations to their traditional homeland" manifests the very DNA of apartheid.

Through the Bantu Education Act the Nationalist Party government mandated that teachers were to be trained in segregated institutions. Moreover, *Bantu* teachers should be prepared only to the level required to prepare *Bantu* children for their place in society. The Act outlawed schools for Africans unless such schools were

[3] Bantu is a derogatory and inaccurate reference to all Africans.

government-registered. When Minister Verwoerd introduced the Act in parliament, he declared, "When I have control of native education, I will reform it so that natives will be taught from childhood to realize that equality with Europeans is not for them."

The Christian National Education (CNE) Policy

Christian National Education (CNE) was the Nationalist Party position that embodied principles of its ideology: "No mixing of languages, no mixing of cultures, no mixing of religions, and no mixing of races" (Christie, 1986, p. 160). CNE ensured that education of 'the *Bantu*' was inferior (Jarvis, 2008). The Nationalist Party envisioned a system of education whereby, "Afrikaans schools must not only be mother-language in the truest sense of the word; they must be the places where our children are soaked and nourished in the Christian-National spiritual *'kultur'*" (Malherbe, 1960, p 10). Rakometsi (2008) wrote that "according to CNE, God had earmarked South Africa for the Calvinist Nationalists who were to have the final say in all race matters as 'the superior partner'" (p. 28).

The CNE could therefore be regarded as "the official ideological position of Afrikaner Nationalists on education" (Rakometsi, 2008, p. 27). Christie (1994) noted that the CNE "overtly privileged the religious beliefs of Afrikaner churches together with Afrikaner nationalism as the basis of the apartheid education system, insisting on racial separation and mother tongue schooling" (p. 48). With regard to African education the CNE was unequivocal that the Afrikaner was a God-chosen trustee to lead the *Bantu*, who were deemed to be in a state of 'cultural infancy.' Article 15 of the CNE: *African (Bantu) Teaching and Education* stated that "the calling and task of white S.A. with regard to the native is to Christianize him and help him on culturally." It continued, "we believe that the teaching and education of the native must be grounded in the life and world view of the white … and that the natives must be led to a *mutatis mutandis* yet independent acceptance of the Christian and National principles" (Rose & Tunmer, 1975, p. 128).

During Apartheid, therefore, the Bantu Education Act and the CNE provided the overarching purpose for teacher education -- to prepare teachers who would reinforce the Nationalist ideology by teaching pupils that their status in the social order was divinely ordained. Deviation would be out of the question.

Teacher Education Post-Apartheid – 1994–Present

While the transition from apartheid to democracy was momentous, the harms of apartheid continue to affect education. Adler (2002) argued that "apartheid produced a grossly unequal society and damaged the essential fabric of society, with consequences which require repair. Redress in education across all institutions is an imperative" (p. 7). South African education performs poorly and lags behind much

poorer countries that spend less on education and do not have resources and facilities that compare to South Africa's (Letseka, 2013, 2014a, 2014b). South Africa ranks at the bottom on international assessments such as the Progress in International Reading Literary Study (PIRLS) and Trends in International Mathematics and Science Study (TIMSS). An article in *The Economist* (No one gets prizes, 2010) described South Africa's education as 'last in class' of 133 countries ranked by the World Economic Forum (WEF)'s Global Competitive Index.

Poor performance is evident on the country's own *Annual National Assessment* (ANA), where in 2014 the Grade 9 mathematics average score was 10.8 % (Department of Basic Education (DBE), 2014; John, 2014). South Africa also performs poorly in the sub-regional evaluation conducted by the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ), a consortium of 15 Ministries of Education that assesses primary school pupils' proficiency in reading and mathematics. South Africa has not achieved the average required score of 500 basis points on this evaluation since its launch in 1995. Poorer countries with GDPs a fraction of South Africa's have consistently performed above the required score. Concerns about South African schools have prompted descriptions such as 'a crisis' (Fleisch, 2008), 'a national disaster' (Bloch, 2009), 'essentially dysfunctional' (Taylor, 2006), and 'inefficient' (Simkins, Rule, & Bernstein, 2007).

When a country's education system fails, teacher education often becomes the culprit, although teacher education is only one possible explanation of learners' poor performance. Unemployment, chronic and generational poverty, disease, lack of resources, lack of critical infrastructure and sanitation -- all can wreak havoc on an education system's performance. Yet teachers must do their part. As Spaull (2013) observed, "teachers are the primary locus of schooling systems around the world. Being the single most important element of the education system, the quality of a country's teachers is intimately related with the quality of its education system" (p. 24).

South Africa's Initial Professional Teacher Development (IPTD), offered at the country's 23 public universities under supervision of the Department of Higher Education and Training (DHET), is under immense pressure to produce a critical mass of quality teachers. The Center for Development and Enterprise (CDE) (2011) noted that South Africa is producing too few teachers, especially in key subjects such as maths and science. The teacher education system needs to produce at least 15,000 more teachers a year (Parliamentary Monitoring Group, 2012). However, in 2007 only 5716 new teachers graduated from Bachelor of Education (B.Ed.) and Postgraduate Certificate in Education (PGCE) programmes; in 2008 this rose to only 5942 (DHET), 2011. In addition to an insufficient quantity of teachers, South Africa faces challenges of teacher quality. The DHET acknowledged that "The problem of poor quality teaching and poor subject matter knowledge of our teachers … is one of the greatest impediments to improved delivery of quality education in the system as a whole, as measured by poor learner performance, not only in international tests (TIMSS and PIRLS), but also in our own systemic assessments and matriculation examinations" (p. 77). Spaull (2013) argued that "Rural maths teachers in South Africa have significantly lower levels of content knowledge than rural

maths teachers in Swaziland, Tanzania, Uganda and Kenya" (p. 5). Others note that many South African teachers cannot answer maths questions based on the curriculum 1 or 2 years above the grade they teach (Grobbelaar, 2011; Taylor & Reddi, 2013; Taylor & Taylor, 2013).

Two strategies for addressing these problems are the Integrated Strategic Planning Framework for Teacher Education and Development in South Africa (ISPFTED or SPF for short) 2011–2025 and The Minimum Requirements for Teacher Education Qualifications 2011 (MRTEQ).

The SPF is the DHET's master plan for teacher education, addressing the critical issues of "teacher demand, supply and utilisation" and the "preparation and development of teachers." The SPF identifies the assumptions that influence predictions of teacher supply, demand, and attrition. For example, an aggressive drive to increase access to education at first resulted in massive increases in primary school enrolments, but the mid-1990s to early 2000s saw declines. Teacher attrition, attributed to "contract terminations, resignations, and mortality," is estimated at 6–9.6 %. This is exacerbated by the fact that few university entrants are keen to pursue teaching, or when they do, see teaching as a stepping stone to more attractive and better rewarding professions.

The MRTEQ (DHET, 2011) stated that "the primary purpose of all Initial Teacher Education (ITE) qualifications is to certify that the holder has specialized as a beginner teacher in a specific phase and/or subject" (p. 15). The MRTEQ seeks to develop teachers with capabilities for integrated and applied knowledge, both "the condition for, and the effect of scrutinizing, focusing together and expressing different types of knowing in the moment of practice." The MRTEQ position is that by explicitly placing knowledge, reflection, connection, synthesis and research in the foreground, integrated and applied knowledge give "renewed emphasis to *what* is to be learned, and *how* it is to be learned" (pp. 8–9). The MRTEQ cites six dimensions of teacher education for a globalized world: Disciplinary learning; pedagogical learning; practical learning (analysing practices across a variety of contexts); work-integrated learning; fundamental learning (ability to converse competently in a second language and use information and communication technologies); and, situational learning (knowledge of contexts of education, including policy, politics, and organizations). While all are important, MRTEQ prioritizes the importance of disciplinary and pedagogical learning.

Section Overview

Given this history, as well as the severity of the current situation, an important question is: Whither South African teacher education? Current reforms of teacher education are affected by the legacies of apartheid. After decades of restricting the education of African children and teachers, the government must strategically redesign South Africa's teacher education to meet higher expectations (Hammer, 1990; Hammer & Champy, 2003; Letseka, 2014a). For us, the SPF and MRTEQ are

proactive plans to address the challenges of post-apartheid teacher education. Their full implementation will require resources and tremendous effort on the part of teacher education institutions. Time and careful evaluation will show whether they are effective.

The History of Initial Teacher Preparation in Singapore

For a tiny island city state of 716.1 km^2 with no natural resources (Department of Statistics, 2014), Singapore has done well on international studies such as Progress in International Reading Literacy Study (PIRLS), Programme for International Student Assessment (PISA), Trends in International Mathematics and Science Study (TIMSS), and the International Baccalaureate (IB) diploma exams (Mullis, Martin, Foy, & Drucker, 2012; OECD, 2014; Teng, 2014). An OECD (2010) report stated that "Singapore was rated first in the 2007 *IMD World Competitiveness Yearbook* (IMD, 2007) for having an education system that best meets the needs of a competitive economy" (p. 160). The State supports education well as a means to develop its only resource: People. Education is given the second highest amount in its annual budget (Ministry of Finance, 2015). This emphasis on education has helped Singapore make enormous progress in academic achievement since its independence in 1965.

It is beyond the scope of this section to present a detailed history of teacher education in Singapore.[4] My aim is to focus both on Singapore's unique accomplishments and those that parallel other nations' teacher education history. The following account is divided into three eras based on structural changes in the delivery of teacher education. Within each era I discuss three major themes: meeting the demand for more teachers versus improving teacher quality; selectivity in entry; and, the role of research. Then I turn to the important issue of government control over teacher education.

Meeting the Demand for Quantity – Teacher Training College (TTC) Years

Modern Singapore was founded in 1819 as a trading post of the East India Company. The British Empire gained control in 1824. As a legacy of British occupation, English (one of four[5] official languages) is the language of education and government, although many citizens are bi- or even trilingual. Singapore became independent from Britain in 1963, at first uniting with other former British territories to

[4] A detailed treatment can be found in Chen and Koay (2010).

[5] The four official languages of Singapore are: English, Mandarin, Malay and Tamil.

form Malaysia. In 1965 Singapore broke from Malaysia to become a sovereign parliamentary republic. At that time, 75 % of Singapore's population were ethnic Chinese, 13 % ethnic Malays, 7 % ethnic Indians and 5 % Others (Chan, 2013).

Prior to 1950, there was no mechanism by which to comprehensively train teachers in Singapore. In the early years, English-medium schools implemented a system in which pupil-teachers were selected by school managers to assist teachers and thereby learn to teach (Lun & Chan, 1983). Formal training began in 1906 when Raffles Institution, the first school in Singapore, trained teachers for the primary level. In 1928, when Raffles College was established, it began training teachers for the middle and secondary levels. However, teachers in non-English medium schools were largely left on their own. A brief attempt was made to train non-English medium teachers shortly before and after World War II, principally on an in-service basis. Teacher education was not officially formalized until 1950 when the Teachers Training College (TTC) was established.

After self-governance in 1959, and especially after independence in 1965, primary and secondary education rapidly expanded due to a post-war baby boom. Enrolment in primary and secondary schools shot up to 518,000 (27 % of the population) in 1967 (Lun & Chan, 1983). This created a huge demand for teachers, and the only way of ensuring an adequate supply was through a part-time in-service teacher-in-training scheme, where student teachers taught for half a day while drawing stipends. The teaching force doubled, from 10,500 in 1959 to over 19,000 by 1968 (Mourshed, Chijioke, & Barber, 2010). Even when full-time training was put in place, the part-time scheme continued to train the backlog of untrained teachers. As Lun and Chan (1983) noted, part-time in-service training was seen "as an exigency of prevailing circumstances" due to the need to educate the young people of a young state aiming to have universal education (p. 10).

Improving Quality – Institute of Education Years

After rapid expansion to ensure an adequate supply of teachers, there was a need to improve the quality of teacher education. In 1970, Parliament passed the Institute of Education Act to convert TTC to the Institute of Education (IE). TTC had been administered as a government department; with the Act, the IE became a Statutory Board with autonomy to hire from outside the civil service, to raise the academic standing of teacher education, and to confer Bachelor of Education and Master of Education degrees. After a delay due to reconsideration of setting up a body to confer only education degrees, the IE was established in April 1973. It took over functions of the TTC, the School of Education of the University of Singapore[6] and the Research Unit of the Ministry of Education (MOE). Teacher education was now under a sole provider.

[6] Although the University of Singapore had a teacher education programme, offering a Diploma in Education, it only had a small number of students due to the expense of studying full time.

The IE's criteria for selecting applicants were influenced by the continuing tension between teacher demand and the aspiration to improve teacher quality. The first IE Director stated, "By the quality of the outputs of schools, the institution which prepares teachers must also be prepared to share in the glory or shame" (Wong, 1990, p. 19). As Singapore's sole institution preparing pre-service teachers, the IE's reputation was at stake if graduates failed to meet the needs of the schools.

In the early years, however, the IE could not be too selective; its *raison d'etre* was to produce the number of teachers the nation needed. The Director of the London Institute of Education (Taylor, 1980) noted in a report that the ratio of Diploma in Education (secondary level) applicants to admissions was 16.5:1 in Science, 3.4:1 in Arts and 6.1:1 in Commerce; the ratio for admission to the Certificate in Education (primary level) to enrolment was 7.6:1. He stated that "these ratios of application to admission for teacher training are among the highest" that he had encountered (p. 52). He acknowledged that "in most but not all systems, the ablest school leavers have not tended to gravitate towards courses of teacher preparation" (p. 89). He encouraged the IE to give future attention to the "quality of student intake" (p. 97). With stabilization of the demand for teachers in the 1980s, the IE became more selective.

Another source of tension in the IE was between teacher preparation and research. Enshrined in the Institute of Education Act is "the promotion of research in education" (Goh, 1983, p. v). However, as highlighted in the Taylor (1980) report, the IE was focused more on preparing teachers than on conducting studies. IE staff members were "forced to draw on the findings of research carried out in the United States and Great Britain rather than those based on the problems and progress of children and schools in Singapore" (Taylor, 1980, p. 1). Research did not take off until 1982, when a conscious attempt was made to set up four teacher education research projects prior to the *1983 Conference on Research and Teacher Education* held at the IE (Ho, 1989). The IE Director of the time was of the opinion that any lecturer "should be able to provide a tentative answer to the problem, not from intellectual guesswork or from studies conducted elsewhere but as far as possible from actual investigations by the lecturer or by a team involving the lecturer concerned" (Sim, 1983, p. 105).

As a result, research became a crucial criterion for staff recruitment, promotion and development (Sim, 1990). Senior management officers were required to lead by example in conducting research. Another change was to incorporate research in pre-service programmes, to encourage the next generation of teachers to perceive research as "a potentially useful professional ally rather than the esoteric tool for ivory tower residents" (p. 58). The Educational Research Association (ERA) was set up in 1987 to inspire a culture of research, followed by the Educational Research Unit (ERU) in 1988 to promote understanding of research in teacher education and to articulate the IE's research agenda. Emphasis on research led to growth in graduate programmes in education previously offered only at universities (Lun & Chan, 1983). With its rise in stature, autonomy in hiring, and emphasis on research, the profile of the IE academic staff changed significantly over a short period of time, from 37.5 % holding PhD or Masters degrees in 1975, to 67.3 % by 1982 (Lun & Chan, 1983, p. 14).

Moving Forward – National Institute of Education (NIE)

In the U.S., the Holmes Group (1986) and Carnegie Commission (1986) reports on teacher education advocated 'universitising teacher education' as a strategy for education reform. In 1990, the Minister of State for Education, Dr. Seet Ai Mei, presented a report, *Teacher training in the 1990s: Issues and strategies*, to Minister for Education, Dr. Tony Tan Keng Yam. The report argued that primary teacher education should be upgraded and restructured. Based on findings from a survey of primary teacher training programmes in 11 countries, Dr. Seet Ai Mei decided that establishing degree programmes for primary teachers acknowledged that their practice required "adequate mastery of a wide range of subjects (substantive content knowledge) and a rich repertoire of pedagogical knowledge and skills to successfully handle children with different abilities and interests and at different stages of development" (Seet, 1990, p. 3). The report also recommended the merger of IE and the College of Physical Education to form the National Institute of Education (NIE) as an independent institute of the proposed Nanyang Technological University (NTU). Affiliation with a university would raise the stature of teacher education and make it easier to recruit "high-calibre" future teachers (Sharpe & Gopinathan, 1993).

In 1991, the NIE was established as an independent specialized institute with its own Board of Management within Nanyang Technological University. It had four schools (Arts, Sciences, Education and Physical Education) and a Centre for Applied Research in Education (CARE). Four-year degree programmes were offered for both primary and secondary school teachers, and existing certificate and diploma teacher training programmes were upgraded to diploma and postgraduate levels. There were three routes into teaching: the 1-year Postgraduate Diploma in Education (PGDE) for primary and secondary teachers; the 4-year Bachelor of Arts/Science (BA/BSc) programme for primary and secondary teachers; and, a 2-year Diploma in Education programme for primary teachers. In 2000 the NIE moved to its new campus at NTU, and over the next decade began offering Masters and Doctorate programmes. The NIE also developed a *Framework of Desired Attributes of a Beginning Teacher* emphasizing Values, Skills, and Knowledge (VSK). Concomitantly, enrolments in initial teacher preparation increased significantly (10.6 %) (NIE, 2007).

Emphasis on research was reiterated in a recommendation from the Minister of State for Education, who stated that the NIE should "pay great emphasis" to research, because there is "much scope for studies on educational matters in Singapore and the region which need to be validated locally rather than being based on Western norms" (Seet, 1990, p. 12). In 2003, the NIE set up the Centre for Research in Pedagogy and Practice (CRPP). On average, about 80–100 research projects focused on a wide variety of education issues have been conducted each year, funded by the MOE (Centre for Research in Pedagogy and Practice, n.d.). The CRPP has helped the NIE coordinate and allocate research funding to the faculty. In 2005, the Learning Sciences Laboratory (LSL) was established to study and enhance the use of technology in teaching and learning.

NTU became a research-intensive university in 2006, and as part of this change the NIE envisioned becoming an Institute of Distinction achieving international recognition through research. This was articulated in a Strategic Plan stating that "NIE's teaching and research roles are synergistic, and excellence in teaching rests upon a foundation of relevant, high-calibre research" and that an "appropriate balance between the two roles will therefore contribute to the NIE's international standing" (NIE, 2007, p. 29). The NIE has managed to climb to 10th position in the QS ranking of Universities by Subject (Education) (Quacquarelli Symonds Limited, 2015). This has not been without contention. Faculty members who define themselves as providers of teaching quality rather than research quality were anxious about their appraisals, because substantial weight was given to research output and quality. For this group of faculty, the NIE created a Lecturer Track with a greater emphasis on teaching during appraisals. Although for these faculty members, research was given a lower weighting, it remained one of the major components of evaluation.

Even while achieving its research goals, the NIE still had to ensure an ample supply of fully trained teachers. In 2004, the Minister for Education pledged that MOE would "recruit about 2000 teachers every year" (Shanmugaratnam, 2004, para. 35). Two years later, the MOE wanted to "boost the size of the teaching workforce to 30,000 by 2010" (MOE, 2006, para. 13). When this target was reached, it was revised upward to 33,000 by 2015 (Iswaran, 2010). The NIE increased its hiring and formalized its secondment scheme to bring in experienced teachers to teach in preservice programmes.

While increasing the quantity of teachers, the NIE continued to work on quality. In 2009, the NIE launched its Model of Teacher Education for the twenty-first century (TE21). Six broad recommendations were: emphasizing the internal qualities of the teacher (Values, Skills, and Knowledge); articulating the competencies for NIE graduates; strengthening the theory-practice nexus through reflection and inquiry; extending teachers' pedagogical repertoires; introducing and using an assessment framework for twenty-first century teaching and learning; and, enhancing the pathway for professional development (see NIE, 2012). In addition, the NIE has embarked on a plan to enhance the design and delivery of 4-year degree programmes to allow student teachers to undertake both content and education research, as well as to participate in conferences, overseas practicum and semester exchanges (NIE, 2014).

Thus, the NIE has moved from training and educating large numbers of teachers to focusing on building a distinctive "core group of high-calibre and deeply passionate beginning teachers with intellectual rigour, strong leadership qualities, global perspectives and a keen desire to make significant contributions to education" (NIE, 2014, p. 32). Over the years, in collaboration with the MOE, the quality of succeeding intakes has risen to the top one-third of each Primary One cohort, which include graduates, school leavers with good General Cambridge Examination "Advanced" level results, and the top band of Polytechnic Diploma graduates. After potential candidates are shortlisted, they are interviewed by a panel of senior educationists, including NIE staff members (MOE, 2001; Mourshed et al., 2010). With

such stringent recruitment, only about 14 % of some 18,000 applicants were accepted in 2011 (Ng, 2011). This percentage is set to fall even further, given an MOE push for an all-graduate teaching force, to "raise the standards of education in our primary schools" (Ng, 2008, para. 48).

Structural and Political Issues

The previous sections identified three themes in the history of Singapore's teacher education: teacher quantity versus teacher quality; selectivity of admissions; and, the teacher education mission versus the research mission. These themes appear in studies of teacher education in other nations, but a theme particular to Singapore is the structural and political positioning of teacher education. Because IE and NIE were/are the sole provider of teacher education, there is a symbiotic relationship with the MOE. Under the Act of 1970 the governing body of the IE had 14 members: the Chairman (usually the MOE Director of Education); 4 government representatives; 4 from postsecondary institutions; 1 school principal; 1 teachers' association representative; the IE Director; and, two other IE representatives (Taylor, 1980). About 36 % of the Council came from MOE, giving it an influential position in decision-making. Even now, of 11 members on the NIE Council, 5 are from MOE (NIE, n.d.).

The benefit of such a close relationship with MOE is that the NIE is almost always able to meet the demands of MOE and the school system. The IE and NIE have fulfilled their role of providing an adequate supply of teachers. The relationship between the IE/NIE, MOE and the school system helps to ensure that the quality of teachers has a "greater likelihood of meeting (school) needs with a higher satisfaction" (Eng, 1990, p. 69). In a sense the MOE is the employer of teachers and the schools are the consumers of the IE/NIE "products" (Chin & Balakrishnan, 1983). This perspective was recognized by one Director of IE:

> … so long as it is IE's business to serve its main customer, the schools, IE will be committed unavoidably to adjusting its supply of teachers according to the quantitative and qualitative demands of the schools … IE can only be a successful leader if it follows closely what its customers need and want. (Sim, 1983, p. 100)

Even though the NIE's vision is to become an internationally ranked institution, it must continue to meet the needs of internal stakeholders, and "locally, NIE's major stakeholder and partner remains the Ministry of Education" (NIE, 2007, p. 29). This partnership presents certain tensions. Based on its early relationship with TTC, MOE still sees the NIE as its training arm, even though the NIE is an autonomous institute within NTU. Only a few NIE students are self-funded, full fee-paying students; fees of the majority are paid by MOE, the main client. Thus MOE in many ways is in a position to dictate NIE's future, which could potentially conflict with a university's belief in academic freedom (Chong & Low, 2010).

Moreover, the NIE today envisions its "clientele" as reaching beyond MOE. One way to become an Institute of Distinction is to impact the international education

community (NIE, 2007) by "responding to international opportunities to support other countries in the development of their educational institutions" and "establishing NIE as a preferred provider of educational services to the very highest international standards" (p. 29).[7] Singapore is a founding member of the Association of Southeast Asian Nations (ASEAN), and two aims of ASEAN's charter are "to provide assistance to each other in the form of training and research facilities in the educational, professional, technical and administrative spheres" and "to maintain close and beneficial cooperation with existing international and regional organizations with similar aims and purposes, and explore all avenues for even closer cooperation among themselves" (ASEAN, 2014, para. 3). Now that demand for teachers in Singapore has stabilized, this cooperation could include enrolling preservice and/or in-service teachers from other ASEAN members.

Section Overview

From originally serving the needs of a new nation, teacher education in Singapore has now developed an international outlook. Singapore's teacher education has evolved from a Teachers Training College (TTC) to an Institute of Education (IE) to an autonomous entity (NIE) located within a research university. It has moved from part-time training to full-time education. The NIE has moved from being a provider of solely teacher training to a provider of quality postgraduate research education and an internationally ranked institution. With a strong foundation in both teaching and research, and the flexibility that a lower enrolment in preservice programmes now affords, NIE is poised to "go forth and multiply" – but without losing sight of its internal mission.

The History of Initial Teacher Preparation in Chile

Chile is a multi-ethnic, economically developed, though highly inequitable, Latin American nation. Chilean schools are currently organized into two compulsory levels: an 8-year elementary level and a 4-year secondary level.[8] Non-compulsory, state-subsidized early childhood education is provided for children up to age 5. Administratively, the education system is decentralized and includes three types of

[7] In 2007, NIE provided help to Abu Dhabi and Bahrain to establish teacher education colleges. In 2008 and 2009, NIE staff trained teacher trainers in Vietnam and Indonesia and school leaders from Myanmar, Laos and Cambodia who came to NIE for the Leaders in Education programme (see Low & Lee, 2012 for details).

[8] In response to primary teachers' insufficient disciplinary preparation to address the national curriculum for grades 7 and 8, by March 2018 the system will have six primary and six secondary years.

schools[9]: municipal (public), private subsidized, and private non-subsidized. The government through a per-pupil, attendance-based voucher, finances public and private subsidized schools. These different types of schools enroll students from different socioeconomic backgrounds. In 2009, 80 % of students in municipal schools were from low-income or lower-middle socioeconomic backgrounds, in contrast with 20 % in private subsidized schools and 0 % in schools fully funded by parents (García-Huidobro, 2010).

Chile has a national curriculum and a high stakes testing programme, with school results published in major news outlets. In the 2012 PISA testing programme Chile achieved the best results among participating Latin-American countries, but lagged behind the average for OECD countries (Agencia de Calidad de la Educación, 2014). Although Chile has reached almost universal access to education, assessment data show great inequities among schools serving students from different socioeconomic backgrounds. In the 2012 PISA study Chile was among four countries ranking below the OECD average in mathematics and above the OECD average of the correlation between mathematics performance and pupils' socio economic status. Teachers' pathways through teacher education into teaching positions reflect Chile's high segregated school system. New teachers tend to teach in the types of school they attended, and those graduating from less selective programmes tend to teach in the most vulnerable schools (Ortúzar, Flores, & Milesi, 2012).

In what follows we present overviews of three periods in the evolution of Chile's initial teacher preparation scheme.[10] For the first 100 years, primary and secondary teacher preparation programmes were centrally controlled. Since the 1980s, as part of a deregulated higher education sector, initial teacher preparation has been understood in market terms. What has remained constant throughout these periods is a belief among policymakers and in the civil society that the quality of teacher education is linked to student achievement. In 1878, the government of Chile commissioned José Abelardo Núñez to study teacher preparation in the United States and Europe. In his report, he asserted that "Currently, the most certain criterion for measuring the development and solidity of public education in the civilized nations is the level of the institutes preparing normal teachers" (Núñez, 1883, p. 77). This statement was echoed in the McKinsey Report issued some 110 years later when discussing teacher qualifications as a key factor for raising education achievement. Teacher education is currently seen as a problem, as it is blamed for Chile's under performance on international testing and students' low performance in national testing.

[9] From 1981 through 2014 the state promoted expansion of the private sector. A number of policies led to a deterioration of public education. In 1981, 78 % of students attended a public school, dropping to 39.3 % by 2011 (Concha, 2011; Santiago, Benavides, Danielson, Goe, & Nusche, 2013).

[10] Due to space consideration the histories of early childhood teacher preparation as well as the preparation special education teachers are not discussed.

The Educator State: Centralizing and Nation-Building

The formal education system in the Republic of Chile began around 1840, under the Napoleonic concept of the *Educator State* by which the State centralized control of the system. The State's education agenda in the nineteenth century centered on fulfilling the enlightenment ideal of cultivating reason to pull the masses out of ignorance and the nationalist ideal of developing a Chilean identity (Cavieres, 1997). Notwithstanding State control, based on an agreement with the Catholic Church, since 1860 education law guarantees free universal primary education through a mixed (religious and secular, private and public) provision of schooling.

From the 1870s onward, concerns about Chile's inferior economic development were linked to the insufficient number of people attending schools, as well as to an inadequate school curriculum (Letelier, 1940). Successive education laws expanded provision of schooling across the territory and, in theory to all social classes, although different social classes attended different schools (Cox & Gysling, 1990). In 1920 the first law mandating 4 years of elementary education was passed. This legislation also addressed teacher qualifications; all public school teachers were required to hold a professional degree as a normal teacher or to have a State license to teach specific courses or a license provided by the Council of Primary Education. Mandatory schooling was extended to 6 years in 1929 and to 8 in 1964. Free mandatory secondary education became law in 2002. Each of these expansions would, of course, require preparation of more teachers.

Normal Schools

According to Chilean historians, Chile was the first Latin American country to establish a Normal School. Professional education of primary teachers started in 1842 with the creation of the Escuela Normal de Preceptores (Normal School for Men) in the capital city of Santiago. The decree creating the school stated that its mission was to prepare teachers known for high moral behavior and equipped with easy, clear and uniform methods that would extend primary education to all social classes (Núñez, 2010). By 1854, the first Normal School for women opened in Santiago, and two more Normal Schools opened in the provinces.

Normal Schools attracted and recruited low-income students who showed academic talent. Men had to be 18 years old, able to read and write, exhibit good behavior, and come from a family with an impeccable moral reputation. Women meeting the same academic and moral requirements could start as young as age 10. Entry requirements by 1929 included: 14–18 years of age; good health; no physical language or mental disabilities; healthy teeth; proof of good behavior; and, passing entrance examinations. Students with a high school degree entered directly to the Professional Preparation sequence. During their early years Normal Schools were boarding schools, in order to supervise prospective teachers' behavior. All expenses

were covered by the State, and in exchange graduates were required to work in a public primary school for 7 years. Primary teacher preparation was concurrent with secondary schooling; thus as the length of secondary schooling increased (from 3–6 years), so did the length of Normal School preparation. In 1967 teacher preparation moved to the postsecondary level, requiring 3 years of specialized preparation in the Normal School.

The early Normal School curriculum was practically the same for women and men (Cox & Gysling, 1990). The first curriculum, from 1842 to 1860, reflected the idea that schools needed to teach the basics of language and math, with a strong Christian moral education component, as well as the belief that teachers' knowledge should not go beyond the school curriculum. Beginning in 1889 participation of German educators led to introduction of topics such as psychology, pedagogy, didactics, history of teaching, planning the model lesson, physical education, music, art, and technical education. Changes introduced in 1913 included content linked to productive sectors such as horticulture, mining, and economy (accounting). Normal Schools continued to provide the majority of the elementary teacher workforce until the 1970s when the military dictatorship dismantled the Normal School system. Following an ideological cleansing performed by military-appointed university administrators, Normal School students and selected faculty were transferred to the closest university teacher preparation programme (Núñez, 2002).

Preparation of Secondary Teachers

Secondary teacher education took a very different path. As recommended by Núñez in his 1883 report, in 1889 the government hired German educators to direct new Normal Schools and to create the Pedagogical Institute at the Universidad de Chile to offer secondary teacher education programmes. Applicants to the programme were high school graduates with a concentration in humanities. In addition to passing an entrance examination, they had to provide evidence of good behavior in high school, good health and vaccinations. By the 1960s the high school diploma and passing a college examination were sufficient.

The demand for secondary teachers was not as strong as for primary teachers, as secondary schools were more selective and not yet compulsory. Although the secondary programme required courses in education, in-depth study of a discipline comprised most of the coursework. Cox and Gysling (1990) identified seven different periods in the evolution of secondary teacher preparation between 1889 and 1980, reflecting changes in the knowledge base of the teaching profession and in beliefs about the purposes of secondary education. For example, the expansion from a 4-year to a 5-year programme in 1907 reflected increased attention to the practicum as an opportunity for knowledge development. By 1931, pedagogical preparation became an important topic of research associated with the creation of laboratory schools. The most significant change in secondary teacher education was an increase in the proportion of coursework associated with professional preparation.

Secondary teacher candidates themselves also affected the evolution of teacher education. Reforms of the 1940s were influenced by the student movement's petition for a paid year-long student teaching experience, concurrent study of disciplinary and pedagogical courses, and more research opportunities. Reforms of the 1960s took place in the context of a wider university reform movement demanding a more socially relevant curriculum, greater access to higher education, and greater democratization in university decision-making processes (Cox & Gysling, 1990). During this period a strong teachers' union also influenced education policy.

The Market State: Decentralization and Choice

The military dictatorship that came to power in 1973 transformed the role of the State in education. Under market-based reform, beginning in 1982 the responsibility for school administration was decentralized to municipal governments while the Ministry maintained control of pedagogical and curricular matters. Teachers lost their status as state employees, and the teachers' union was abolished (Delannoy, 2000). The Pedagogical Institute lost its university affiliation as a result of the dictatorship's decision that teacher preparation did not require a university degree. All university-based Pedagogical Institutes were ordered to restructure as Technical-Professional Institutes or Superior Academies. This measure was short-lived, however; by 1987 the institutes regained university status.

Additionally, the 1990 Educational Law passed by the dictatorship hours before leaving the presidency provided the State with few tools to regulate higher education programmes, including teacher preparation offered by universities or professional institutes (Ávalos, 2002). Each institution defines its curriculum and entry requirements for teacher preparation programmes, some requiring a high school diploma plus a minimum score in the national college entrance exam and others only requiring the high school diploma.

Education reforms initiated after the restoration of democracy in 1990 centered on increasing both the equity and quality of the system. Equity was pursued through programmes that afforded more resources and support to low performing schools (Guttman, 1993). Quality was pursued by investing in infrastructure, introducing information technologies, enriching classroom teaching and learning, school-based improvement plans, and provisions for inservice teachers' professional development (for a full review see a report produced by OECD, 2004b).

From 1997 to 2002 the Ministry of Education funded a programme to improve the curriculum of teacher preparation as part of a wider strategy to (re)professionalize teachers. Through a competitive process, funding was awarded to 17 universities covering 79 % of all teacher candidates (OECD, 2004b). This programme provided new resources and modernized teacher education through substantive professional development opportunities for teacher educators. A major change across programmes was an increase in school-based teacher preparation (Ávalos, 2002).

Practicum experiences, however, varied widely in content and type of candidate participation in schools (Montecinos et al., 2011).

The Ministry of Education and 17 universities developed the Performance Standards for the Initial Preparation of Teachers (Ministerio de Educación, 2001). Programmes are not required to use the standards for curriculum or assessment, with different universities adopting them in variable ways (Ávalos, 2002; Jiménez et al., 2005; Montecinos et al., 2011). These standards draw from the framework developed by Danielson (1996) and define what teachers should know and be able to do in four domains: (a) planning instruction; (b) creating a classroom environment conducive to learning; (c) delivering instruction; and, (d) professionalism beyond the classroom.

A clear effect of the market model was an expansion of higher education. Thirty-eight private universities were created, adding to the 25 existing institutions, as well as a number of professional institutes (OECD, 2004b). Cox, Meckes, and Bascopé (2010) showed how the participation of new private universities dramatically expanded the number of preservice teachers (e.g., 813 % increase in elementary preservice teachers from 2000 to 2008). In small towns and cities a number of new private as well as traditional, public universities, began offering part-time teacher preparation programmes to large numbers of students, with classes on weekends and school vacation (Cox et al., 2010). The quality of a programme has been understood in market terms as consumer (student)-provider (university) contracts. In early 2000 growth in teacher supply and demand, as noted by Cox et al., was also linked to a policy that required expansion from half-day to full-day schooling. It is expected that by 2020 there will be a 55 % surplus of teachers in all PK-12 curricular areas, except physics and chemistry (Sánchez et al., 2013).

The Evaluative State: Accountability Through Standards and Measurement

As in other parts of the world, since 2000 education policies in Chile have intensified the role of the "Evaluative State." This governance model has been characterized by Manroy (2004) as regulations promoting a balance of decentralization/centralization, external evaluation, choice, and tighter control over teachers' work. Next we discuss two initiatives to enhance the quality of initial teacher education programmes: a mandatory accreditation system implemented in 2006; and, the Program for the Promotion of the Quality in Initial Teacher Education (INICIA) started in 2008.

Mandatory Accreditation of Initial Teacher Preparation Programmes

In the context of quality assurance processes in higher education, in 2005 the legislature decided that accreditation would be mandatory for teacher education programmes. This measure purported to curb the proliferation of low quality

programmes. The accreditation framework, without specifying content or hours/credits, stated that teacher education curricula must be structured into four areas (Comisión Nacional de Acreditación de Pregrado (CNAP), 2007):

- Specialty Area (Disciplinary): Courses associated with content addressed by the national PK-12 curricular framework and pedagogical content knowledge.
- Professional Area: Courses about pupil learning and development, assessment, curriculum, and related pedagogical issues.
- General Area: Courses related to the social foundations of education and courses specific to an institution's mission.
- Field-based Preparation: A sequence of curricular activities that culminate in a student teaching phase.

For-profit private agencies were created to accredit programmes through a three-stage process: (a) programme self-assessment; (b) external evaluation by a panel of peers; and, (c) assessment of the internal and external reports by an accreditation council the agency assembles. A study by Domínguez et al. (2012) concluded that accreditation guidelines failed to provide enough direction to evaluators thus the vast majority of decisions leave room for discretion.

Programme for the Promotion of the Quality in Initial Teacher Education (INICIA)

Initiated in 2008–2009, INICIA includes three components: (a) development of disciplinary and pedagogical standards; (b) tests to measure attainment of those standards on graduation; and, (c) supports for programme improvement. INICIA responded to recommendations provided by the OECD (2004b) as well as a national commission calling for policies that could bridge the gap between initial teacher preparation and teachers' workplace demands (García-Huidobro, 2010).

The first component implemented was the test, with widely published results reinforcing a public perception that initial teacher education in Chile was of low quality. For example, Lopez Stewart (2012) reported that only 50 % of the elementary teachers assessed in 2011 were deemed as having an adequate level of pedagogical knowledge. In the test measuring knowledge of Spanish language arts, mathematics, social sciences and natural sciences, over half of the test takers performed at the "insufficient level." These findings should be interpreted in light of the fact that these tests had not been subjected to studies of content validity in relationship to curricula, nor had the standards been published in time to align the curricula (Montecinos, 2014). As with all national tests in Chile, the results showed that highly selective programmes outperformed non-selective programmes, each enrolling candidates from different SES backgrounds. The test to date is voluntary, and politicians' efforts to make it mandatory have been resisted. Resistance is part of a wider social movement to stop testing as a marketization tool. Teacher candidates have even boycotted the test, and the number taking it has dropped to 14 %. At issue is the use of scores against new teachers if tests are required for employment and the use of scores to support a differential salary structure.

Currently, the government is discussing the draft of a teacher career pathway law. The initial proposal includes provisions for increasing selectivity among teacher education programmes through establishing a minimum college entrance examination score or high school ranking. Adding high school ranking takes into account the social class bias of the exam; score distribution is highly correlated with students' family income and the type of school attended (Contreras, Corbalán, & Redondo, 2007). Shifting Chile's initial teacher preparation through policies consistent with deregulation, marketization and accountability risk exacerbating the educational inequality 35 years of such policies have created. Alternatively, policies need to place more pressure on universities to invest in high quality teacher preparation rather than operating teacher preparation programmes as low investment, high return businesses enrolling thousands of teacher candidates. In 2012 there were over 2153 preservice teacher education programmes offered by 70 institutions, enrolling nearly 103,682 students (Eyzaguirre & Inostroza, 2014).

Section Overview

The history of teacher education in Chile represents internal and international discussions around the purpose of education and educational quality. Nationally, discussions have centered on the social function of schooling for the poor and the wealthy, as well as for students assumed to be academically talented. Initially, the Educator State held as an ideal high quality public school as spaces for social integration and class mobility. The Educator State reassured middle and low-income families' belief that education was a legacy they could provide for their children's future. Whereas the first 100 years of teacher preparation was completely centralized, the last 40 years have been largely characterized by deregulation and marketization. In the Evaluator State, mandated accountability measures, following international trends, run the risk of increasing inequities. They are also based on the assumption that increased pressure through testing automatically leads to programme improvement. Over the last 40 years as policies have created socioeconomic segregation in schools, they have also created an imperative for teacher education institutions to prepare teachers who can create equitable opportunities for all pupils.

The History of Initial Teacher Preparation in Finland

In many European countries such as Finland, education aims to support the development of the whole person rather than merely the cognitive domain. Finnish education acknowledges the importance of social and affective domains, including emotional and spiritual concerns, in student development (Tirri, 2011). In spite of these emphases, international comparative studies have shown that Finnish students perform very well academically (OECD, 2011a, 2011b). According to the Program

for International Student Assessment (PISA), Finland is the highest achieving country in Europe and has always scored among the top three countries in the three domains of mathematics, science, and reading (OECD, 2004a, 2004b, 2011a, 2011b). These achievements and the quality of teacher education have made Finland an exemplar country from which other countries want to learn (Tirri, 2014).

One reason for Finland's success in international comparisons is the government's principle of "equal opportunity and high-quality education for all". The practical implications of this principle are adoption of a national core curriculum, free education at all levels and strong financial support of public education. As a consequence no significant differences in teaching quality exist between public and special (private) schools. Partly for this reason, only a small minority of schools in Finland are special schools with their own entrance examinations and financial support from private or corporate sources. Another implication of the principle is that special education is mainly understood as supporting students with learning disabilities (Tirri & Kuusisto, 2013). In mixed ability classrooms, teachers should differentiate teaching methods in ways that consider students' individual characteristics, needs, and interests. Even though gifted students are not explicitly mentioned in the national core curriculum, they can be understood as being included.

Another characteristic of Finnish education is national consensus. Both teachers and students should agree on the goals and aims of education in order to make them meaningful in the teaching–studying–learning process (Tirri & Ubani, 2013). The following brief history of Finnish teacher education may help us to understand the historical, cultural and sociological factors that led to this level of national consensus over the purposes, content, and practices of education.

The Early Years

We can identify the beginning of Finnish teacher education with the year 1852 when the first professorship in education was established at the University of Helsinki (Kansanen, 2003). The professorship, placed in the Faculty of Theology, was the first to be established in education in the Nordic countries. The Professor of Education was exceptionally close to teacher education and schools in general. He was expected to supervise student teachers and develop secondary teacher education in Finland as part of his duties. Education was an auxiliary subject, and thus its status was different from that of other subjects. However, a university professorship in education was a unique feature in Europe at that time and highlighted the importance of education in the nation's life (Iisalo, 1979). The strong position of the university in teacher education left its mark, and according to Kansanen (2003) the present situation can perhaps be interpreted in this light.

The Church was an important educational institution in Finland. First the Catholic Church and then the Evangelical Lutheran Church supported teachers and promoted education among the Finns. As early as the fifteenth century, literacy was a basic requirement for marriage within the church (Niemi, 2012). The Professor of

Education was also a pastor in the Lutheran Church, and the first teachers were male clergy; thus school and church were tightly linked. In 1863 Uno Cygnaeus founded the first teacher training college for elementary school teachers, admitting women as well as men. Uno Cygnaeus was influenced by the thinking of Swiss and German educators. He advocated educating children of all ages, incorporating practical subjects, and emphasizing moral character and religion in teacher education. Based on this first model, many other teacher training colleges were founded in Finland. The colleges were more practice-oriented than Universities, and the first candidates came mainly from peasant family backgrounds.

According to Niemi (2012), respect for teachers' work has deep historical roots in Finland and has been a significant cultural feature of Finnish society. Other researchers support this claim (Sahlgren, 2015; Uusiautti, Paksuniemi, & Määttä, 2013). In the early years teachers were considered important persons in local communities, often responsible for cultural activities in their villages. The community looked up to them as moral role models with special skills. By the late nineteenth century the school system began to replace the church in terms of responsibility for basic education and literacy. When a 6-year basic education became compulsory for all children in 1921, teachers were called "candles of the nation", bringing light to every locale (Niemi, 2012). Because of the high status of the teaching profession, Finland had the highest number of primary school teachers with upper-secondary school diplomas of all European countries prior to World War II (Sahlgren, 2015; Simola, 2005). According to Sahlgren, World War II increased the existing nationalist connotations of teacher education. The external threat posed by the USSR further strengthened the "nationalist educational spirit" in teacher training colleges.

Post World War II: Finland as a Welfare Society

According to Sahlgren, Finland's history of occupation, war and poverty had given rise to a unique attitude that can be called Finnish "sisu". The word can be translated as "inner strength" or "determination" that describes the Finnish national character (Sahlgren, 2015, p. 32). Finland has historically been poorer than the Scandinavian countries, and postwar economic progress came later than in the other Nordic countries (Sahlgren, 2015). After World War II the concept of the welfare society emerged. Education was seen as a means to create greater equity through free education for all citizens. However, Finland had a bifurcated system in which fourth-grade students had to decide what careers they would pursue as adults.

The two routes were academically oriented schools with strict entrance examinations or schools that led to vocational fields. According to Niemi (2012), because the education system sorted individuals into one of the two categories at a very early stage of their lives, schools created a divided nation (and a divided corps of teachers). In addition, academic schools very often had tuition fees, further strengthening the divide. Moving to a school system that would be the same for all children was not an easy process in spite of a general consensus on the importance of education.

After a very difficult political debate in the 1960s, it was decided in 1968 that the parallel school system should be replaced by a national 9-year basic education that would represent the ideology of comprehensive education. One of the arguments for the common 9-year education for all was that it was too early to judge student capacities after only 4–6 years of basic education (Niemi, 2012). During this period Finnish nationalism again came into play, and teacher education was dedicated to preparing teachers who were committed to build the nation and to raise students' performance in international tests. While the government at the time was a strict regime, through this period in Finnish history teacher education assisted in raising national expectations (Sahlgren, 2015).

The 1970s: Academic Teacher Education

Reform of the structure of the education system demanded reform of teacher preparation. The Teacher Education Act ratified in 1971 brought about major reform in teacher education. In 1974 teacher education in primary and secondary schools was reassigned from teacher training colleges to universities to strengthen the academic status of teachers. In 1979 the basic qualification for secondary and elementary school teachers was defined as a master's degree obtained in programmes requiring 4–5 years to complete. The purposes of this modification were to unify the core aspects of elementary and secondary education and to develop an academically high standard of education for all teachers. Teacher education for the secondary school level was also reformed by expanding the scope of pedagogical studies (Kansanen, 2003; Niemi, 2012; Niemi & Jakku-Sihvonen, 2006). This lengthened the education for secondary school teachers and increased the demand for teachers, especially in mathematics and science.

Despite this lengthier preparation Finland continued to have an adequate supply of teachers, and the teaching profession remained attractive in most subjects. Finnish young adults, especially females, have always been interested in being teachers. Teaching has traditionally been a respected occupation, but more rigorous preparation actually made it more attractive to talented students. Today it is easier to be admitted to the faculties of law or medicine at the University of Helsinki than to the classroom teacher education programme. At the University of Helsinki Department of Teacher Education fewer than 10 % of applicants are accepted annually for teacher preparation. Preservice teachers are selected on the basis of their academic achievement as well as communication and social skills, and study education as their major. The entrance examination includes written assignments, interviews, and pedagogical tasks. Subject teacher applicants, in contrast, apply to the faculties in their respective subjects and choose teacher education later, usually after 2 years (Kansanen, 2003). It is more difficult to be admitted into teacher education in some subjects, such as religious education, than in others, such as mathematics, where there is a teacher shortage. Teachers also have subject-specific purposes related to their own areas that guide their pedagogical thinking. However,

general teaching purposes are common to all student teachers, whatever the subject area (Tirri & Ubani, 2013).

Official Finnish education policy in the 1970s strongly emphasised the principle of equality of opportunities. The principle was not only ideological, but also pragmatic: the reserve of talent was to be harnessed to increase the wealth of the nation. Education was seen as an investment in human capital for economic development (Laukkanen, 1995). Finnish education researchers (Niemi, 2012; Simola, 2005) argued that Finnish education policy has intentionally aimed at equity and inclusion in education, which is the main reason for its good learning outcomes. Over time Finland has created an education system with the following characteristics: uniformity; free education; free school meals; and, special needs education.

The 1980s and 1990s: Teachers as Autonomous Professionals

In the 1980s legislative reforms again changed the education system in Finland. The centralised decision-making of the 1970s changed in favour of decentralization, abandoning the concept of a national curriculum and adopting the idea of municipal curricula (Laukkanen, 1995, pp. 22–23). This curricular redesign was closely connected with other megatrends such as deregulation evident in other European countries. This trend increased opportunities for teachers to influence their work and introduced decision-making into school communities (Tirri & Kuusisto, 2013). The transformation gave a special character to Finnish education, a culture of trust. Teachers are trusted and given a great deal of professional freedom in curriculum design, teaching methods and learning materials (Lavonen, 2014; Sahlberg, 2011). However, the national curriculum still provides the values and aims that guide autonomous teachers in their work (Finnish National Board of Education, 2004). This teaching autonomy requires a thorough knowledge of pedagogical content (Shulman, 1986, 1987) as well as the moral competence to reflect professional ethics in teaching (Tirri, 2010). Teacher education is challenged to develop these competencies, and life-long learning and in-service education are needed for each teacher to keep up with these professional demands.

Universities in Finland also have a high degree of autonomy in designing their curricula, and there is no detailed "curriculum of teacher education" for all universities. However, all institutions follow the same principles and general outlines. All eight Finnish universities have teacher education programmes for classroom teachers and subject teachers, and, since 1995, for kindergarten teachers, who are subject to a bachelor's degree examination. Both elementary and secondary school teachers must earn a master's degree, and their academic status is the same (Kansanen, 2003).[11]

[11] A more detailed current description of the main components of the teacher education programmes for elementary and secondary school teachers in Finland can be found in Niemi (2012).

The increased autonomy challenged teachers' ethical conduct and made them reflect on their professional ethics. Ethical principles for teachers were published for the first time in Finland in 1998 by the Trade Union of Education (Tirri, 2010). These principles defined the values behind teachers' ethics as human worth, honesty, justice and freedom. Furthermore, the principles defined the values in the context of pedagogical interactions relevant to a teacher's work. The values should be reflected in the relationships between the teacher and the pupil as well as between the teacher and their colleagues. The principles also provide guidance in the development of a teacher's personality and relationship to society (Tirri, 2010; Trade Union of Education in Finland, 2010).

The 2000s: Research-Based Teacher Education

Current teacher education in Finland is based on the idea of autonomous and professional teachers who continue to develop throughout their working careers and on the ideal of life-long learning. The goal of teacher education is to educate pedagogically-thinking teachers who can combine research findings with the profession's practical challenges. Teachers' thinking is pedagogical when it is intentional and directed at student learning (Kansanen et al., 2000). In order to think pedagogically, a teacher has to be aware of their values and beliefs, formulate the goals for their teaching and give justifications for this decision-making. Hence, reflection in-action and reflection-on-action are important skills in becoming a pedagogically-thinking teacher (Schön, 1987). According to Kansanen (1999), reflection is a way of acquiring knowledge about one's own undertakings and about interactions in the teaching-studying-learning process. Research-based thinking also means the capacity to read articles in professional journals and research reports and then apply the findings to teaching, to make decisions based on rational argumentation in addition to everyday or intuitive argumentation (Kansanen et al., 2000).

Kansanen (1999) compared the Finnish research-based approach to the inquiry-oriented paradigm in teacher education identified by Zeichner (1983). According to Jyrhämä and Maaranen (2012), in the international literature an inquiry-oriented teacher often means someone who conducts inquiries as part of their teaching; in other words, inquiry as a teaching method. In a current study of Finnish teachers, their conceptions seem to be much broader than that. Teachers viewed the inquiry orientation as a stance, very close to being a reflective teacher (Jyrhämä & Maaranen, 2012). The authors compared the views of Finnish teachers to the definition given by Zeichner and Liston (1996) for a reflective teacher as one who examines, frames and attempts to solve the dilemmas of classroom practice, is aware of and questions the assumptions and values they bring to teaching, is attentive to the institutional and cultural contexts in which they teach, takes part in curriculum development and is involved in school change efforts, and takes responsibility for their own professional development (Jyrhämä & Maaranen, 2012).

Kansanen (1999) described the contents of research-based teacher education at the Department of Teacher Education at the University of Helsinki as including three large content areas: pedagogical content knowledge or subject didactics; the theory of education; and, practice. These components are in reciprocal interaction, and their main organising theme, from the beginning of the programme to the end, is a research-based approach integrated into every course in the programme. Courses in systematic research methods are introduced at the very beginning of the studies. The research-based approach culminates in the writing of a required master's thesis. Class teachers (teaching grades 1–6, pupils from 7 to 12 years of age) write their theses in the field of education, while subject teachers (teaching grades 7–12, with pupils from 13 to18 years of age) choose a topic in their major from a subject they are teaching.

The latest teacher education reform has been influenced by the Bologna Process, which was intended to align policies in higher education among participating European countries. Finnish universities revised their curricula for teacher education following the guidelines set up by the Bologna Process in 2005. The combination of a 3-year bachelor's degree and a 2-year master's degree in appropriate subjects qualifies a person to teach subjects in elementary and secondary schools or general subjects in vocational institutions. The Bologna Process aims to further reinforce the academic basis of the teaching profession in Finland. The new curriculum for teacher education further emphasizes the readiness of teachers to apply research-based knowledge to their daily work. Part of this curriculum is the requirement that student teachers must conduct studies of their own (Välijärvi & Heikkinen, 2012, p. 34).

Section Overview

This brief history of teacher education in Finland is provided to help us understand the high status of teachers, the emphasis on moral and other "non-cognitive" purposes of teaching, and Finland's determination since World War II to create an equitable but also high performing system of schooling. Historically teachers have been trusted and respected in Finland, and the profession attracts good students, a unique advantage to teacher education. Teacher education in Finland has become increasingly selective, academic, and research-based. Even though the ethical role of a teacher has changed from that of a religious and moral example to a principled professional with moral competence in pedagogical encounters (Tirri, 2014), the ethical dimension of teaching has remained central. However, some challenges for the future can be identified. Finnish teachers are facing more diversity than before in student populations. This new challenge will demand high-level ethical and pedagogical skills. Moreover, teachers need to master the rapidly changing developments in information and communication technology to function in the same learning environments as their students. With their research-based education and professional status Finnish teachers have the potential to meet the challenges of the future.

The History of Initial Teacher Preparation in the United States

Histories of U.S. teacher education do not portray a "march of progress" from humble beginnings to brilliant success. They demonstrate that despite efforts to improve its prestige, U.S. teacher education has been perpetually beleaguered (Bales, 2006; Fraser, 2007; Herbst, 1989; Jones, 1998; Labaree, 2008). As Cochran-Smith (2004) noted, "Since the time teacher education emerged as an identifiable activity there have been few periods when it was not being critiqued" (p. 295).

U.S. teacher education is atypical internationallybecause U.S. education is not nationally governed. The Constitution does not mention education; therefore, power over schooling fell to individual states, eventually creating 50 different state systems. Due to different state political cultures, the pace of public school development and level of regulation varied. Decentralization is even more notable because until recently most states supported "local control", delegating substantial power to local education agencies or school districts with elected boards. The private school sector, minimally regulated and not requiring state credentialed teachers, is quite robust. Teacher education presents a similar pattern. Thousands of institutions, small and large, public and private, traditional and alternative, on campus and online, offer degrees in education. Attempts to impose serious government regulation over the field are fairly recent and not always welcomed. According to Tobin (2012), "Teacher education in the United States has long had a complicated relationship with structures of governmental power and control" (p. 485).

Nevertheless, over time the cultures, structures and curricula of American education have converged, not through top-down power but through networks of influence (Tyack, 1974). National education organizations have disseminated ideas among their members. National politicians have made speeches and issued splashy reports exhorting state and local leaders to "save the nation" by reforming education. The federal government has accrued power over education by tackling policy problems that fall under federal legal authority, such as civil rights. The federal level has also leveraged state and local change through either the threat to withhold funds for noncompliance with federal law or the lure of incentive grants to support innovation. Teacher education presents a similar pattern. State departments of education have gradually adopted more demanding criteria for programme approval and teacher licensing/certification, often borrowing these criteria from other states or national groups. National bodies such as the Council for Accreditation of Educator Preparation (CAEP) apply the same accreditation criteria to programmes across the country. Still, because of continuing state and local differences, it is difficult to write a unified narrative of *the* history of U.S. teacher education. For every generalization, there are multiple exceptions.

Colonial Period (Roughly 1600–1789)

European conquest of North America began in the fifteenth century,[12] and missionaries soon began "educating" indigenous populations to convert them to Christianity and to replace native cultures with European cultures. Although missionaries perceived themselves as saving souls and civilizing savages, for Native Americans European education was deculturalization (Spring, 2013). Some white masters and missionaries taught enslaved Africans Christian doctrines and even basic literacy or math skills to increase their economic value (Woodson, 1986). But the racist assumption behind slavery was that Africans were inherently inferior beings to be exploited for agricultural labor. Southern states later outlawed the practice of teaching slaves to read because of its potential for spreading rebellion (Fraser, 2007).

In colonial settlements informal and non-formal education was critical. Homes were the most important education settings, and parents the most important teachers. Masters of skilled occupations were responsible for teaching their young apprentices in the work setting. The purpose of any formal education was religious; thus, clergymen were the first formal teachers. However, others soon began to specialize in teaching as an occupation. In New England "dame schools" literate women taught children in their homes for a fee. Aristocratic families hired tutors to transmit high status cultural capital, such as the classics and arts, to their children. Based on what leaders saw as parental dereliction of duty, seventeenth century New England towns hired schoolmasters to oversee the first publically established schools (Fraser, 2007; Herbst, 1989; Lucas, 1997).

The key point here is the absence of formal teacher preparation, because "the only real requirements for the job were a willingness to declare oneself fit to teach, and, if one wanted to be paid, someone … who would pay" (Fraser, 2007, p. 25). Teacher qualifications were literacy, religious orthodoxy and moral character (Lucas, 1997). Rote memorization and order were more important than creativity. Furthermore, teaching was not a "career". The schoolmaster was a part-time, temporary employee with poor working conditions and low wages, often hoping to advance to a more respected occupation (Fraser, 2007; Lucas, 1997).

Yet legacies of this era continue to imbue U.S. teacher education. Some Americans still assume that learning to teach is an on-the-job activity. Teacher salaries lag behind those of other professions. Long-term stability of the teaching force is problematic; a surprising number of teachers do not persist (Keigher, 2010). While the religious purpose of teaching has faded in public schools, the teacher's moral character and role in socialization are still scrutinized. American public school teachers indoctrinate students in the secular faith of the "American dream" (Hochschild, 1996) and the Protestant work ethic (Weber, 1958). However, because of their history of oppression minority students may be skeptical about these messages, especially from white middle class teachers.

[12] English, Dutch, and Germans, primarily Protestant, founded the original 13 colonies on the east coast. The predominantly Catholic French and Spanish conquered the west.

New Republic (Roughly 1789–1840)

This brief period was pivotal for teacher education. Once Eastern colonists won independence from England, leaders began to ponder the role of education in constructing a national identity. Because education was not a federal responsibility the patterns described previously continued, but leaders' writings show growing support for formally educating citizens (at this point, only white property-owning males). Thomas Jefferson proposed a meritocratic system of schooling from primary through college levels for his state of Virginia, and as President he promoted education in the western territories. As the U.S. expanded, militarily defeating and forcibly relocating native people and acquiring or wresting land from the French and Spanish, new state constitutions incorporated provisions for schools. The number and types of schools grew in both public and private sectors. Secondary schools in populous areas included academies where young women pursued education befitting the ideal of Republican Motherhood – mothers' roles in educating future male citizens (Fraser, 2007; Hoffman, 1981; Lucas, 1997).

This period marks the beginning of formal teacher education. Leaders in New York, for example, funded teacher preparation in private male academies. According to Fraser (2007) such programmes were less prestigious than college preparation, and young men did not enroll in numbers needed to meet the teacher demand. Therefore, leaders turned to women (Lucas, 1997). The first academy devoted to preparing women as teachers was the Troy Female Seminary founded by Emma Willard in 1821. In making a case for her school, Willard articulated the warrants for preparing women as teachers[13]: (1) Educated women, while not voting citizens, could contribute to the republic as teachers; and, (2) Women were more naturally suited to teaching than men. Schoolmarms could also be paid less than schoolmasters – an argument in their favor from the perspective of local school boards. Troy and similar institutions attracted women with rigorous academic preparation and a sense of missionary zeal (Fraser, 2007); and teaching provided young women with rare opportunities to earn money and to travel (Hoffman, 1981).

Therefore, the seeds of teacher education were planted in this period, albeit in private soil. Women educators were pioneers in this endeavor (Fraser, 2007; Herbst, 1989), and they inspired women to see teaching as a calling or "true profession" (Hoffman, 1981; Lucas, 1997). But the beliefs that women are more naturally suited to teaching and that teachers are motivated by mission more than money would have profound consequences for teacher education.

[13] These arguments were not Willard's alone. They were articulated by Stowe, Barnard, Mann, etc. (Lucas, 1997).

Common Schools (Roughly 1840–1870)

Most historians attribute the rise of state-sponsored public schools to macro level economic, political, and cultural changes. At the micro level the individual credited with best making the case for public schools was Massachusetts State Secretary of Education Horace Mann (Fraser, 2007). Mann appealed to multiple constituencies to build support for tax-supported schools. To business leaders he extolled the value of literate, well-socialized employees; to political leaders he promised educated voters and loyal citizens; and to middle class city dwellers he vowed to reduce crime and social disorder among poor immigrants (Mann, H. (L. Filler, 1965).

State by state (except in the south, which came later) legislatures adopted laws establishing elementary public schools. The one-room schoolhouse symbolized the spread of "American civilization" across the continent. However, state governance of schools depended on political culture (Herbst, 1989). Many common schools were neither compulsory nor entirely free to attend. They were also not common, because some states limited them to white children or segregated them by race, providing drastically different resources to black schools. Missionaries controlled education for Native Americans and often for Mexican Americans in the west. Because of limited state funding, common schools depended on local support, leading to wide variation in access and quality.

As common schools multiplied, so did the demand for teachers. Mann was impressed by Prussia's teacher preparation, and leaders sharing his centralist ideology favored state-sponsored normal schools (Fraser, 2007; Lucas, 1997). Preparation provided in most normal schools at this point was not collegiate; graduates were versed in the elementary curriculum, the Bible, and moral standards (Herbst, 1989). Moreover, normal schools did not prepare most teachers (Fraser, 2007; Herbst, 1989). Female seminaries from the previous era continued, and secondary schools and academies added "normal departments". Short-term inservice teacher institutes were less costly alternatives (Fraser, 2007; Lucas, 1997). Schools proliferated so quickly that many teachers were hired with no preparation. Local boards hired teachers who knew just a bit more than their prospective pupils, or devised their own examinations to make hiring decisions. Lower teacher demand in secondary schools was met by private academies, early public high schools, or colleges.

The legacy of this period was the entry of state governments into teacher education. However, teaching was not considered a profession requiring lengthy formal preparation. Despite Mann's hopes for the normal school, preparation was acquired in a haphazard variety of ways, or not at all. Teacher letters and memoirs show that teaching in a one room schoolhouse, with students of all ages and poor facilities, was very difficult. Attrition was a still problem, and this further argued against high public investment in teacher education. These patterns continued into the twentieth century.

Progressive Era (Roughly 1870–1940)

The period between the U.S. Civil War and World War II was one of momentous economic change and social reform, with schools playing a central role. Progressives "cast the school as a fundamental lever of social and political regeneration" (Cremin, 1961, p. 88). In education, progressivism had two branches, administrative and pedagogical. The administrative branch controlled school management and teacher supervision based on "scientific" principles borrowed from business. The child-centered pedagogical progressives congregated in teacher education. This led to a continuing complaint from administrators (and often teachers) that teachers are not prepared for the "real world" of schools but for an impractical philosophical ideal (Labaree, 2005).

In this period teacher education was upgraded in status. State normal schools became "teachers colleges" with professors offering courses on both theory and practice. After the Civil War, southern states adopted provisions for racially segregated and radically unequal public schools, and this led to development of postsecondary institutions focused on educating Black teachers for Black schools (Anderson, 1988; Fraser, 2007). State universities incorporated normal schools as departments or colleges of education. Still, Lucas (1997) cited data showing that by 1931 only 10–12 % of elementary teachers held bachelor's degrees; not until the 1950s did this exceed 50 %. Secondary teachers and school administrators, in contrast, were more likely to hold college degrees and to consider themselves "professionals."

Teacher education by the mid-twentieth century was still decentralized and relatively unregulated. Three trends hampered its development. First, teachers colleges evolved into comprehensive institutions with an array of majors. Institutional advancement meant shedding their status as "mere" teacher training sites, and this prevented them from developing as places devoted to teacher preparation (Herbst, 1989). Second, according to Labaree (2008) the relationship between schools of education and the universities that incorporated them was "uneasy." Faculty in traditional disciplines viewed schools of education as inferior, and schools of education were cross-pressured to both produce teachers and adapt to academic norms (Clifford & Guthrie, 1988). To gain credibility, education faculty turned to graduate education and research, distancing themselves from teacher education (Clifford & Guthrie, 1988; Herbst, 1989; Labaree, 2008). Some academics derided teacher education as a "cash cow" that could be "milked" for funds to support graduate education and research. Third, states initiated requirements for teacher certification based on credit hours (x hours in methods, x hours in curriculum, etc.) rather than content or quality.

The major legacies of this period were movement of teacher education to the collegiate level and states' assertion of control over programmes leading to state certification. More troubling were the low status of teacher education and university faculty reluctance to identify as teacher educators.

Teacher Education as a National Problem (1950–Present)

Since the 1950s U.S. teacher education has been identified as a national problem. The most severe criticisms accompanied international crises such as the Soviet launch of Sputnik, the Cold War with communism, and global economic competition. National crises exacerbated "a long standing tug of war between state and national level policy-makers" over control of teacher education (Bales, 2006, p. 395). The National Council on Accreditation of Teacher Education (NCATE), a collaboration of organizations with a shared interest in teacher education, was founded in 1954 and undertook efforts to raise the quality of affiliated programmes.

But politicians do not always believe that teacher education can "reform itself". Lucas (1997) summarized the numerous books and reports excoriating teacher education in this period. Clearly, critics argued, American schools were failing, and teacher education was to blame. Different critics presented different prescriptions for reform. Wang, Odell, Klecka, Spalding, and Lin (2010) argued that the differences are ideological or political, because "none receives substantial empirical support" (p. 395). Competing values and arguments are:

1. *Equity*: Given the oppressive history of schooling for minority and low-income students and continuing achievement disparities, teacher education should recruit minority students and faculty, add multicultural coursework, and diversify field experiences (Zeichner & Hoeft, 1996). After 1954, school desegregation moved many black students into formerly white schools where white teachers were at best unfamiliar with and at worst hostile to black communities (Foster, 1997; Gay, 1978). Another negative consequence of desegregation was loss of teaching positions for black teachers (Foster, 1997; King, 1993). In the Southwest and communities with large numbers of immigrant students, white teachers were not prepared to work across language and cultural boundaries. While NCATE adopted multicultural education into its accreditation process in 1978, and some states followed suit, Neumann (2010) did not find evidence of a strong equity emphasis in teacher education programmes and state regulations. Critics such as Kramer (1991) even lampooned multicultural curricula as detracting from academic rigor in teacher education.
2. *Quality*: U.S. teacher education suffers from the perception that it attracts low ability students (Goldstein, 2014; Kramer, 1991). Some critics believe that selective admissions, rigorous disciplinary and research-based coursework, and well-supervised practicummes would produce more academically talented and professional teachers. Faced with this critique since the 1983 report *A Nation at Risk*, states and programmes developed higher standards for admission, accreditation, and certification. States do have the power to close or de-accredit low quality teacher education programmes, but a recent survey showed that this is very rare (Sawchuk, 2013). In 2011 the privately-funded National Council on Teacher Quality (NCTQ) announced that it would evaluate teacher education

programmes. Some institutions refused to participate, and the results (NCTQ, 2014) rank only 400 programmes. Experts dismissed the methods as flawed and the results as inaccurate (Darling-Hammond, 2013), but headlines such as "Teacher Training Is A Ridiculously Easy Way to Ace College, Report Says" (Resmovits, 2014) did not enhance teacher education's reputation.

3. *Accountability*: Teacher education programmes have proliferated over time, and in many states virtually all are accredited. There should be a more objective means to determine if programmes are effective, by assessing graduates or even tracing test performance back to the teacher's alma mater. Linked PK-16 state databases make the latter feasible, but such plans encounter resistance due to reliance on standardized test scores as the measure of teacher effectiveness (Bales, 2006; Cochran-Smith, 2005). In 2014 the federal government entered more aggressively into this debate. U.S. Secretary of Education Arne Duncan said, "It has long been clear that as a nation, we could do a far better job of preparing teachers for the classroom" (USDOE, 2014). The federal government does not directly control teacher education, but it provides substantial higher education funding that could be withheld from low performing programmes. Proposed regulations would require programmes to report outcomes to the U.S. Department of Education. Resistance surfaced immediately, with one university president calling the plan "Orwellian" and "federal over-reach" (Strauss, 2015).
4. *Deregulation*: Based on free market theory, if costs of state-regulated teacher education fail to produce matching benefits, if quality and accountability reforms have failed, and if some districts still struggle to find traditionally certified teachers, states should open the teacher labor market to faster, less costly alternative routes. Podgursky (2005) argued that rather than instituting costly new programme quality criteria, the U.S. should simply deregulate teacher hiring. Then teachers would be accountable for results (student scores) in order to retain their jobs. This also entails ending teacher tenure policies in favor of short-term contracts. This deregulation of teaching would effectively eliminate teacher education programmes.

Section Overview

A number of legacies, some going back to the colonial era, continue to affect U.S. teacher education. Given negative public perceptions and the trend toward deregulation, U.S. teacher educators today are challenged to develop a stronger case for their practices and for investment in programme quality (Forzani, 2014). Schools of education are challenged to reclaim teacher education as a central mission rather than a low-status sideline. "Whether the places where teachers are taught will be able to meet the concerns of their critics and to transcend some of the historical problems that have afflicted the enterprise remains an open question" (Fraser, 2007, p. 214).

Conclusion

In a volume on international teacher education, Darling-Hammond and Lieberman (2012) posed four dimensions for comparison: recruitment; initial preparation; induction; and, ongoing professional development. The historical perspective allows us to consider *how* and *why* these dimensions were constructed. Rather than the result of strictly functional decisions based on a nation's "needs," teacher education is a social and political construction. Understanding historical contexts prevents simplistic recommendations for change, such as borrowing policies and practices from higher-achieving countries ("Just do what Finland does!").

Purpose and Politics

In the countries included in this chapter we observe leaders exhorting teacher educators to build new nations, to maintain faith in religion and country, to reproduce class and race segregation, and to respond to economic and political crises both domestic and international. In some cases they contradictorily asked teacher educators to strive for social integration while creating conditions that generated class and race division. Teachers as a labor force were the means through which leaders believed they could achieve their ends. This led alternatively to attempts to control teacher educators to meet political aims or to respect teacher educators as experts who should have a major role in reform. Free market thinkers and curricular critics in the U.S. and elsewhere have even suggested eliminating teacher education (as hopelessly ineffectual or ideological or both), something that in many nations would be nearly unthinkable.

What accounts for the different political fates of teacher education in these five nations? In two countries (Singapore and Finland) teaching has evolved as a high status profession whose students today are successful on international measures. Teachers and the institutions that prepare them are not perceived as serious national problems. Another difference is that in these two nations both equity and quality became the dominant regulatory ideals, with all teachers prepared similarly under common national standards. The other nations (South Africa, Chile, U.S.) have struggled with the roles of teachers and schools as reproducing inequality and providing the highest quality education only to the few. While the public schools are supposed to be "common" to all in these nations, it is "common knowledge" that they are unequal. Teaching and teacher education today are blamed for achievement differences rooted in the nation's histories of oppression. South African teacher education today is attempting to address the legacy of apartheid through more centralized quality reforms. Chile and the U.S., in contrast, have implemented both quality/accountability reforms and deregulatory or market reforms, neither of which involve teacher educators as key policy actors (because they are identified as part of the problem).

To return to Darling-Hammond and Lieberman's (2012) dimensions, this chapter looked at the first two: recruitment issues and initial preparation.

1) In terms of recruitment issues, an assumption in all of the above accounts was that teacher candidates should have good moral character and some degree of academic skill, with the emphasis over time shifting from religious faith to academics. In at least three cases teacher education did not recruit elite students; teaching provided opportunities for employment and upward mobility. Four accounts mentioned the tension between: (i) providing a larger supply of teachers as school systems grew and/or attendance expanded; and, (ii) increasing teacher quality to improve student achievement. The exception was Finland, where initial reliance on clergy and high respect for teachers (and perhaps slower population growth) rendered recruiting sufficient academically capable teachers less problematic. Finland and Singapore have made recruitment selective while still meeting demand, adjusting selectivity to match teacher demand in certain content areas. Teacher recruitment in Chile and the U.S. has been influenced by free market theory and deregulation, reducing government control over selectivity amid a proliferation of competing programmes. Finally, teacher recruitment in South Africa and the U.S. until recently was racialized, with teacher education and hiring linked to school segregation and stratification.

2) In relation to initial preparation, an interesting pattern in these accounts was the influence of European educationists over the development of teacher education. In part this was a legacy of colonialism, of course, but teacher educators in Finland were also influenced by their European neighbors. All of these nations have struggled with recurring questions about what teachers should know and be able to do as outcomes of teacher education, with trends toward more rigorous programmes and expectations based on centralized policies. All have to some extent differentiated elementary and secondary teacher preparation. As democracies that recognize the harms of past inequities as well as the economic benefits of a more educated population, all face the challenge of preparing teachers to provide more equitable learning opportunities. Singapore and Finland, the smallest nations, seem to have the strongest consensus on teacher education purposes and quality, including incorporation of reflection and research. With adoption of recent reforms, South Africa and Chile are somewhere along this path, although Chile is also influenced by free market theorists. Here the question is whether nations are moving toward centralized reforms due to internal forces, the power of teacher educators as professional stakeholders, or external pressure from agencies that finance educational reform in developing countries or organizations such as OECD and international testing programmes. In the most contested system, U.S. teacher education faces conflicting political pressures that on one hand lead to more government scrutiny and on the other lead away from government/professional control toward free market approaches.

Among these five nations we have encountered a very broad set of issues in the history of teacher education that provide rich possibilities for continued discussion. In the end we are limited to the nations represented. We hope the chapter will stimulate further research and writing on the history of teacher education in other nations.

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Chapter 3
Structure of Teacher Education

Cheryl J. Craig

Readers possibly will begin reading this chapter perhaps naively thinking that the structure of teacher education is only peripherally connected to local, national and global politics. However, by the time this chapter is read, they undoubtedly will think differently. This work conclusively shows that politics, in addition to history and culture, plays a decisive role in how international structures of teacher education have taken shape. The shaping effects can particularly be seen in countries that belong/previously belonged to the British Commonwealth because the British left educational legacies that some countries still adopt (see profiles of Australia, Canada and New Zealand) and others are trying to shake (see profiles of India, Malaysia, Pakistan and Zambia). The same can be said of Portugal and Spain who conquered a different set of nations (i.e., Portugal—see Brazil's and Mozambique's profiles; i.e., Spain—see Argentina's, Chile's, and Mexico's profiles). At the same time, another group of countries are dealing with the remnants of the former Soviet regime (see Estonia's and Georgia's profiles, for example) while still others in far flung places (see the profiles of China and the Philippines, for instance) are coming to terms with the longitudinal effects of multiple foreign occupations. More recently, the influence of the Bologna Agreement has been pervasive not only in participating European Union nations (see the profiles of Italy, Netherlands and Spain, for example) but also in want-to-be (see the profiles of the Slovakia and Turkey) and non-participating nations (see Switzerland's profile) as well.

Also present in this international research review, readers will find different movements that have unfurled over time, which have affected how teacher education is structured. While Greece may have been the cradle of Western civilization and liberal education (see Greece's profile), other European countries such as Germany, France, England, Spain and Portugal (see country profiles) contributed greatly to the spread of Western civilization via the mass education movement.

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This, in turn, gave rise to the need for teacher education not only in their home countries, but in the countries they explored as well. In the profiles, nations like Botswana, Egypt, India, Mozambique, Nigeria and Zambia (see individual countries' profiles) still struggle to make education available for all. In sharp contrast to these developing nations are the Nordic social welfare countries (see the profiles of Sweden and Finland, for example), Greece, Argentina, Chile and Cuba, which provide universally free public education and university education. China, in South Asia, additionally offers some free teacher education routes.

In addition to the mass education movement, other educational reforms become apparent in the profiles readers will soon digest: specifically, the influence of the liberal arts tradition, the introduction of education to the academy, the beginning of schools of education and the rise of alternative certification programmes. In Finland's profile, for instance, we see how the field of teacher education first emerged alongside the disciplines followed by its introduction as a strong, equal partner to the academy. In the profiles of countries such as Taiwan and Israel (see Taiwan's and Israel's profiles), there is a deliberate move to create schools of education and to make teacher education an academic enterprise. Furthermore, this change is still taking place in countries like Kenya, Mozambique and Zambia (see Kenya's, Mozambique's and Zambia's profiles). At the same time, Switzerland, a wealthy, developed country with a complex canton-based educational system, adopted university-based teacher education decades after its European counterparts and France (see country profile) has only in the recent past named its institutes, Schools of Education.

In the profiles as well as in the Houston, Texas exemplar that will soon be presented, alternative teacher education programme certification appeared as an innovation on the structure of teacher education scene. This happened in the U.S., but also in England (Teach First), Australia (Teach for Australia), Estonia (School to Work) and so forth (see country profiles for each of these nations). Alternative certification programmes initially arose out of the dire need to supply teachers to urban and remote areas. However, the initiative concurrently punctured a hole in the monopoly that universities and colleges have experienced where the preparation of teachers has been concerned. It forever altered the structure of teacher education in the U.S. by opening the gateway for for-profit (i.e., consultants, web-based companies, providers from other states, etc.) and not-for-profit (i.e., regional education offices, school districts, philanthropies) providers entering the teacher education marketplace. It fit the neo-liberal philosophy spreading like wild fire throughout North America and other parts of the globe (particularly England and Australia). It is therefore unsurprising that the profile of Chile, for instance, mentions the "doubtful quality" of how some of its teachers are prepared and that Estonia's profile included how it has adopted an alternative certification programme modeled on the structure of one of England's alternative programmes. The South African profile additionally mentioned 100 private teacher education providers there.

Regardless of where countries were located internationally, teacher education tended to be linked with the public schools and hence, the preparation of future citizens. As forthrightly stated in Iran's profile, teachers and teacher educators play

critically important roles in "nation building". In fact, they are deemed "the soul of education" in Cuba's profile. It is therefore safe to say that the systems of education that have been created not only are the products of different countries' accumulative histories of teacher education, they also reflect what is currently important to the nations where they have been produced. It is little wonder, then, that in some countries, males and females may attend certain teacher education classes separately. This may occur in Iran and Oman, for instance. Several other countries may have culturally and religiously specific ways (see profiles) to make teacher education work within the given belief system of the majority population. Such an approach may happen in parts of Israel, with faith, not gender, shaping one's teacher preparation experience. Additionally, while some countries like Canada historically support Catholic education as part of its public education system and Finland offers special classes for youths of all religions, other countries, for example, the United States, are like France and have built their educational systems—and hence, their teacher education programmes—on the principle of secularism. As for Britain, its impact as a conquering nation lives on—with British-influenced educational systems stretching from Asia to Africa to Australia and the South Pacific. This has given rise to such things as French-speaking citizens in Canada maintaining language rights and other parts of the current United Kingdom (see profiles of Northern Ireland, Scotland and Wales) developing their own educational systems, with their own language rights (see the Wales profile). Then, too, there is evidence of history being redressed in the profiles of Argentina, Brazil, Canada and New Zealand, for instance, with special provisions being made for the preparation of teachers who will instruct aboriginal youth.

Another major theme readers will find in this overview of the structure of teacher education is a thread that repeatedly runs throughout the warp and weft of the country profiles: international comparison. Embedded in the profiles are acronyms of several international agencies (i.e., OECD, IEA, UNESCO, World Bank) conducting a number of international comparison tests (PISA, TALIS, PIRLS, TIMSS). Readers will encounter such statements as "Mexico ranks lowest in education according to OECD," "Teacher quality is a strength of the Canadian education system," "UNESCO has recognized Cuban's literacy initiative," and "Norway is suffering from 'PISA shock'. This is because countries are not only internally assessing their teacher education programmes[1] and adjusting their systems but international agencies and other consortias are, at the same time, comparing different nations' approaches to teacher education and recommending how better results can be achieved. It is little wonder, then, that shortly after the Bologna Accord was struck, evaluation headlined the *Green Paper on Teacher Education in Europe* (Buckberg, Campos, Kallow, & Stevenson, 2000) and was described as the "new leitmotif?" of teacher education. Hopefully, review chapters such as this one will

[1] Several states in the U.S. (Colorado, Louisiana, Tennessee, Texas) are currently evaluating their teacher education programmes via value-added assessments that are based on how the grade school students of former teacher education programme graduates perform on standardized reading and mathematics achievement tests (Goldhaber, Liddle, & Theobald, 2013).

become part of forthcoming international discussions because the quality of teacher education programmes and the quality of teachers/teacher educators are totally contingent on the structures, resources and commitments that underpin their work. This international literature review amply makes this point through the presentation of concrete evidence drawn from local, national and international documents.

This review chapter will now transition to: (1) a discussion of what the structure of teacher education refers to; (2) an elucidation of its sources of evidence; and, (3) a presentation of international profiles of how teacher education is organized within different nations. It then examines two phenomena that profoundly shape the organization of teacher education internationally: structures *within* teacher education and structures *of* teacher education. The work ends by reiterating why the structure of teacher education matters and what might be done to make it matter.

What Is the Structure of Teacher Education?

The structure of teacher education is the foundation on which teacher education programmes are formed. Such organizational structures are historically, culturally and socially produced, despite the scant research attention paid to these critically important determining factors (Darling-Hammond, Hammerness, Grossman, Rust, & Shulman, 2005). How teacher education programmes and their constituent parts (i.e., practicum/field-based experiences, mentoring experiences, induction experiences) (i.e., Zeichner, Liston, Mahlios, & Gomez, 1988) develop are greatly affected by the structures underpinning them. Indeed, the design, enactment and assessment of teacher education unavoidably reflect the structural anatomy on which programmes are built. In addition to being historically, culturally and socially shaped, national and state policies, institutional contexts and labor markets greatly affect how contemporary teacher education unfolds (Bell, 1981; Grossman & McDonald, 2008). Current teacher education structures are situated at the interstices of these multiple shaping forces within individual nations.

Globally, the structure of contemporary teacher education differs by country and/or state/province/region and/or setting (You, 2014). Therefore, it is almost impossible to make sweeping proclamations about the structure and organization of teacher education internationally. Because teacher education tends to be a local and/or regional matter, common language with common terms to describe its various structures does not exist within nations, let alone across nations. Also, some countries' systems of teacher education are relatively straight-forward and easy to decipher (see China, Singapore, and South Korea). Other countries have diffuse layers of decision making (see Germany, Pakistan, Switzerland, and the United States). As a result, the latter structures of teacher education are multi-stranded and take many forms as later will be illustrated.

This work follows in the footsteps of Feiman-Nemser (1990) who is credited with authoring the first handbook chapter on "Teacher preparation: Structural and conceptual alternatives" and Gimmestad and Hall (1995) who several years later

defined "the structure of teacher education programmes" in the *International encyclopedia of teaching and teacher education.* The chapter includes the features of teacher education structures in over 50 countries and attempts to seek commonalities in how their anatomies have taken shape. It also presents structures of teacher education in two radically different locations (Bergen, Norway; Houston, USA). Before addressing these tasks, however, the sources of evidence will be discussed because they drove how the background research for how this chapter has unfolded.

Sources of Evidence

This chapter has been informed by several resources and experiences: (1) my co-editorship of eight volumes of the Association of Teacher Educators (ATE) Yearbook (Craig & Deretchin, 2008, 2009, 2010, 2011; Craig & Galavan, 2013; Deretchin & Craig, 2007; Gallavan & Craig, 2012, 2014); (2) my co-editorship of the International Study Association on Teachers and Teaching (ISATT) Yearbook (Craig, Meijer, & Broeckmans, 2013); (3) my co-editorship of a three volumes on *International teacher education: Promising pedagogies* (Parts A, B, and C) (Craig & Orland-Barak, 2014, 2015; Orland-Barak & Craig, 2015); and, (4) my co-editorship of *Inside the role of the Dean: International perspectives on leading in higher education* (Clift, Loughran, Mills, & Craig, 2014). In addition, I served as Secretary of the International Study Association on Teachers and Teaching from 2009 to 2015, as Executive Editor of *Teachers and Teaching: Theory and Practice* since 2010 and I have been on the editorial review board of *Reflective Practice: International and multidisciplinary perspectives* since 2004. Further to this, my university has a large enrollment of international students. Through my daily interactions with them, my conference interactions with international colleagues, and my long-term editing of journals and volumes including or focusing exclusively on international teacher education, I have come to know—by osmosis—a considerable amount about how teacher education is organized globally. This knowledge, however, has not been intentionally sought. Rather, it has been learned *in situ—in vivo*.

In addition to the multiple sources already highlighted, I also wish to acknowledge my reading and digesting of OECD and TIMSS documents over time (i.e., OECD, 2005; Skilbeck & Connell, 2003), which is a general interest of mine. Two other sources deserve special mention because they greatly contributed to my framing of this chapter. First, Ingvarson et al.'s (2013) report, *An analysis of teacher education context, structure, and quality-assurance arrangements in TEDS-M countries: Findings from the IEA teacher education and Development study in Mathematics (TEDS-M)*, provided the skeleton for what I needed to look for, and included several background country reports that reinforced what I was able to glean from the earlier listed sources. Second, Kari Smith's (2015) chapter, *The art of diplomacy: Looking back at the position as Head of teacher education* introduced to me to Hansèn's (2008) four organizational structures for teacher education lodged in institutions of higher learning, which caused me to take into account how higher

learning is also involved in organizing teacher education programme delivery. It is important to note here that without Smith's interpretation of Hansèn's scholarship, I would not have been able to make sense of it because the work was a University of Bergen in-house report written in Norwegian.

All of this material helped me to descriptively and conceptually "get … the fish out of the water" (Blömeke & Paine, 2008)—that is, to characterize international teacher education structures amid what is historically, culturally and socially taken-for-granted (Brouwer & Korthagen, 2005; Darling-Hammond et al., 2005; Wideen, 2013). Cumulatively, this work questions whether particular local, national and international structures limit the possibilities that teacher education holds (Brouwer & Korthagen, 2005; Grossman & McDonald, 2008; Korthagen, Kessels, Koster, Lagerwerf, & Wubbels, 2001; Korthagen, Loughran, & Russell, 2006; Tom, 1995, 1997) and affect the academic achievement of school children taught by teachers prepared in particular systems (Ingvarson et al., 2013). Also, the chapter inherently queries whether it is more instructive to unpack teacher education according to its component parts instead of viewing as it an ever expanding continuum that also includes beginning teacher induction to the profession and all teachers' subsequent years of experience (Clift, 2009; Feiman-Nemser, 2001).

International Profiles of Teacher Education Structure

Profiles of teacher education structures in several sample nations are presented in two appendices. Appendix 1 provides a brief description of each nation's educational backdrop, governance structure, programme highlights and interesting features.[2] Appendix 2 broadly outlines the teacher education programme types[3] in each of the sample countries (i.e., concurrent/consecutive[4]; duration; grade span; specialization, etc.) (Gimmestad & Hall, 1995; Schwille et al., 2013). It is important for readers to understand from the outset that teacher education restructuring is an ongoing process and that what is reported here is what was found in the literature and on the internet at particular points in time. It is possible that changes have occurred in the interim. Also, programmes in the same nation are not carbon

[2] The countries appear in regions using the U.S. Department of National Defense's terminology.

[3] Schwille et al.'s (2013) terminology has been adopted. Programme has to do with coursework leading to a teaching certificate/permit/credential. Programme-type refers to a number of structural features.

[4] Schwille et al.'s (2013) terminology has once again been adopted. Concurrent teacher education programme types allow prospective teachers to study subject-matter content, pedagogy, and other coursework at the same time during the first years of post-secondary education. Consecutive teacher education involves phases—the completion of a prior degree with a specific specialization followed by a separate programme that focuses on pedagogy and practicum (field-based experience).

Fig. 3.1 Regional map of the world with a sample of over 50 countries identified

copies of one another as will be demonstrated later in this chapter. The descriptions in Appendix 1 represent major tendencies; outlier programmes, for the most part, have only peripherally been taken into account. A further consideration to keep in mind is that my research assistants and I were not able to find contacts in every country to assist us with specific details we were unable to locate in the literature.

To manage variability in reporting, two stages of verification were attempted where each country's profile in the two appendices are concerned. First, graduate students (see chapter credits) browsed the internet and consulted library sources to prove whether the initially gathered information was erroneous. Second, after fine-grained adjustments were made to the descriptions, the profiles were then emailed for authentication purposes to a scholar living and working in each of the selected countries (see chapter credits). Three other important notes need to be shared. First, chapter length considerations greatly restricted what is shared about individual nations (the topic of teacher education curriculum is separately addressed in this handbook). Second, countries are reported by regions,[5] using an adopted set of labels on the map in Fig. 3.1. Third, the country profiles appear alphabetically in Appendix 1 in the following regional order: North America, Central America, The Caribbean, South America, West Europe, East Europe and the Former Soviet Union, Africa, South Asia, East Asia, Southeast Asia, and Australia and the South Pacific.

[5] The regions of the world, according to the U.S. Department of National Defense, are North America, Central America, Caribbean, South America, West Europe, East Europe and the Former Soviet Union, Africa, Middle East, South Asia, East Asia, Southeast Asia, and Australia and the South Pacific.

Interim Summary

Based on the country profiles presented in Appendices 1 and 2, it is evident that governments mostly authorize universities throughout the world to structure and organize teacher education programmes. However, colleges, normal schools, vocational schools and alternative certification programmes also are involved as teacher education providers within various country profiles. In the forthcoming sub-section, attention will focus specifically on the different ways teacher education programmes can be organized within different academic milieus in the same country.

Organizational Structures for Teacher Education

A university organizational structure *within* teacher education will now be presented, using Norway and specifically the University of Bergen as an exemplar. Attention then shifts to the structure *of* teacher education, most specifically a discussion of the teacher education service providers in the U.S. with Houston, Texas being the exemplar.

Bergen, Norway: An Exemplar

Hansèn's (2008) scholarship outlines four organizational structures for how teacher education is delivered within Norwegian university contexts (Smith, 2015). They are: (1) the integrated model; (2) the asymmetric model; (3) the matrix model; and, (4) the decentralized model (see Fig. 3.2).

Each of these models will now be described using K. Smith's (2015) interpretation of the structures Hansèn (2008) conceptualized.

The *integrated model* (Fig. 3.3) of organizing teacher education has teacher education positioned as an independent unit within a faculty or university/school of education. Where this model is concerned, teacher education has its own leadership that possesses the power to make decisions, use resources, hire/fire staff, etc. within a set of guidelines laid out by the university/state/province/country. Course content is 'bought' from other faculties and disciplinary knowledge rigorously fulfills programme requirements. Despite the Dean being the overall leader, the Head of Teacher Education is the daily decision maker. The strength of this approach is that the students strongly identify themselves as students of teaching. A possible weakness, according to K. Smith (2015), may be the faculty who instruct prospective teachers in the other faculties.

The second approach, the *asymmetrical model* (Fig. 3.4) of teacher education is again a separate unit with decision making power in all matters except that of subject matter courses. Faculty members in the other disciplines are held responsible

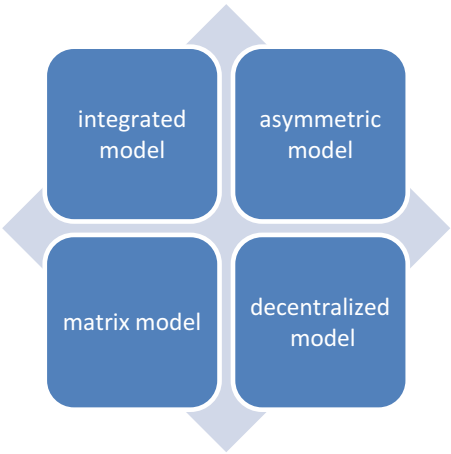

Fig. 3.2 Hansèn's (2008) Structures of 5-Year Teacher Education Programmes as cited in K. Smith (2015)

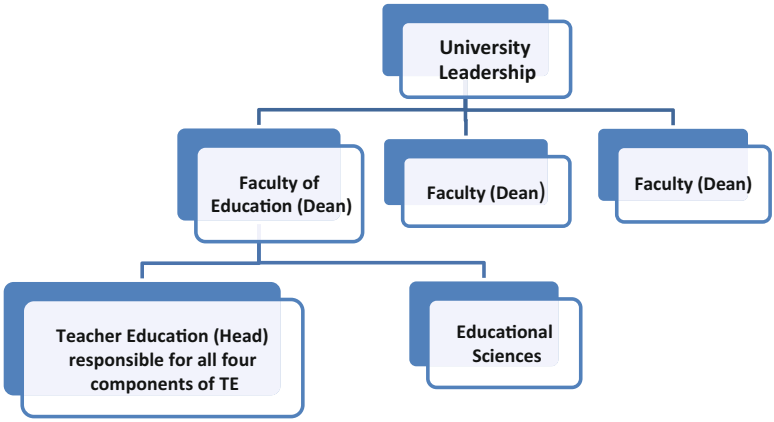

Fig. 3.3 Integrated model of teacher education (Hansèn, 2008 in Smith, 2015)

for those courses; education and non-education students are taught side-by-side in them. This model is highly complex and joint planning is challenging due to the number of faculties involved. Also, education students may not strongly identify with one another, as Smith observed, because they are part of the general graduate student population (Fig. 3.5).

As for the third approach, the matrix model, it operates without a Faculty of Education/School of Education. Faculty members responsible for content and pedagogy courses are sprinkled throughout the university, making those who teach language and literacy part of the English Department and those who teach mathematics part of the Mathematics Department, for example. A Head of Teacher Education, appointed by the university, is in charge for a stated number of years. The Head coordinates all meetings and arranges to bring faculty scattered across many faculties together. In K. Smith's experience, the decision making process that arises from

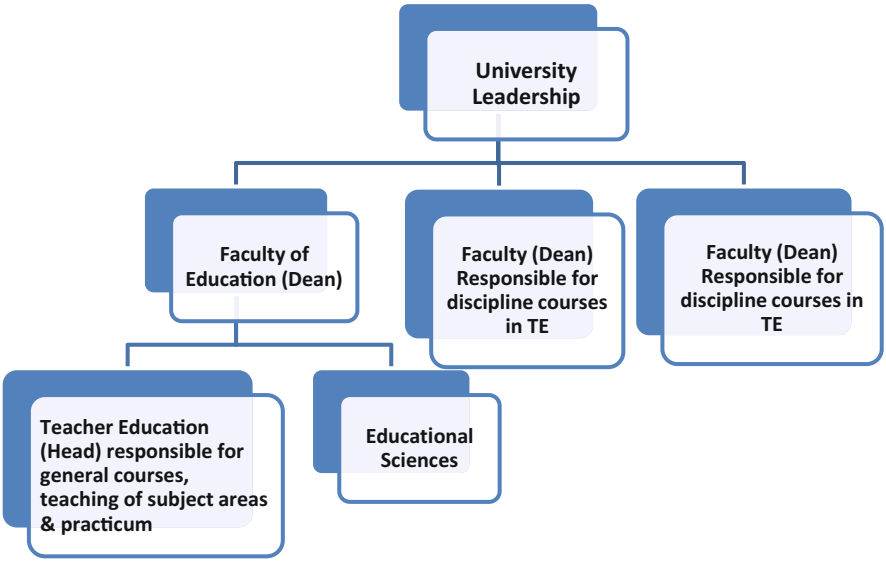

Fig. 3.4 Asymmetrical model of teacher education (Hansèn, 2008 in K. Smith, 2015)

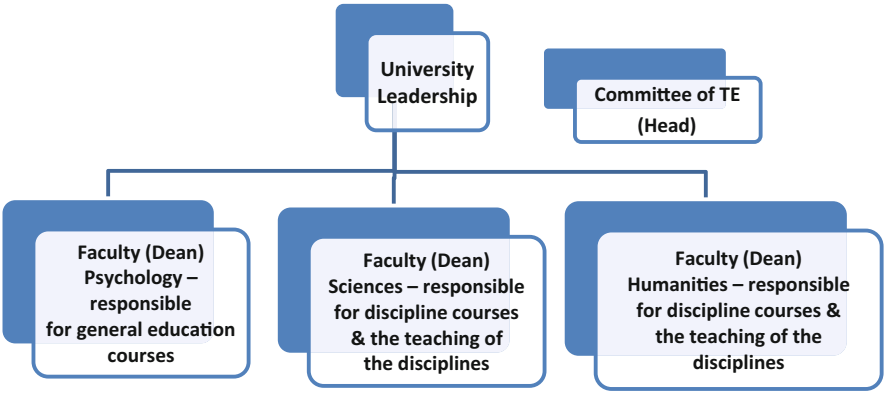

Fig. 3.5 Matrix model of teacher education (Hansèn, 2008 in K. Smith, 2015)

this model is one of consensus. The difficulty, as she points out, is that all of the various faculty members have other priorities, which may trump their roles as teacher educators in significance. The strength of this model is that teacher education students tend to have strong preparation where content knowledge in their specialty subject area/s is/are concerned.

The fourth approach Hansèn identified is the decentralized model (Fig. 3.6) where teacher education unfurls independently in each faculty with no Head of Teacher Education binding the structure of teacher education together. Also, no

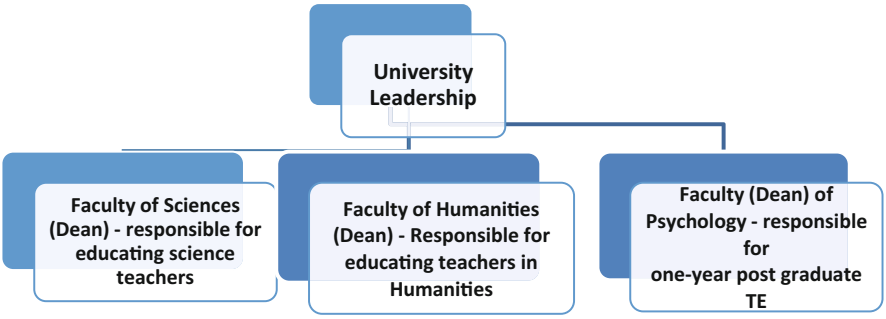

Fig. 3.6 Decentralized Model (Hansèn, 2008 in K. Smith, 2015)

meetings are held to engage members from diverse faculties in discussions about teacher education as an independent area of study. In this approach, content knowledge is the sole concern. Little or no attention is paid to pedagogy. Also, an appointed faculty member(s) handles all university and faculty affairs relating to education. This approach generally meets baseline standards, although content area faculty may not always be in agreement with what is being asked of them since they are content area specialists by choice and reluctant teacher educators by design.

Kari Smith's chapter in *Inside the role of the Dean: International perspectives on leading in higher education* describes in fine-grained detail, how she, as a Head of Teacher Education, changed the structure of teacher education in her university in order to conduct teacher education more cohesively and to more readily align with what the European Union decided by virtue of the Bologna Accord. Smith indeed managed to shift the organization of teacher education at the University of Bergen from a decentralized model of teacher education to a matrix model of teacher education. Readers will recognize that this was not an easy feat, given the conflicting theories of action underpinning the different models of teacher education delivery that she and her colleagues had to negotiate.

Attention will now be directed to the multiple structures *of* teacher education in the U.S., using the multiple teacher education providers in the Greater Houston area as an example.

Houston, Texas: An Exemplar

In the United States, the NCLB Act allows school districts to hire 'teachers' in Title 1 schools,[6] providing they have a prior university degree and are enrolled in an approved alternative (alternative = expedited) certification programme have completed an examination on content knowledge competency, and have passed a requisite criminal

[6] A Title 1 School is a campus that receives extra funding from the federal government to improve the education of disadvantaged children in the United States.

background check. These alternative certification programmes can be offered by a variety of service providers (regional educational offices, school districts, internet companies, private consultants, for-profit and not-for-profit companies) or by colleges or universities, which themselves may have alternate certification programmes internally lodged and competing with their regular certification programmes (see Prairie View A&M University in Table 3.1). Such approaches have flourished in

Table 3.1 Providers of teachers in the proximal zone of professional impact

Teacher education provider position based on 10-year average	Programme type	Number of teachers prepared in 2013	Number of teachers prepared from 2003 to 2013
Texas Teachers of Tomorrow[a]	Alternate Certification Programme	2726	14,039
State of Texas Region 4 Educational Service Center	Alternate Certification Programme	466	10,279
ACT-Houston	Alternate Certification Programme	341	6438
Sam Houston State University	University Certification Programme; Post-Baccalaureate Programme	530	5325
University of Houston, Main Campus[b]	University Certification Programme; Post-Baccalaureate Programme	357	4292
Houston Independent School District	Alternate Certification Programme	116	3697
University of Houston, Clear Lake	University Certification Programme; Post-Baccalaureate Programme	260	2667
University of Houston, Downtown	University Certification Programme; Post-Baccalaureate Programme	254	2071
Kingwood College	Alternate Certification Programme	125	1912
Prairie View A&M University	University Certification Programme; Post-Baccalaureate Programme; Alternate Certification Programme	62	1423
Web-Centric Alternate Certification Programme[c]	Alternate Certification Programme	242	1207
Pasadena Independent School District	Alternate Certification Programme	46	1145
North Harris College	Alternate Certification Programme	0	734
Texas Southern University	University Certification Programme; Post-Baccalaureate Programme	44	721
Cy-Fair College	Alternate Certification Programme	0	674
Houston Baptist University[d]	University Certification Programme; Post-Baccalaureate Programme	47	611
YES College Preparatory School[e]	Alternate Certification Programme	208	492
Blinn College	Alternate Certification Programme	21	424
State of Texas Region 6 Service Center	Alternate Certification Programme	22	413

(continued)

Table 3.1 (continued)

Teacher education provider position based on 10-year average	Programme type	Number of teachers prepared in 2013	Number of teachers prepared from 2003 to 2013
University of St. Thomas[f]	University Certification Programme; Post-Baccalaureate Programme	26	406
Alief Independent School District[g]	Alternate Certification Programme	0	403
Houston Community College System	Alternate Certification Programme	17	299
Montgomery College	Alternate Certification Programme	0	281
Tomball College	Alternate Certification Programme	0	127
Rice University[h]	University Certification Programme; Post-Baccalaureate Programme	5	89

Source files obtained from Teacher Certification Files, Texas Educational Agency Files, Academic Excellence Indicator System [AEIS] Data
[a]Texas Teachers of Tomorrow began as an alternate certification provider in 2006
[b]University of Houston, Main Campus became recognized as a Tier 1 (research intensive) campus during the 10-year period
[c]Web-Centric alternate certification provider began in 2006
[d]Houston Baptist University is a private university
[e]YES College Preparatory School began offering its alternate certification programme in 2010
[f]The University of St. Thomas is a private university
[g]Previously, Alief Independent School District attempted to offer its teacher education programme through creating its own "Corporate University."
[h]Rice University is one of the top ten private universities in the United States

states facing teacher shortages and/or favoring open market, business-oriented models to the delivery of teacher education. For example, the following providers were approved by the State Board of Education Commission (SBEC) of Texas in 2013, in addition to *Teach for America*, an alternative certification programme that is nationally approved and operating in 46 American locales, Houston being one of them.

In addition to the teacher education providers already mentioned, several additional providers have more recently entered the teacher education marketplace as outlined in Table 3.2.

As this descriptive and statistical data suggest, alternative certification programmes have overtaken university and college teacher education programmes in the past decade in preparing the vast majority of teachers instructing youth in Houston's urban schools. Like the universities in Norway, each of these Houston-area universities, colleges and alternative certification providers has state approval for delivering their versions of teacher education. This makes for many variegated strands of teacher education in some states in the U.S. and creates great flux in the quality of the teachers produced. This fuels America's "teaching crisis" (National

Table 3.2 Other producers of teachers in the Greater Houston area

A+ Texas Teachers	Alternate Certification Programme
Harris County Department of Education	Alternate Certification Programme
Intern Teacher ACP	Alternate Certification Programme
North American University	Alternate Certification Programme
Relay GSE Houston Alternative Certification Programme	Alternate Certification Programme
Rice Education Entrepreneurship Programme	Post-Baccalaureate Programme
Texas Alternative Certification Programme at Houston	Alternate Certification Programme
Texas Gulf Foundation	Alternate Certification Programme
Western Governors University—Alternate Certification Programme Only, Salt Lake City, Utah	Alternate Certification Programme

Commission on Teaching and America's Future, 2003) as the U.S.'s teacher attrition rate skyrockets,[7] (particularly among alternatively certified teachers in America's urban schools), while public confidence in education simultaneously plummets.

Parting Words

Using concrete examples from numerous countries, this chapter has shown how politically shaped and vitally important the structure of teacher education is internationally. If the structures *of* teacher education become too diffuse—as in the Houston, Texas example, additional teacher attrition/retention and overall teacher quality problems will result. Likewise, if the structures *within* teacher education programmes are not cohesive—as per the Bergen, Norway model, prospective teachers may experience chasms arising from the delivery of their teacher preparation programmes. Internationally, citizens must champion defensible, cohesive structures of teacher education that work productively inside-out (i.e., University of Bergen, Norway) and outside-in (i.e., Houston, TX, USA). Because teachers prepare youth for all other professions, the world's future is at stake.

[7] The largest school district in metropolitan Houston loses 50 % of its beginning teachers in the first 4 years (see Craig, 2013); its current workforce is composed of 80 % of its teachers having 5 years or less of experience and 50 % of its administrators having 5 years or less of experience (see Craig, under review).

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Appendices

Appendix 1: Country Profiles by Region

Country	Educational backdrop	Governance	Programme highlights	Interesting features
NORTH AMERICA				
Canada	Canada's teacher education status is influenced by official bilingualism emerging from British and French colonialism, by an official policy of multiculturalism emerging from immigration policies, by the Canada Act which defines education as a provincial matter, and by the proximity of American educational influences. Canada is recognized as having one of the top literacy rates in the world.	Teacher education is a responsibility of the Canadian provinces; no federal agency decides on educational policy for the country though a Council of provincial ministers of education influences policy. The one exception is First Nations schools, which are federally funded by Aboriginal Affairs and Northern Development Canada. Reflecting Canada's history, both English and French teacher preparation and English and French schools are part of Canada's public education system.	There are approximately 50 teacher education programmes in Canada. All are offered through universities and are "highly selective" because they draw on the top 30% of high school cohorts (http://www.ncee.org/programmes-affiliates/center-on-international-education-benchmarking/top-performing-countries/canada-overview/canada-teacher-and-principal-quality/). All Canadian teacher candidates engage in extensive field experiences as part of their teacher preparation. Canada, however, has no common teacher certification examination. Once one's teacher education programme is successfully completed, a candidate submits his/her documentation to obtain a teaching certificate in one's respective province. For example, the certificate is provided by an education department (Nova Scotia), a group of stakeholders (Quebec), and an independent decision making body (Ontario). Teachers can easily move from province-to-province in Canada, but they must apply for new certification in the province to which they move.	According to the Center for International Benchmarking in Washington D.C., Canada is a top performing country where student achievement is concerned. In the Center's Canada report, teacher quality is praised as "a strength of Canadian education" (http://www.ncee.org/programs-affiliates/center-on-international-education-benchmarking/top-performing-countries/canada-overview/canada-teacher-and-principal-quality/).

United States of America	The U.S. educational system is arguably the most diverse in its forms of educational delivery (public schools, private schools, faith-based schools, charter schools) of any country in the world. While the desegregation of America's public schools in the 1960s sought to bring about equal opportunities to quality education for all youth, it unfortunately fell short of the mark, triggering a long series of publicly and privately funded reforms that have not lived up to expectations. After A Nation at Risk (ANAR) (Gardner, 1983), a trumped up political report claiming American's 'mediocre' educational system was more dangerous than any enemy, its educational system became increasingly politicized. ANAR laid the groundwork for the No Child Left Behind (NCLB) (2002) policy, which has recently been replaced.	Education—including teacher education—is a states' right in the U.S. and, hence, falls within the jurisdictional authority of state boards of education. Over time, though, the U.S. has shifted from local control to more centralized control with teacher education programmes being accredited by national agencies and the NCLB Act penalizing states that do not comply with national policy (Fiske, 2008). In some ways, there is dual pressure from both state and federal accrediting agencies which are usually complementary.	All teacher education programmes in the U.S. must be approved by their respective states. Great variations in programmes and in teacher/teacher education quality exist. Approved providers include traditional teacher education programmes offered by colleges and universities and alternative certification programmes, which are offered by a vast assortment of entities (non-profit agencies, for-profit agencies, internet providers, independent consultants and so forth) which allow individuals to teach (if they have a previous degree, have completed a content area examination, and have passed a requisite criminal background check) while taking a handful of courses to become certified in an expedited way. The Alternative Route programme in some states requires that certified candidates have a full-time contract with a school district before they can pursue an Alternative Certification programme.	The NCLB Act defined a quality teacher in the United States as a teacher who has content area knowledge in the school subject s/he teaches. Overall, accountability measures associated with NCLB have diminished the role of curriculum in the U.S. while heightening the attention paid to evaluation. Fifty percent of the U.S.'s beginning teachers leave the profession in the first 5 years of employment.

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Country	Educational backdrop	Governance	Programme highlights	Interesting features
CENTRAL AMERICA				
Mexico	Like other Latin American countries colonized by Spain, Mexico, upon securing its independence, focused the development of its educational system on national character rather than on the creation of human capital (Zinny & McBride, 2014). Teacher preparation was structured at the national level and the curriculum, content and structure were consistent across the nation. This led to criticism of the system preparing a "single type of teacher and a single type of teaching" for contrasting landscape of diverse learners across the country.	In the 1980s and 1990s, a process of decentralization occurred in Mexico, which gave more autonomy to the local states. In 2014, the state wrestled control of teacher education from the teachers' unions, assuming responsibility for teacher certification, evaluation and salary matters (Zinny & McBride, 2014).	Public institutions offer most teacher education programmes, despite private institutions being on the rise (Smith, 2013). For high school teachers there is not a specific teacher education programme and teachers can enter the teaching profession after a university degree which is consistent with the subject to be taught (i.e. to teach mathematics you could be a physicist, an engineer or a mathematician). Teachers tend to participate in in-service training. High school teachers may be required to obtain a master's degree in the future.	On the 2011 PISA assessment cycle, Mexico ranked third lowest in reading, mathematics, and science in comparison to other OECD countries (International Student Assessment (PISA), 2015). Teachers are relatively high paid professionals in Mexico.

CARIBBEAN				
Cuba	As a result of former Cuban leader Fidel Castro's 1960 declaration that each child would be henceforth entitled to a free education, Cuba's education system underwent a transformation with a focus on becoming an illiteracy free country. Teacher preparation was immediately viewed as a key factor in the success of these pursuits, as Castro described the teacher as "the soul of education" (Breidlid, 2007). By 1964, UNESCO had recognized the success of the literacy endeavor and since then, Cuba has been internationally recognized for its efforts toward equity.	Cuban education is under the direction of the Ministry of Education.	Typical teacher preparation includes an average of a 5–6 year preservice education course of study, which is followed by an in-service programme of the same length (Gasperini, 2000). Academic programmes and school partnerships are seen as important parts of pre- and in-service teacher development. Action research is integral to both phases of the development process. Also, the content of the programmes is designed to balance pedagogical and practical knowledge while developing values and skills that meet the needs of the students served by the teacher.	Cuba's teacher educators are trained in one of the country's 15 higher-education pedagogical institutes. In order to reduce the theory-practice divide, those desiring to be teacher educators are required to work as teachers for a minimum of 5 years.

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Country	Educational backdrop	Governance	Programme highlights	Interesting features
SOUTH AMERICA				
Argentina	As a former Spanish colony, Argentina's language of instruction is Spanish. Increased attention has recently been given to bilingual education for indigenous communities that constitute 1.7% of Argentina's population (SITEAL, 2014).	Teacher education in Argentina is regulated by the 2006 national law, Ley 26,206 (Ministerio de Educación Presidencia de la Nación, 2011). The law adopted a "Consejo Federal de Educación" (CFE, Federal Council of Education), which is made up of education ministers from each of Argentina's provinces. It also established the Instituto Nacional de Formación Docente (INFOD) which, when translated, means the National Institute of Teacher Development. Teacher preparation is carried out by the provinces in the "Institutos Superiores de Formación Docente" [ISFD] (Ministerio de Educación Presidencia de la Nación, 2011). The majority of ISDFs are public and tuition-free.	Although teacher preparation programmes in Argentina are 4-year programmes, none of the ISFDs are under university jurisdiction. Therefore, none of the teacher preparation programmes are able to grant a bachelor's degree. In order to obtain a university degree, certified teachers must enrol in the Educational Sciences or another discipline. Collaboration among universities and teacher training providers is, in general, not existent.	According to Suasnábar and Palamidessi (2006), the field of education as a discipline in Argentina has emerged as two separate bodies that have grown parallel to each other. On one hand, there is the Normal/Institute tradition that produces teachers and teacher supervisors. On the other hand, there are university-based education scholars. The national and provincial ministries have unsuccessfully attempted to bridge the historic divide by creating educational forums that include all education-related professionals.

Brazil	Brazil has many cultures of people. The country's indigenous population speaks Portuguese.	Teacher education in Brazil is governed by the Ministry of Education which is subordinate to the President of the Republic. Over time, the system has become somewhat decentralized when some autonomy was granted to the states within the boundaries of the education policy laid out by the federal government, which was based on The Law of Directives and Bases of National Education (Law 9394/96) (LDB). The LDB regulates the educational system in Brazil according to the principles of universal education emanating from the federal constitution in 1988. It includes (1) common core curriculum for primary and secondary education, with some degree of flexibility; and mandatory specialty areas like civic education, physical education, arts, health programmes and religions (religion must be offered by schools but religion is an elective course for students) (see http://www.planalto.gov.br/ccivil_03/leis/l9394.htm). States are responsible for Basic Education and High Schools. Higher Education is the responsibility of the federal government.	Despite the LDB requiring all teachers to complete their 4th year of experience to have a higher education degree in licentiate courses, only one-third of elementary teachers in Brazil currently hold bachelor's degrees. In high schools, the number of teachers having bachelor's degrees with no preparation in the field of education is 22% (Prata-Linhares, Bossler, & Caldeira, 2014).	Brazil is currently experiencing a major teacher shortage, particularly where mathematics and science teachers are concerned (Prata-Linhares et al., 2014). Lack of interest in the teaching profession in Brazil has been attributed to negative public perception of education and poor working conditions and resources in the schools (Marcondes, 2013).

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Country	Educational backdrop	Governance	Programme highlights	Interesting features
Chile	Initially colonized by Spain, Chile experienced military coups and later became one of Latin America's most stable, Spanish-speaking countries.	The governance of teacher education is not nationally organized in Chile. However, the Ministry of Education maintains a non-formal relationship with universities and other teacher training providers. Private and public schools flourish in Chile. Higher education is free-of-charge for qualified students.	Decentralized education reforms in the 1980s produced a plethora of teacher education programme-types outside of public university-based teacher education in Chile. Still, the majority of preservice teachers are prepared in university programmes (Montecinos, Ceardi, & Fernández, 2014). Preservice candidates are able to teach in Chile at the successful completion of their programmes after they have had their theses approved and been granted the teaching entitlement (Titulo de Professor).	According to Chileans' Avalos, Téllez and Navarro (2010), "the unregulated growth of teacher education programs in private universities and the mushrooming of distance programs of doubtful quality have raised concerns about the quality and effectiveness of these programs."
WESTERN EUROPE/UK				
England	The history of teacher education in England dates back to first half of the nineteenth century and the mass education movement.	The Council for the Accreditation of Teacher Education (CATE) controls and regulates initial teacher training programmes offered by government agencies in England.	In order to teach in state-maintained schools in England, teachers must possess Qualified Teacher Status (QTS). To obtain QTS the individual must go through initial teacher training (ITT) which combines theoretical learning with at least 18 weeks of practice teaching during school placements. The three main ways to achieve QTS are through undergraduate teacher training, postgraduate teacher training and employment-based teacher training. Postgraduate teacher trainees are eligible for a number of tax free-bursaries that range from £4000–9000. Generally, teacher trainees preparing to teach Mathematics, Physics, Chemistry and Engineering receive the higher bursaries. Overall, British teacher education has vacillated between school-based and university-based models of preparation.	The current standards against which British student teachers are assessed and graded are divided into three discrete units: Professional Values and Practice; Knowledge and Understanding; and Teaching. Educators in England, however, are critical of standards-driven bureaucratic models (Furlong, 2002; Furlong & Smith, 1996). Enhancement courses are offered in some universities in England in Mathematics, for example, before potential candidates enter their teacher education degree programmes in order to maintain programme and teacher quality (Clarke & Murray, 2014).

Northern Ireland	Northern Ireland has a complex educational history shaped by both political and religious forces. The current trend in Northern Ireland is to integrate schools so that students, teachers and leaders from all faith traditions can attend.	The General Teaching Council for Northern Ireland (the Council) governs teacher education in Northern Ireland.	For over a decade, Northern Ireland's approach to teacher education has revolved around a framework that details the range of competences that need to be addressed by new teachers in all three phases of their early teacher education: Initial Training, Induction and Early Profession Development. The value of this framework is that it is a spiral curriculum specifying what needs to be learned (and re-learned) at each stage of early teacher education. Moreover, because it covers all three phases, each of the partners involved in supporting professional development – HEIs, Schools, and Education and Library Boards (equivalent to LEAs) – have clear expectations and a common language for understanding what trainees at each stage need to learn. (http://www.education.ox.ac.uk/wordpress/wp-content/uploads/2010/07/CE-Report-Annex-A-Review-of-ITT-provision-in-Wales-English.pdf)	The Northern Ireland model considers what prospective teachers need to learn about different issues and then returns to those issues again and again as teacher candidates progress through the different stages of their early careers.

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Country	Educational backdrop	Governance	Programme highlights	Interesting features
Scotland	The history of teacher education in Scotland dates back to the mass education movement with the establishment of the Church Education Committee and normal schools. In these schools, instruction in the subject areas and practice in the art of teaching occurred through prospective teachers serving as monitors under the guidance of a schoolmaster (http://www.ed.ac.uk/schools-departments/education/about-us/maps-estates-history/history/part-two).	Political responsibility for education at all levels is vested in the Scottish Parliament and the Scottish Government's Education and Lifelong Learning Department. The General Teaching Council for Scotland regulates professional standards (http://www.gtcs.org.uk/education-in-scotland/scotlands-education-system.aspx). Qualifications at the secondary school and post-secondary (further education) levels are provided by the Scottish Qualifications Authority, the national awarding and accrediting body in Scotland. Teacher education programmes are delivered through various schools, colleges and other learning centers.	In Scotland, teachers are trained through a 4 year undergraduate (Bachelor of Education) or a 1 year postgraduate programme that can be studied part-time.	According to Menter and Hume (2008), "the processes of change in Scotland appear to have been less radical and at a slower pace than in England; however, they have been achieved through a more consensual process and so in the long term are likely to be more embedded than those in England" (p. 213).

Wales	As part of the United Kingdom, Wales has maintained a distinct identity and form of education. It also has its own educational policy, one of which is Iath Pawb, an initiative aimed at preserving and expanding the use of the Welsh language. The responsibility for education in Wales lies with the Welsh Assembly Government.	Initial Teacher Training (ITT) in Wales is offered by three collaborative ITT centers of teacher education. Each center is comprised of two ITT providers (http://teachertrainingcymru.org/node/7). ITT in Wales is inspected by Estyn under the terms of the Education Act (2005), while HEFCW has the responsibility for accrediting institutions that provide ITT. Recently, proposals for changes to the governance arrangements for ITET in Wales are being made. (http://www.education.ox.ac.uk/wordpress/wp-content/uploads/2010/07/CE-Report-Annex-A-Review-of-ITT-provision-in-Wales-English.pdf)	Three-year undergraduate courses lead to Qualified Teacher Status (QTS) in Wales. Secondary teachers are subject specialists. Initial teacher training (ITT) combines university-based theoretical learning with up to 24 weeks practical teaching experience.	A variety of sources of funding and support are available to preservice teachers while they complete their teacher education programmes in Wales.
France	The present French school (école) system was founded on general principles inspired by the 1789 revolution as well as by the principle of secularism. Teacher education in France began by a decree of Napoleon in 1808 (Misra, 2014).	In France, the state, regional authorities, and professional bodies have shared responsibility for education. Central government retains fundamental powers when it comes to defining and implementing education policy and national education curricula and is responsible for the recruitment and salaries of teachers. Since the 1980s, the State has been devolving powers in order to strengthen the role of local authorities in the management of the school system.	A future teacher in France has to meet two criteria to become a fully qualified teacher: (1) hold a Master's degree and (2) pass the competitive recruitment examination organized by the French Ministry of Education. Once these criteria are met, newly qualified teachers become civil servants after one probationary year of service. Teachers recruited by private schools must also pass competitive examinations and are paid by the State if they are part of grant-aided schools. However, they are not civil servants (Picard & Ria, 2011).	In 2012, a labor government came into power in France and restructured the teacher education system, renaming Frances' institutions 'Schools of Education' (Ecoles Superieures du Professorat etde l'Education - ESPEs).

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Country	Educational backdrop	Governance	Programme highlights	Interesting features
Finland	Finnish teacher education began in 1852 with the first professorial chair of education at the University of Helsinki. The Professor of Pedagogy lectured on teaching methods and advised students on teaching skills. The task of the professor was to develop teacher education, particularly for secondary school teachers (Kansanen, 2003). Since the 1980s, Finland's reform of its education system has shifted from a technical rational paradigm to an interpretivist paradigm (Lauriala, 2013). The Finnish international reputation (in the international standardized measurement tests) has increased interest in teacher education.	The Ministry of Education of Finland sets educational policies that are open to local interpretation.	Teacher education was centralized in Finnish universities in 1974 and a master's degree programme was added to the primary teacher diploma in 1979. With the 1999 Bologna Agreement, teacher education became a 3-year Bachelor's degree, followed by a 2-year Master's degree. Teacher education is systemically planned in Finland and deeply rooted in the teacher-as-researcher philosophy and prepares teachers for a research-based orientation towards their practical teaching work in the classroom. They are also guided to learn reflection as a way of thinking and as a tool for continuous professional development. The moral qualities of teaching are also integral to their teacher education programmes.	A unique feature of Finnish teacher education is that both primary and secondary school teachers earn a master's degree and their academic status is the same as other degree programmes (Kansanen, 2003, p. 86). Finland maintains 11 practice teaching schools that belong administratively to the eight universities offering teacher education programmes (Lauriala, 2013). The connection between the theoretical and the practical in Finnish teacher education is organically linked. Preservice teachers are not expected to produce new knowledge through their research, but rather to solve a practical or theoretical issue encountered in practice (Tarman, 2010). Upon graduation, teacher candidates are licensed as full-fledged teachers. Competition, however, is fierce, and approximately 15% of the applicants in teacher education are accepted.

Germany	Germany, a cradle of the global mass education movement, has had teacher education programmes reaching back to the early nineteenth century. Germany's participation in large-scale assessment studies and the Bologna Declaration of 1999, among other factors, has brought about recent changes to the German system of teacher education (Rotors, 2015).	The federal government of Germany does not have the authority to make teacher education policy. However, common features are determined by the Conference of Ministers of Education and Cultural Affairs. Each federal state, though, is responsible for how it structures teacher education and schooling.	There is great variation in how teacher education is delivered in Germany due to its decentralized structure. Initial teacher education takes 5 years for primary teachers and at least 6 years for secondary teachers. The programme is divided into two phases. The first phase, which lasts 3–4 years, takes place in universities and ends with a thesis and written and oral examinations. Upon successful completion of these examinations, students are eligible to proceed to the second phase (preparatory service), which lasts one and one-half to 2 years. The second practical phase is conducted in the schools and is supervised via a state-run 'Study Seminar.' In this phase, students work at schools with a reduced salary and participate in training sessions on a weekly basis run by various teacher trainers. In-service training institutes are subordinate to the Ministries of Education in the respective federal state. At the end of this phase, candidates take another state exam, which consists of an oral exam, sometimes another written thesis, and an evaluation of classroom teaching.	After they complete a 2-year probationary period, and have successfully applied for a permanent position, teachers are appointed for life as German public servants with high initial salaries, particular in upper secondary school. Germany is considered to have one of the longest, most rigorous and in some respect least inflexible programmes of teacher preparation in the world. As a country, Germany is currently in the process of reconciling its historical Didaktik tradition of education, which is hermeneutic in nature, with a newly introduced accountability-based system, which is input-output by design (Roters, 2015).

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Country	Educational backdrop	Governance	Programme highlights	Interesting features
The Netherlands	The 1848 constitution of The Netherlands allows any group of parents to require the state to create a school for their children at the government's expense. These schools can be faith-based or not. These campuses are directed by school boards that may be responsible for several campuses (Center for Educational Benchmarking, Netherlands Report). All schools are governed by school boards and about 98 % are paid by the government.	The Dutch government's duty is to provide quality education for all. According to a 2004 law, teachers in The Netherlands must not only be qualified, but be competent. Higher Education Institutions governs teacher education. The ministry has devised a set of professional standards for all candidates entering the teaching profession, which serve as "benchmarks" for teacher education (Meijer, Oolbekkink, Pillen, & Aardema, 2014). All graduates of teacher education institutes are considered competent and can enter the profession. Teacher education institutes are responsible for the curriculum of the teacher education programmes. Every 6 years the national accreditation organization (NVAO) evaluates the programme, aims, and curriculum and ensures that it abides by the standards.	Teacher education is delivered in two kinds of institutes: Hogeschools or the universities of applied sciences (UAS), which cater to about 95 % of the students and research universities that cater to the remaining 5 % of the students.	Despite Dutch teachers being paid more than the Organization for Economic Cooperation and Development (OECD) average, there is a shortage of secondary school teachers in the Netherlands that is expected to become severe by 2017.

Norway	Norway, which has the distinction of being one of the richest countries in the world, has suffered from what has been termed "PISA shock" in the last decade (Smith, 2014). The country has scored lower than the mean when compared to other Organization for Economic and Cooperative Development (OECD) nations and other Nordic countries. This has set in motion of series of reform of the Norwegian teacher education system.	Norway has a national framework for teacher education, which all of its universities and colleges follow. There is leeway, however, in how individual institutions interpret this framework.	Norwegian institutions are responsible for the quality of their programmes. The connections between internal and external quality assurance are maintained by the Norwegian Agency for Quality Assurance in Education, which acts independently of the government and institutions of higher learning. There are no tests for teacher candidates when they complete their teacher education programmes.	A recent comparison of Finnish and Norwegian teacher education states that "Norway's teacher education policies are controlled by politics [while] Finland leaves the development of teacher education policies to researchers and educators in the actual fields of education and policy" (Ladegaard, 2012). Also, despite teachers being paid relatively high in Norway, a teacher shortage looms on the horizon.
Portugal	Current forces affecting Portugal's educational system are the Bologna process and the severe financial and economic crisis the country is experiencing.	Teacher education in Portugal is controlled by the Ministry of Education (ME). Teacher education was restructured in Portugal in the wake of the Bologna Agreement. The Decree-Law 43/2007 outlines the professional qualifications for all levels of teaching.	A 3-year degree (licenciatura) and a master's degree in teaching, which typically is 2 years in length, are required to teach in Portugal. This replaced the integrated teacher education degree, and which revolved around integration of theory and practice, subject knowledge and pedagogy. It usually involved a year long practicum in the school.	The separation of the years of preparation into two component parts has resulted in a consecutive model of teacher education that has replaced the concurrent model previously in existence. The major drawback, according to Flores (2014), is the reduced time and space for the practicum. Portugal presently is experiencing a teacher surplus and high unemployment rates.

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Country	Educational backdrop	Governance	Programme highlights	Interesting features
Spain	Like other European countries, Spain's educational system traces back to the mass education movement of the nineteenth century. Most recently, its European Union involvement has brought about changes in the country's structure of teacher education. With the adoption of the European Higher Education Framework, teacher education in Spain has shifted to a 4-year degree programme.	Teacher Education in Spain is mainly state-regulated in its curriculum and the organization (i.e., credits, certification). The state offers guidelines to the regional governments (i.e. Castillay León, Madrid, Andalucía, etc.). However, the decision making process of deciding the final syllabus, how to teach its subjects, organizing the practicum, etc. mainly remains at each university.	In Spain, a University Council develops the core curriculum for teacher education degree-related programmes. Each university designs its courses based on the core curriculum and provides practicum experiences for prospective teachers as required by governmental policy.	The list of the successful teachers is made public in the Boletin Official del Estado (BOE) or in the regional gazettes: i.e., BOCYL (Official Gazette of Castilla y León). The certification is valid nationally and, since the adoption of the European Higher Education framework, it is generally applicable to the other country members of the EU.

Sweden	Sweden, a Nordic social welfare state, provides free education to all including higher education. This mean teacher education is free of charge to those aspiring to be teachers. There are also state subsidized student loans to help cover living expenses, as most students do not stay with their parents.	The responsibility for teacher education falls within the duties of the Ministry of Education and Research, most specifically in the portfolio of the Minister for Higher Education and Research.	All Swedish teacher education programmes, regardless of programme length or specialization, include at least one term of practice teaching in the schools. The teacher education reform of 2011 standardized the teaching degree programmes available in Sweden.	Because Swedish schools are often organized around team teaching, some Swedish teacher education assignments involve group assignments. This group approach prepares prospective teachers for the way schools—their future workplaces—are organized (Edling & Frelin, 2015). However, recently there has been more of a push for teachers to teach individually.
Switzerland	A late adopter of the university model of teacher education, Switzerland incorporated teacher education into its university system in the 1990s. There are great variations among the Swiss cantons and the majority of teacher education is realised in Specialised Institutions offering university degrees (BA and MA) but different from the Universities.	The canton (regional) governance system of Switzerland makes it difficult for teacher education to be coordinated nationally. The only educational matter over which the state government has authority is vocational education. In the past, teacher education credentials were not transferable from one canton to another. However, the Swiss Conference of Cantonal Ministers of Education changed this policy and now transferability exists.	Teacher education delivery in Switzerland is highly diverse, with less diversity occurring in secondary teacher preparation programmes than in elementary ones due to all secondary programmes currently being based in university settings. The number of subjects a prospective teacher is required to study in Switzerland greatly exceeds other countries' expectations.	Teacher education in Switzerland has undergone radical changes recently due to Switzerland being a participating non-member of the European Union in the Bologna process.

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Country	Educational backdrop	Governance	Programme highlights	Interesting features
EASTERN EUROPE AND FORMER SOVIET UNION				
Czech Republic	The Czech Republic has been in state of reform since the splitting up of the former Czechoslovakia in 1993. The Czech Republic has been a member of the European Union since 2004.	The minimum standard of education in the Czech Republic is established by the Ministry of Education. After a teacher education programme has been approved at the faculty level, it must be accepted by the respective university and then by the Ministry of Education. The Ministry of Education has a special advisory board (Accreditation Committee) which supervises the teacher education programmes.	The Czech Republic's 5-year master's degree in teacher education programme was suspended as a result of the Bologna Process (with exception of primary teacher education programme). Apart from universities, professional schools are also qualified to prepare teachers, in a more practically-oriented way. In addition, accredited private and religious institutions are also able to offer teacher preparation programmes for several categories of pedagogical workers.	The shift from a concurrent delivery of a teacher education programme to a consecutive delivery system has been strongly criticized in the Czech Republic. The change, which some consider "destructive," hindered the intermingling of content area knowledge, didactics and reflective practice (Minařiková, Písová, & Janík, 2015).
Estonia	In Estonia, an induction year has been funded, complete with supervisors, since 2004. The Bologna Agreement necessitated changes to the structure of Estonian teacher education, which resulted in the abolition of this paid induction year. Estonia is currently experiencing a shortage of teachers in several subject areas, particularly the science disciplines (Leijen, Kullasepp, & Anspal, 2014).	The general framework for teacher education in Estonia is guided by the regulations of the Government of the Republic of Estonia (i.e., Standard of Higher Education, 2008; Teacher Training Framework Requirements, 2000).	Two types of teachers are prepared in Estonia's system of teacher education: class teachers (Grades 1–4) and subject teachers (Grades 5–12). Both tracks of teachers are prepared in university settings. Teacher education in Estonia is composed of three requisite parts: (1) general educational study; (2) study of a particular content area; and (3) professional preparation (i.e., didactics, etc.). In addition to traditional teacher education programmes offered by institutions of higher learning, there is also an alternate teacher preparation route called "Youth to School," which is based on the British 'Teach First' alternate certification programme. The teacher education curriculum of this alternate certification programme includes volunteer coaching, networking and leadership development.	In Estonia, an induction year has been funded, complete with supervisors, since 2004. The Bologna Agreement necessitated changes to the structure of Estonian teacher education, which resulted in the abolition of this paid induction year. Estonia is currently experiencing a shortage of teachers in several subject areas, particularly the science disciplines (Leijen et al., 2014).

Georgia	Since the dissolution of the Soviet Union, Georgia has undergone massive educational changes to undo historically inherited practices and policies (Collinson et al., 2009).	The State Commission on Educational Facilities regulates the number of students able to enter teacher education programmes in Georgia. Private and public universities are largely in charge of teacher education in Georgia. A 2014 law requires students to pass a teacher certification examination after s/he has completed a relevant degree programme and worked on a probationary basis in a school for 1 year.	Each university in Georgia develops its own standards, requirements and teacher education programme.	Teacher education in Georgia continues to be in flux as the old Soviet system becomes replaced with the new Georgian system that is in the process of being installed.
Greece	The wellspring of Western civilization and the language and culture from which the word, 'pedagogue', originated, Greece, a member of the European Union, is currently suffering a major economic setback. Austerity measures are being felt in all sectors of its society, including education.	Education in Greece is centralized and under the auspices of the Hellenic Ministry of Education and Religious Affairs. However, teacher education in Greece is to a great extent formulated by and the responsibility of universities' departments of education (i.e. Nursery/Early Childhood, Primary/Elementary) and for secondary school teacher education by universities' departments according to their specialization (i.e. Philology, Foreign Languages, Physical Education, History, Chemistry, Biology, Mathematics, Physics, Philosophy, Economics, etc.). Special education teachers who work in the area of primary education are graduates of the university departments of education. Having taught in mainstream schools for a minimum of 5 years, they complete a 2-year in-service training programme in special education.	By virtue of the country's constitution, education is free at all levels of the Greek system. Teachers complete their undergraduate studies, sit for national teacher qualification examinations (subject and pedagogic knowledge) and then are placed on tenure lists maintained by the Ministry of Education and Religious Affairs. Appointments are made when school openings become available and are based on teacher's national teacher qualification examination scores and criteria set by the Ministry of Education. Greek teachers become civil servants after a probationary period of 2 years of successful teaching.	Greece is currently experiencing a teacher surplus, particularly where secondary teachers are concerned. At the present time, with the current austerity measures and the commensurate school consolidations, very few teachers are being appointed. This has created long lapses between teacher preparation and permanent teacher employment with many beginning teachers working as hourly state teaching appointees, providing private tutoring, and/or turning to private schools.

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Country	Educational backdrop	Governance	Programme highlights	Interesting features
Kazakhstan	Formerly a part of the Soviet Union, the idea of teaching for a democratic society and a market economy continues to be somewhat new to the citizens of Kazakhstan. The country has worked diligently to reform its system of education since gaining its independence in 1991 (Collinson et al., 2009; Zogla, 2006). Teacher education has long been a priority in shaping Kazakhstan's independent character and economic future (Chapman, Weidman, Cohen, & Mercer, 2015).	Tertiary education policy in Kazakhstan is driven by three policy documents: (1) the constitution of the Republic of Kazakhstan; (2) the Law of Education; and (3) the State Programme of Educational Development for 2011–2020. In 2010, Kazakhstan became the first country in Central Asia—and the 47th country in all—to join the Bologna Accord.	According to Wilson, Turner, Sharimova, and Brownhill (2013), "the main aim of the teacher education reform programme is to develop the learning and expertise of teachers in the public school system, so that the young people of Kazakhstan will become global learners in the twenty-first century" (p. 1). An additional thrust is to establish a network of professional development centers throughout Kazakhstan.	Where teacher education and development are concerned, Kazakhstan has entered into a critically important partnership with the University of Cambridge in England.

Poland	Since 1999, Poland's educational system has experienced reforms that have increased the qualifications of its teachers. Currently, 98% of teachers in Poland hold a bachelor's and master's degrees.	Teacher education in Poland is mostly offered within the legal and institutional framework of higher education. However, a few teacher training colleges, which are not under the jurisdiction of higher education, produce a small number of teachers. Licensure does not exist in Poland. The college education programmes are being systematically phased out.	Like other European countries, Poland has adapted its delivery of teacher education in response to the Bologna Accord. Poland's old 5-year master's degree route to teacher preparation has been phased out and has been replaced by a 3-year bachelor's degree and a 2-year master's degree.	Initial teacher education is provided within two sectors of the education system: higher education sector and the school education sector (until 2015). The degree programmes, including first-, second- and long-cycle programmes, are offered within university type HEIs, namely in universities, technical universities, polytechnics and academies. Non-degree postgraduate programmes are offered by non-university HEIs (with no rights to confer the academic degree of doctor). In the school education sector are offered the college programmes (now being phased out), including teacher training colleges and foreign language teacher training colleges.

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Country	Educational backdrop	Governance	Programme highlights	Interesting features
Russian Federation	Similar to other countries that constituted the former Soviet Union, the Russian Federation has struggled to replace Soviet methods of teaching for industrialization and collectivization (Zogla, 2006) with methods and approaches that would help the country align more favorably with the Bologna Agreement and Europe.	Teacher education in the Russian Federation is controlled by the Ministry of Education and Science.	The old 5-year master's degree programme in the Russian Federation has been abandoned and has been replaced with a 3-year bachelor's degree and a 2-year master's degree. Elementary teachers are prepared in one department in the Russian Federation; secondary teachers are prepared in a different department.	In Russia, approximately 75 % of the teaching work force is female. The more than 190 institutions offering teacher education were reduced to 62 in 2009.

Slovakia	Before 1989, teachers were trained to work in highly homogenous environment of identical state schools with a unified national curriculum. Slovakia joined the European Union in 2004. But the implementation of Bologna process started earlier, around 2000 when Slovakia joined OECD and NATO as well. Two main strategies have influenced Slovakia's higher education at the turn of the millennium: the Bologna Process and the Lisbon stategy of the EU.	The Slovak governing body for elementary, secondary and higher education, including educational facilities, lifelong learning, science, and the state's support for sports and youth, is the Ministry of Education, Science, Research and Sport . It works with regional authorities to put national policy into action. Different regional authorities are responsible for founding and establishing public schools. Preschools, kindergartens, primary and lower secondary schools are founded and managed by municipalities, higher secondary schools (called middle schools) are founded and managed by districts/ counties, public higher education (universities) are self-governing subjects subsidized directly by the Ministry.		Slovakia participates in a number of international comparative studies where education is concerned. These include: OECD's PISA (Programme for International Student Assessment) and TALIS (Teaching and Learning International Survey) tests; and the International Association for the Evaluation of Educational Achievement's (IEA) PIRLS (Progress in International Reading Literacy Study) and TIMSS (Trends in International Mathematics and Science Study) tests. In grade five and grade nine of compulsory education the national testing is taking place (called Testing 5 and Testing 9). For Slovakia, external evaluations of students and schools are typical. There is a strong school inspection system as well. Lack of internal and self-evaluation within the Slovak schools is the weak point stated in the OECD report in 2014.

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Country	Educational backdrop	Governance	Programme highlights	Interesting features
Turkey	The geographical meeting place of Eastern and Western cultures, Turkey established its first teacher training institution in the middle of the nineteenth century in Istanbul (Tarman, 2010). Recent sources showed that first teacher training institutions were established by Mehmet the Conqueror in the middle of fourteenth century within the body of Eyup Madrasah. Recently, Turkey has been aligning its teacher education structure with the Bologna Agreement in order to prepare the country for its higher education integration into Europe (McKeown, 2015).	Initially, the Ministry of Education gained control of the whole educational system when Turkey became a republic. In 1981, however, the responsibilities and activities of teacher training were transferred from the Ministry of National Education to universities through a Higher Education Council (HEC). This Council of Higher Education is responsible for all higher education reforms (YŐK, 2014).	In Turkey, there is a first year probationary teaching period, which along with one's degree completion, is necessary for certification (Yuksel, 2012).	Candidates for teacher education programmes are selected on the basis of standardized multiple choice questions in university entrance examinations. Students who graduated from teacher training high schools received additional points before 2014. In 2014, these schools ceased to exist. Most Turkey universities with faculties of education offer dual (both regular and evening) programmes. Although students in the evening programmes are required to pay higher tuition than the ones enrolled in regular programmes, they are admitted to the same courses of study with relatively lower scores than the regular students. Regular students are, however, not required to pay tuition fee anymore because a few years ago was repelled. Turkey has a career ladder for teacher advancement (Yuksel, 2012) which unfortunately has been suspended. Currently, there is an over-supply of secondary subject teachers but a lack of pre-school and primary school teachers in Turkey.

MIDDLE EAST				
Cyprus	Cyprus continues to deal with political and geographical disputes that influence how education is delivered in the country.	The Ministry of Education and Culture has jurisdiction over education in the Republic of Cyprus. Cyprus's policy initiatives ideally seek a peaceful coexistence among majority and minority groups, among other disputed matters (Zembylas et al., 2011).	Cypriot teachers are prepared in institutions of higher education with an average course of study being 4 years for preservice teacher education. There is increasing emphasis and a growing body of literature about in-service education and internship programmes in Cyprus.	After prospective teachers are prepared in Cyprus, their names are placed in a registry according to their areas of specialization and the year they graduated from their teacher education programmes. This practice was in place until recently. Currently, teachers are given examinations and are then offered positions.
Egypt	For several decades, the quality of primary education in Egypt has been poor, which has resulted in an illiteracy rate around 28 % (Keddie, 2013). Until 2012, less than 10% of the total number of schools in Egypt met the national standards for quality education (UNICEF, http://www.unicef.org/egypt/education.html).	The Ministry of Education takes a centralized control of developing and monitoring teacher education programmes in Egypt. It cooperates with other international organizations (i.e., UNESCO, World Bank, United Nations Development Programme, UNICEF) to enhance teacher education. UNICEF, for example, is supporting the Ministry of Education to develop standardized teacher's performance observation tools, training manuals, and a skilled cadre of trainers nationwide (UNICEF, http://www.unicef.org/egypt/Fact_Sheet_-_Education.pdf).	The Mubark Teacher Training Institute holds short courses on pressing educational topics and organizes workshops about language and the use of IT in education. This national institute aims to transfer information from the Ministry of Education directly to school teachers. Remote videoconferencing is another form of national training, which is to facilitate the communication between teachers and the Ministry of Education (Maklad, 2008).	In Egypt, teachers earn small salaries, which amount to a little more than $281 per month range (Keddie, 2013). Sometimes, Egyptian university professors interact with the schools and assist with teacher improvement (Maklad, 2008).

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Country	Educational backdrop	Governance	Programme highlights	Interesting features
Iran	Iran has a long historical and cultural legacy where education is concerned (Azam, Fauzee, & Daud, 2014). Teachers in Iran are considered nation-builders (Shamohammadi, 2012). Iranian teacher education programmes have been in a state of reform since the 1990s.	Teacher education is governed by the Ministry of Education in Iran. Iranian teachers are prepared at teacher education universities (Daneshgah Farhangian). There are typically two gender-based institutions per province: one for males; one for females (Gholami & Mehrmohammadi, 2014). A teaching certificate is required for employment at nearly all Iranian public schools. For primary and middle school teachers, this certificate requires the candidate to have a post-diploma (associate's degree: 2 years after high school). For high school positions, preservice teachers need a bachelor's degree in a suitable content area (Samiei, 2011). The same is not the case for Iran's burgeoning private schools where "personal relationships/ networks and principals' personal approaches" (Shamohammadi, 2012, p. 132) are key determining factors in the hiring decision.	The existing teacher education curriculum in Iran revolves around teacher content knowledge, teacher pedagogical knowledge and pedagogical content knowledge. A fourth strand is currently being introduced: performance competencies (Gholami & Mehrmohammadi, 2014). In the new teacher education programme and within the strand called PC, three modes of teacher inquiry are emphasized. They are: action research, lesson study and narrative research. This combination of three approaches is expected to assist in achieving the meta-competency of reflectiveness which has been set as the guiding principle in the new TE programme.	Since 1996, the Ministry of Education has supported the teacher research pedagogy for in-service teachers. This approach is now being introduced to Iran's teacher education programme at its Daneshgah Farhangians (Gholami & Mehrmohammdi, 2014).

Israel	Israeli society is highly diverse, involving many different national, ethnic, and religious groups (Paul-Binyamin & Reingold, 2014). No multicultural agenda has ever been introduced to Israel. The reciprocal relationships among the various groups are characterized by "mutual rejection" (Paul-Binyamin & Reingold, 2014).	The teacher education colleges in Israel are under the supervision of Ministry of Education. While most schools are regulated by the Ministry of Education, the state schools are divided into national and religious sectors (i.e., Arab, Jew, Orthodox Jews), each of them separately supervised by the Ministry (Yogev, 1996). By contrast, university teacher education programmes are autonomous although they follow the Ministry's general curricular guidelines.	To develop teacher education, Israel initiated the academization of teacher training colleges and the professionalization of teaching (Zohar, 2002). Israeli preservice teachers are prepared in university teacher colleges, which provide teaching certification programmes for the elementary and junior high school levels; or in university academic schools of education that offer programmes leading toward the high school teaching certificate. There are additional Arab speaking institutes for the training of Arab teachers, although the majority of Arab teachers are trained in Hebrew speaking universities and colleges. There are also separate teacher preparation institutes for independent orthodox schools (Yogev, 1996). Before a teacher is granted his/her teaching license, an assessment is made by a committee headed by an inspector from the Ministry of Education (Zohar, 2002). Lower secondary teachers may complete a 3-year programme and be qualified to teach grades kindergarten through ten, or they may undertake a 4-year integrated programme at teacher training college, earning both a bachelor's degree and the teacher's diploma. Upper secondary school teachers must hold a university bachelor's degree in a disciplinary field other than education and a teaching diploma, which may be completed either in a 1 or 2 year programme following the award of the bachelor's degree or as a 3 or 4-year integrated programme" (Schumacher, 2008).	An induction programme operates during the first year of teaching in Israel. Inductees work as independent teachers throughout the entire study year for at least 12 weekly hours. The induction year serves as a basis for the assessment of inductees. A positive report at the end of the induction year is necessary for the teacher to be granted a teaching license (Lazovsky & Reichenberg, 2006).

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Country	Educational backdrop	Governance	Programme highlights	Interesting features
Oman	Teacher education is available at only a few institutions. Sultan Qaboos university opened in 1986 and consists of six colleges. Among these colleges is the College of Education which is the sole academic institution that started to grant bachelor degrees in education in different subjects areas such as Islamic science, Arabic language, Science, Mathematics, Arts and physical education. All graduated students from this college are qualified to teach at elementary and secondary government schools.	The Ministry of Higher Education governs higher education in Oman. In the mid-2000s, the ministry consolidated six teacher education colleges into one institution of higher learning, the College of Applied Sciences.	Males and females are prepared to be teachers in different institutions in Oman. Some programmes have more emphasis on English as a language of instruction than others. Some teacher education programmes include cultural components (Arabic language, Islamic origins).	The Bachelor of Education degree in Oman takes 4 years at most institutions. At a few institutions, it takes 5 years to complete.

AFRICA				
Botswana	When Botswana gained its independence in 1966 from the British, its general state of education was poor. Since then, the government has worked to expand both primary and secondary education and to increase its number of teacher education programmes.	The Ministry of Education and Skills Development has jurisdiction over education in Botswana. Initially, the Department of Teacher Training and Development was established in 1989 to spearhead the development of teacher education in the country. The Department provides leadership and direction to both preservice and in-service teacher education at college and university levels.	Botswana's universities have more autonomy over decision making where teacher education is concerned than does its colleges. There are practicum experiences of varying lengths in Botswana. Seven weeks of teaching practice is required for the country's Bachelor of Secondary Education degree programme.	Twelve education centers are responsible for teachers' professional development in Botswana. At the University of Botswana the Department of Primary Education (DPE) programmes focus on teachers' professional development in the areas of content knowledge and pedagogical content knowledge. Although teachers in primary schools are generalists, the DPE programmes offer specializations in all subjects taught in primary schools.

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Country	Educational backdrop	Governance	Programme highlights	Interesting features
Kenya	Prior to the Harambee Movement (1960s–1970s) which organized fundraising efforts for the improvement of universal primary education, the Kenyan education system was largely governed by small informal local groups directed by parents. Through the movement, the Ministry of Education sought to move the country's education system toward a goal of offering students an education that was more formal, guided by teachers who were civil servants and directed centrally through the Ministry of Education, rather than driven by local parental interests (Duflo, 2014).	Kenyan Education is fostered under the Ministry of Education. Because of the increased standardization and professionalism in the preparation of teachers, Kenyan hiring is no longer limited to traditional local committees and Parent Teacher Associations, but also occurs through the Ministry of Education's Teacher Service Commission. In public primary and secondary schools, hiring of teachers is done by the Teachers Service Commission as the sole employer on advertisement. Local primary school committees hire teachers for the primary schools only in cases where there are teacher shortages in primary schools. Parents Teachers Associations are found only in secondary schools where in conjunction with the Boards of Governors [management] may hire already qualified teachers as temporary teachers for the secondary school in subjects where there are shortages – again these are paid agreed salaries and known only within the respective schools. In both cases, the temporary teachers are not considered teachers.	Since the 1980s, the Kenyan University System, which provides teacher training, has grown from a single university to five (Deal, 1999). In 2012 through to 2013, the government upgraded 15 constituent colleges to full university statuses hence Kenya currently has 22 Public universities. Of the current 22 public universities, only 5 do not offer teacher Education programmes. Those individuals enrolled in teacher education programmes participate in varied courses of study and are placed with cooperating teachers under university assigned supervision.	As Kenyan teacher education moves toward formal education and standardized curriculum, there remains uneven representation, participation, and often a shortage of cooperating teachers who have been sufficiently prepared to support incoming teacher candidates.

South Africa	Following a long period of Apartheid in South Africa, university-based teacher education programmes were one of many post-Apartheid changes.	Parents Teachers Associations are found only in secondary schools where they, in conjunction with the Boards of Governors [management], which may hire already qualified teachers as temporary teachers for the secondary school in subjects where there are shortages – again these are paid salaries and known only within the respective schools.	In the early 2000s, 37% of South African teacher education students were enrolled in teacher education programmes offered in public-private distance education partnerships.	Over 100 private providers are currently involved in teacher education in South Africa.
Zambia	When Zambia loosened Britain's colonial chains, it suffered from a lack of infrastructure to provide education to its people. The country is currently working hard to offer 7 years of primary education to all children.	The temporary teachers are not necessarily trained.	Ten teacher education colleges in the country are authorized to provide General Certificates of Education and five teacher education colleges are able to offer the diploma programmes. Only colleges affiliated with the University of Zambia have the authority to offer teacher education degree programmes. Preparation to teach subjects like industrial arts and agricultural science is not within the policy jurisdiction of the Ministry of Education (Manchisi, 2004).	135,000 qualified teachers will be needed in Zambia for its citizens to have 7 years of primary education by 2030 (UNESCO).

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Country	Educational backdrop	Governance	Programme highlights	Interesting features
SOUTH ASIA				
China	Education in China has grown rapidly since the reform and opening-up of the country in the late 1970s. Tremendous resources have been invested in teacher preparation and development. According to Ding and Sun (2007), the teaching force in China is generally in a state of shortage, especially in the western, less-developed regions and rural areas.	The Ministry of Education (MOE) oversees teacher education in China. Under the direction of the MOE, local governments have primary responsibility for running the teacher education system.	In addition to governing teacher education programmes, the Ministry regulates the selection of practicum schools and supervisors, determines the qualifications for university and school supervisors, determines the number of candidates assigned to a supervisor, and sets the number of hours preservice teachers must spend in schools, among varied other things. Increasingly, universities which have teacher education programmes have created their own partnership schools based on the regulations. Additionally, while the central government establishes the teacher preparation requirements and standards, the programmes vary in entry criteria, exit requirements, certificate examinations and other requirements, as they are under the operation of respective provincial education commissions. Prospective teachers in China spend a great deal of time observing the classrooms of experienced teachers.	Unlike many countries, China traditionally has had no system of teacher certification. Only since the early 1990s has the government started to implement teacher examinations and credentials. Another feature worth mentioning is that the students enrolled as part of a government-support cohort in six normal universities in China are entitled to receive government-supported teacher education, which not only covers tuition and accommodation fees, but also provides a subsidy.

Japan	In the aftermath of World War II, Japan followed the U.S. Education Mission's recommendation to incorporate teacher education into its university system.	Japanese teacher education is under the jurisdiction of the Ministry of Education, Culture, Sports, Science and Technology (MEXT). The statute most influencing teacher education is the Law for Certification of Educational Personnel. Minimum requirements are nationally determined, but the 47 prefecture boards of education can require further preparation in order for candidates to teach in particular locales. After 1 year of probation in schools, beginning teachers become permanent employees (Howe & Arimoto, 2014).	Different requirements for licensure exist for different levels of Japanese schooling. Programmes also differ because there are over 1000-MEXT authorized teacher education institutions. As measures to keep capable teachers at school, MEXT introduced educational personnel certificate renewal system in 2009 in order to create a framework to reward teachers' motivations and efforts. Also MEXT established a new required professional subject, Kyoushoku Jissen Enshu in 2010. The content of Kyoushoku Jissen Enshu is for students to reflect on their own learning over the years spent at the university.	Becoming a teacher is very competitive in Japan because teachers are paid more than average citizens. Teaching is one of the few lifetime professions for Japanese females. Recently, the working conditions of teachers have eroded (Howe & Arimoto, 2014). Local authorities are focused on contemplating the role of NPO support while also engaging in various activities, helping to launch community businesses and social businesses, and enhancing cooperation between NPOs and other sectors.

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Country	Educational backdrop	Governance	Programme highlights	Interesting features
South Korea	After South Korea overcame the Korean War, a new philosophy to democratize education was embraced with support from the United States. In a short period of time, South Korea's literacy rate rose from 22% to over 90%, making it one of the most literate nations in the world.	Teacher education in South Korea is centrally governed by the Ministry of Education (MOE) and highly regulated. The Ministry of Education holds the belief that "the quality of education cannot exceed the quality of teachers," thus it enacts policies aimed to improve teacher quality and capacity. Once teacher education students graduate from university, they are automatically eligible to receive a teaching certificate. The certificate indicates the level at which one can teach and the subject areas one is authorized to teach. The credential allows teachers to be employed anywhere in South Korea.	Primary school teachers attend national universities. Secondary school teachers are prepared in colleges of education or in education departments of private or public universities. The practicum in South Korean teacher education generally takes 4 weeks. Both primary and secondary candidates take entry-level examinations in order to study teacher education. In order to become a teacher, applicants need to attend education courses run and managed by teacher education institutes, and acquire a teaching certificate relevant to a given category. Teachers are classified into several categories, for example, elementary teachers, secondary teachers (e.g., English teacher, Math teacher, etc.), professional counselors, librarians, and nursing teachers. They are required to meet the specific qualification criteria for each category and to be licensed by the by the Deputy Prime Minister of Education as stipulated by a South Korean presidential decree.	The status of teachers in South Korea is very high in comparison to other professions. Primary and secondary teachers in Korea enjoy high social status as professionals with corresponding incomes because they are civil servants. There are more university teacher education programmes in the country than departments involving other academic or professional disciplines (You, 2014). Because South Korea has an oversupply of teachers, only one in five teacher candidates ever becomes employed.

Taiwan	Since the retreat of the Nationalist (KMT) regime from Mainland China to Taiwan in 1949, this island state has undergone major reforms in the economic, political and social spheres. In the 1990s, following economic, political and social changes, a further wave of reform focused on education. In 1994, a landmark Teacher Education Act was enacted to implement a brand-new diversified teacher education system.	Initially, Taiwan pursued teacher quality through a continuous upgrading of the single-purpose normal institutions in a highly regulated monopoly system. Teacher quality was primarily focused on the academic ability of entering students. Government intervention played an important role in preparing quality teachers to meet the expansion of the system due to population growth. The major reform in 1994 heralded a new era in Taiwan's teacher education. Since then, the focus has been on diversification, deregulation and competition. Hence, teacher quality is no longer limited to academic ability; other factors such as personal qualities, motivation and commitment are additionally taken into account.	Before 1995, teaching training education programmes were only provided at teachers colleges (preparing elementary and kindergarten teachers) and normal universities (secondary teachers). After the Teacher Education Law was enacted in 1995, public and private colleges and universities became eligible to provide teacher education programmes to prepare teachers (40 credit hours for elementary teachers; 26 credit hours for secondary subject area teachers).	One of the most important missions of institutions for teacher preparation in Taiwan is to promote the professional growth of both prospective and practicing teachers. At teachers' colleges, for example, there are general courses (to increase understanding of liberal arts), specialized courses (to enhance understanding of content area knowledge), and professional courses (to cultivate professional knowledge and skills).

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Country	Educational backdrop	Governance	Programme highlights	Interesting features
EAST ASIA				
India	India has a long history of being a British colony. Prior to that, the lower castes in Indian society were denied education by design. Mass education, which was introduced by the British and reinforced in contemporary India by the Right to Education Act of 2009, has challenged elitist views of education in India (Ratnam, 2013). The current discourse in teacher education aims to create a humane and professional teacher (NCTE, 2009) who is sensitive to the context of contemporary India. The high-powered commission on teacher education appointed by the Supreme Court of India in 2012 made this landmark move.	Education is essentially state governed in India. The National Policy of Education (1986) allowed central and state governments to collectively establish a mass network of District Institutes of Education and Training (DIETs). Currently there are 28 DIETs and 18 English Language Teaching Institutes throughout the country. More recently, private agencies have entered the education sector to meet the demand for preparing teachers. The National Council for Teacher Education (NCTE) as a statutory body is responsible for planned and coordinated development of the teacher education system throughout the country. The Central Institute of English and Foreign languages (CIEFL), Indira Gandhi National Open University, (IGNOU) also offers certificate and diploma in teacher education.	Traditionally, teacher education is offered as a 2-year diploma (D.Ed.) and 1 year Bachelor (B.Ed.) programme to teach in elementary and secondary school respectively. The Bachelors of Elementary Education (B.El.Ed.) degree is the only 4-year integrated professional degree programme in India (Batra, 2009). There is a vast network of private organization and non-government agencies providing teaching certification in India. Currently, teacher education programme is undergoing substantial reform with significant focus centered on the building of intellectual links between universities and teacher education institutions and increased durations of programmes. Those enrolled in 4 year university programmes have their practicum spread over 4 years: 1 week in the first year, 3 weeks in the third year, and 16–18 weeks in the fourth year.	The 4-year Bachelors of Elementary Education (B.El.Ed.) is a benchmark programme in the country which prepares teachers to critically engage with theories and challenge status quo questions of caste, community and gender asymmetry (Batra, 2005). In their final year, preservice teachers conduct two action-research projects which focus on sociological and pedagogical aspects of their teaching.

Pakistan	Since gaining independence from Britain in 1947, Pakistani policy makers have worked hard to shift the field of education from being colonial and administratively driven to being professional and forward-moving (Rizvi, 2013). This shift is outlined in the report of the Commission of National Education in 1959, which called for a complete restructuring of the country's educational system. This restructuring has proven to be a difficult goal to put into action.	All teacher education institutions are provincially administered in Pakistan. Each of the provinces has its own unique structure with different nomenclatures. The Federal Ministry of Education brings together responsibilities for different sub-sectors of education. Within a Province or Area Administration, the authority is further divided across District and Institutional levels. Teacher education has traditionally been considered as a provincial subject. Each province has a distinct centralized organizational structure to prepare teachers for schools of different levels.	A practicum is a compulsory component of all teacher education programmes in Pakistan. Also, most teacher education programme offering institutions have practice schools attached to them, many of which are under-resourced. In the teacher education programmes, Islamic ethical values are heavily emphasized in professional development.	Becoming a teacher remains the last choice of an occupation in Pakistan (Rizvi, 2013). Teaching is not regarded as a full-time profession. Most male teachers are engaged in other jobs, small businesses or work on farms after school hours. The teaching workforce in the private sector has grown significantly in recent years. The majority of teachers are employed at the middle and secondary school levels. Many private schools have developed their own teacher training programmes with a clear emphasis on content area preparation.
SOUTH-EAST ASIA				
Malaysia	Malaysia is an ex-British colony which gained its political independence in 1957. Malaysia is a society divided by race, language, religion, culture, and to some extent by occupational and regional differences.	Currently, Malaysia has a democratic political system, ruled by a coalition. The government under the banner of the National Front is comprised of representatives of primarily three political parties. The Ministry of Education regulates teacher education in Malaysia.	Teacher education occurs at two levels, with the training of non-graduate teachers in the teacher training colleges and the training of graduate teachers in Malaysian universities. Graduate teachers for the secondary schools are mostly trained in the universities which offer two types of teacher education programmes: one being the consecutive programme; the other being the concurrent programme.	Malaysia's aim is to have all elementary and secondary teachers in the country prepared in universities. The Ministry of Education has declared that all teachers in Malaysian secondary schools and 50 % of teachers in primary schools will be university-educated by the beginning of 2016.

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Country	Educational backdrop	Governance	Programme highlights	Interesting features
Philippines	The Philippines was colonized first by Spain and then by the U.S. It was also occupied by Japan during World War II. Like its neighbor, Singapore, the Philippines emerged from its checkered colonial past with a citizenry that highly respects quality education. From the time the Spanish colonizers established a school system more than a century ago, the preparation of Filipino teachers has occupied center stage in the growth of the educational system in the Philippines.	In 1997, the Commission on Higher Education (CHED), which governs teacher education in the Philippines reported that there were 815 teacher education institutions (TEIs). Approximately 85% of the institutions are private, and the rest are state-supported. According to UNESCO, the Philippines spends less than 1/11 and 1/8 of what Singapore and Thailand, respectively, dedicate to education.	Teachers in the Philippines generally complete a 4-year college degree in education, and, in addition, must jump the hurdle of a difficult national licensure examination.	The financial situation of the education sector has made teaching an unattractive profession in the Philippines. A public school teacher's maximum salary is P10,000. This, according to the National Economic and Development Authority (NEDA), is short of the P16,710 needed for an average family to survive. Also, teachers' conditions in the work environment (20 h of active teaching, 15 h of lesson planning, 10 h of other assigned duties, etc.) are not conducive to professional growth.

Singapore	After serving as a British colony, Singapore emerged as an independent nation whose leadership has greatly valued teaching and teacher education. Singapore's teacher education model draws its assumptions and practices from the UK. The National Institute of Education is the single source of initial teacher education graduates and is responsible for almost all educational research and professional development courses.	The Ministry of Education in Singapore hires the nation's teachers. The National Institute of Education, as mentioned earlier, prepares them. The National Institute of Education (NIE) works in partnership with the Ministry of Education and the schools, NIE to provide all levels of teacher education, from initial teacher education programmes to professional development programmes for in-service teachers and executive leadership programmes for principals, department heads and other school leaders.	The Ministry of Education offers "Teaching as a Career" seminars to attract potential candidates to the profession. Individuals apply to be teachers on the Ministry's website. Those who are shortlisted and successfully interviewed are allowed entry to the national university programme. The Postgraduate Diploma in Education (PGDE) programme consists of educational studies (20%); curriculum studies (50%), practicum (25%) and language enhancement and academic discourse skills (5%). In the practicum year, preservice teachers not only receive their tuition from the National Institute of Education, but are also paid a full salary and receive benefits equivalent to other Singaporean civil servants.	All preservice teachers in Singapore are guaranteed teaching positions. Singapore is one of a handful of nations that systematically seeks to attract and retain the most talented teachers possible. Also, NIE encourages student teachers to participate in overseas service learning journeys and to complete exchange semesters at overseas universities. In addition, the formal curriculum also helps to expose student teachers to global issues and raises their understanding of the common challenges and focus across national boundaries.

(continued)

Country	Educational backdrop	Governance	Programme highlights	Interesting features
AUSTRALIA AND THE SOUTH PACIFIC				
Australia	Teacher education in Australia has been deeply influenced by the English due to colonial ties and Australia's continued association with Britain. Variation in the level of teacher quality is seen in the Australian educational system.	There are overlapping responsibilities of states and the Commonwealth for universities and teacher preparation. Generic national professional teaching standards are mandated across Australia through the Australian Institute for Teaching and School Leadership (AITSL) (McGraw, 2014). Preservice teacher education programmes are designed by faculties in universities, which are subsequently authorized by the states through boards, councils or institutes of registration (Sim, 2006).	Selection for teacher education in Australia is based on Grade 12 results, or first-degree results, in the case of graduate entry programmes (Sim, 2006). The preparation of primary teachers is of a generalist nature. There are also specializations in Health, Physical Education, Science, Mathematics and Music available. At the secondary level, preservice teachers major in two subject areas. Graduate entry programmes are 1 or 2-years in duration and vary across faculties. Pedagogical preparation more than subject area content preparation is emphasized (Sim, 2006). Preservice teacher education programmes typically involve a culminating teaching portfolio that provides documentation of their achievements in terms of academic performance and professional attributes (Sim, 2006).	Australia is developing new programmes that value the teacher as scholar (Aspland, 2006), which indicates that the country is making a commitment to a more scholarly orientation to teacher development. Australia is dealing with an aging teacher workforce and increasing retirement due to somewhat pernicious working conditions in some of its schools. Teacher retention and attrition has become a burgeoning issue in Australia.

New Zealand	New Zealand was colonized by Great Britain in the nineteenth century. While the country has been fully independent for many years, Queen Elizabeth II is still the country's official head of state.	Education in New Zealand is directed by the central government through the Ministry of Education. The Minister of Education has responsibility for the quality and supply of teachers. Teacher education is specifically regulated by the Education Council of Aotearoa New Zealand (EDUCANZ), which approves and monitors initial teacher education, the registration of teachers and the maintenance of professional standards (Ell, 2011).	There are 15 providers of initial teacher education for primary teachers, offering 32 different specializations. There are nine providers for secondary teachers, offering 15 specializations. Seven of the country's eight universities offer programmes for both sectors. In primary teacher education there are several providers offering Maori-medium preparation. Other providers in both sectors are church-based organizations or private institutes (Ell, 2011). Once teacher candidates have completed their formal preparation, they apply for teaching positions as provisionally registered teachers. The provisional registration period is a minimum of 2 years of continuous service in an appropriate position. Then, the provisionally registered teacher (PRT) must demonstrate to the EDUCANZ that they have met the registered teacher criteria. This is commonly achieved through the preparation of a portfolio of evidence (Ell, 2011). The schools in which PRTs are placed receive additional funding to provide induction for 1 day per week in the first year of teaching, and half a day per week in the second year. The activities for the induction period are planned by the schools.	All prospective teacher education students are interviewed and assessed in terms of their communication, numeracy and literacy skills, by selection committees representing different sectors of society (Ell, 2011).

Appendix 2: Teacher Education Programme Type by Country and by Region

Country	Programme-type	Consecutive/ concurrent	Duration in years	Grade span	Specialization
North America					
Canada (i.e., Nova Scotia)	Primary	Consecutive	4 + 2	1–6	Generalist
	Secondary (Junior + Senior)	Consecutive	4 + 2	7+	Specialist
United States	Primary	Concurrent	4–6	1–3/4/5	Generalist
	Primary	Consecutive	4 + 1	1–3/4/5	Generalist
	Primary + Secondary	Concurrent	4	4/5–8/9	Specialist
	Primary + Secondary	Consecutive	4 + 1	4/5–8/9	Specialist
	Secondary	Concurrent	4	6–12	Specialist
	Secondary	Consecutive	4 + 1	6–12	Specialist
Central America					
Mexico	Post-graduate 4 (during in-service)	Consecutive	2	10–12	Specialist
Caribbean					
Cuba	Undergraduate – Primary	Consecutive	5	1–6	Generalist
South America					
Argentina	Tertiary Early Childhood Education (Not undergraduate)	Concurrent	4	Infants	Generalist
	Tertiary Elementary education (Not undergraduate)	Concurrent	4	1–7	Generalist
	Undergraduate + pedagogic courses	Consecutive	4 + 1–2	8–12	Specialist
Brazil	Certificate Level (Training Colleges)	Concurrent	3	1–5	Generalist
	Diploma Level (Training Colleges)	Consecutive	3–4 + 1	6–9	Specialist
	Degree Level Bachelor (University)	Consecutive	5	High school	Specialist
Chile	Generalist	Concurrent	4	1–8	Generalist
	Generalist with Further Education	Concurrent	4	5–8	
West Europe/United Kingdom					
England	Undergraduate	Consecutive			
	Postgraduate	Consecutive	1	1–5	
	Postgraduate	Consecutive	1	6–12	
	Employment-based	Concurrent			

(continued)

Country	Programme-type	Consecutive/ concurrent	Duration in years	Grade span	Specialization
Northern Ireland	Undergraduate	Consecutive	3	K-4	Generalist
	Postgraduate	Consecutive	4	5–12	Specialist
Scotland	Bachelor of Education	Consecutive	4		
	Postgraduate	Consecutive	5		
Wales	Undergraduate	Consecutive	3	K-3	Generalist/ specialist
				4–7	
				Primary (children aged 3–11)	
	Postgraduate	Consecutive	1 year	Primary (children aged 3–11);	Generalist/ specialist
				Specialist secondary (children aged 11–18)	
France	Postgraduate	Consecutive			Generalist/ specialist
Finland	Undergraduate & Postgraduate – primary	concurrent	3 + 2	1–6	Generalist
Germany	Grade 1–4 Teachers	Hybrid	3.5 + 2	1–4	Generalist
	Grades 1–9/10 with at least two teaching subjects	Hybrid	3.5 + 2	1–9/10	Specialist (2 subject areas)
	Grades 5/7–9/10 with at least two teaching subjects	Hybrid	4 + 2	5/7–9/10	Specialist (2 subject areas)
	Grades 5/7–12/13 with at least two teaching subjects	Hybrid	4 + 2	5/7–12/13	Specialist (2 subject areas)
Netherlands	Primary or secondary	Consecutive in universities	1 after a 4 year bachelor		Generalist
	Primary or secondary	Concurrent in Universities of Applied Sciences (UAS)	4		Generalist
	Secondary		1 year after master's degree		Specialist

(continued)

Country	Programme-type	Consecutive/ concurrent	Duration in years	Grade span	Specialization
Norway	General Teacher Education with Subject Option (All)	Concurrent	4	1–10	Generalist with extra subject preparation
	General Teacher Education (All)	Concurrent	4	8+	Generalist
	Teacher Education Programme	Consecutive	3 + 1 or 5 + 1	8+	Specialist (2 subject areas)
	Master of Science/Arts	Concurrent	5	5–12	Specialist (2 subject areas)
Switzerland	Teacher for 1–2/3	Concurrent	3	1–2/3	Generalist
	Teacher for Primary School	Concurrent	3	1–6	Generalist
	Teacher for Primary School	Concurrent	3	3–6	Generalist
	Teacher for Secondary School	Concurrent and consecutive	4.5	7–9	Generalist and Specialist
	Teacher for Secondary	Consecutive	6	9–11	Specialist
Spain	Teacher of Primary Education	Concurrent	4	1–6	Generalist
	Teacher of secondary school		4 + 2		specialist
Sweden	Undergraduate	Concurrent	3–5	k-3	Generalist
	Post graduate	Concurrent	4	4–6	Generalist
	Undergraduate	Concurrent	3	k-6	Generalist
	Post graduate	Concurrent	4–5	7–9	Specialist
	Post graduate	Consecutive	5	9 and above	Specialist
East Europe and the Former Soviet Union					
Czech Republic	Undergraduate	Concurrent	3		Generalist
	Undergraduate	Concurrent	3		Generalist
	Post graduate		2		Specialist
Estonia	Undergraduate	Concurrent	3	K - 2	
	Post graduate	Concurrent	5	1–6	Generalist
	Post graduate	Consecutive	3 + 2	5–12	Specialist
Georgia	Bachelors	Concurrent	3	5–12	Specialist
	Masters	Concurrent	5	5–12	Specialist
	Masters	Consecutive	5	5–12	Specialist
Greece	Undergraduate	Consecutive	4	1–6	Generalist
Kazakhstan	Undergraduate		3–4	4	Generalist
	Post graduate		1–2	5–11	Specialist
Poland	Bachelor of Pedagogy, Integrated Teaching	Concurrent	3	1–3	Generalist
	Bachelor's degree	Concurrent	3	4–12	Specialist
	Post graduate	Concurrent	3 + 2	8–12	Specialist

(continued)

Country	Programme-type	Consecutive/ concurrent	Duration in years	Grade span	Specialization
Russian Federation	Primary Teacher Education	Concurrent	5	5–11	Generalist
		Concurrent	5	1–6	Specialist
Slovakia	Bachelor's + Master's degree	Concurrent	3 + 2		Generalist with one or two subject area preparations
Turkey	Bachelor's degree Primary teachers	Concurrent	4		Generalist
	Bachelor's Degree Secondary teachers	Consecutive	5		Generalist
Middle East					
Cyprus	Bachelor's degree Primary teachers	Concurrent	4		Generalist with two extra subject preparations
	Bachelor's degree in the subject of specialization Secondary teachers	Concurrent	4		Specialist
	A first degree + a postgraduate qualification in the specialist area Special education	Consecutive			Specialist
Egypt	Undergraduate Basic education and general secondary education teachers	Concurrent			Generalist/ Specialist
Israel	Teacher Training College Lower secondary teachers	Concurrent	3/4	k-10	Generalist
	University Academic Schools of Education	Consecutive	3/4		Specialist
	Bachelor's degree in a disciplinary field				
	Upper secondary school teachers				
Iran	Associate degree in primary teaching (2 years after high school)	Concurrent	2	1–5	Generalist
	Primary teachers				
	Associate degree in one specialized subject	Concurrent	2		Specialist
	Lower secondary level teachers				
	Bachelor's degree in one specialized subject	Concurrent	4		Specialist
	Upper secondary level teachers				

(continued)

Country	Programme-type	Consecutive/ concurrent	Duration in years	Grade span	Specialization
Oman	Bachelor of Education (University)	Concurrent	5	5–12	Specialist
	Diploma after Degree	Consecutive	5 + 1	5–12	Specialist
	Bachelor of Education (colleges of education)	Concurrent	4	1–6	Specialist
Africa					
Botswana	Diploma in Primary Education	Concurrent	3	1–7	Generalist
	Diploma in Secondary Education, College of Education	Concurrent	3	8–10	Specialist
	Bachelor of Secondary Education, University of Botswana	Concurrent	4	8–12	Specialist
	Bachelor of Education (Primary)	Concurrent	4		Specialist
South Africa	Bachelor of Education	Concurrent	4		
	Bachelor of Education with Post-Graduate Certificate in Education	Consecutive	4 + 1		
Zambia	Certificate Level	Concurrent	2		Generalist
	Diploma Level	Consecutive	2 + 1		Specialist
	Degree Level (University)	Consecutive	2 + 2		Specialist
Kenya	Certificate (teacher training colleges)	Concurrent	2 residential programme	1–5	Generalist
	Diploma (teacher training colleges)	Concurrent		6–12	Specialist
	Bachelors (University)	Consecutive		6–12	Specialist
South Asia					
China	Elementary Teacher Education	Concurrent	3 + 2		Generalist\ specialist
	Elementary Teacher Education	Consecutive	4 + 2		Generalist\ specialist
	Secondary Teacher Education	Concurrent	4		Specialist
	Secondary Teacher Education	Consecutive	4 + 2		Specialist
South Korea	Elementary (Education Schools)	Concurrent	4	1–6	Generalist
	Secondary (Colleges + Universities)	Consecutive	4	7–12	Specialist

(continued)

Country	Programme-type	Consecutive/ concurrent	Duration in years	Grade span	Specialization
Taiwan	Certificate Level	Concurrent	2	1–6	Generalist
	Certificate Level	Concurrent	2	1–6	Specialist
Japan	Elementary school teacher training programmes	Concurrent	4	7	Generalist
East Asia					
India	Post graduate Certificate	Concurrent	1		Specialist
	Diploma (District Institutes) Primary	Concurrent	2	1–5	Generalist
	Bachelor Degree + Post graduate in education	Consecutive	3–4 + 1	5–12	Specialist
	Bachelors in education (University)	Concurrent	4	1–8	Specialist/ generalist
Pakistan	Certificate Level	Concurrent	1		Generalist
	Diploma Level	Concurrent	2		
	Degree Level (University)	Concurrent	2–4		Specialist
South-East Asia					
Malaysia	Bachelor of Education, Primary	Concurrent	4	1–6	Specialist (2 subject areas)
	Diploma of Education (subject areas)	Concurrent	4 + 1	1–6	Specialist (2 subject areas)
	Malaysian Diploma of Teaching	Concurrent	3	1–6	Specialist
	Bachelor of Education, Secondary	Concurrent	4	7+	Specialist (2 subject areas)
	Bachelor of Arts/Science in Education, Secondary	Concurrent	4	1–10	Specialist (2 subject areas)
Philippines	Bachelor in Elementary Education	Concurrent	4	7–10	Generalist
	Bachelor in Secondary Education	Concurrent	4	1–3	Specialist
Singapore	Post-Graduation, Diploma in Education, Primary Option	Consecutive	4 + 1	1–6	Generalist
	Bachelor of Arts in Education, Primary	Concurrent	4	1–6	Generalist
	Bachelor of Science in Education, Primary	Concurrent	4	1–6	Generalist
	Diploma of Education, Primary Option	concurrent	2	1–6	Generalist
	Post-Graduate Diploma in Education, Secondary	Consecutive	4 + 1	7–10	Specialist (in two subject areas)
	Post-Graduate Diploma in Education, Junior College	Consecutive	4 + 1	11–12	Specialist

(continued)

Country	Programme-type	Consecutive/ concurrent	Duration in years	Grade span	Specialization
AUSTRALIA AND THE SOUTH PACIFIC					
New Zealand	Undergraduate	Concurrent	4	1–8	Generalist
	Post graduate diploma	Consecutive	1	1–8	Generalist
	Post graduate diploma	Consecutive	1	8–12	Specialist

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Chapter 4
Approaches to Teacher Education

Julian Kitchen and Diana Petrarca

Introduction

Teacher education is a contested space. The Holmes Group (1986), by identifying the limitations of conventional approaches used in universities, prompted major reform efforts in North America (Darling-Hammond & Sykes, 1999; Fullan, 1993). Similar challenges internationally have prompted innovation in many countries. Many years later, teacher education remains controversial which has led to major initiatives to reform conventional approaches. It has also led others to propose alternative approaches to teacher preparation outside the university setting.

In considering approaches to teacher education, we write from the perspective of insiders (Cochran-Smith & Villegas, 2015) with years of experience in conventional programmes in the province of Ontario in Canada. As practitioners, we are aware that our programmes, while attempting to address multiple facets of teacher education, do not consistently weave together important elements to forge excellence in the preparation of new teachers. As leaders in the design and implementation of new programmes in our institutions, we are also mindful of the impediments to programme reform in large education colleges. As researchers, who recently conducted a study of teacher education programmes in Ontario (Kitchen & Petrarca, 2015), it is our understanding that most large-scale teacher education programmes claim to address all facets of teacher education without making significant efforts to develop integrated, rigorous programmes.

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Thus, it is useful to explore approaches employed elsewhere in order to rejuvenate conventional programmes. In exploring the state of teacher education, it is helpful to revisit three important questions asked by Feiman-Nemser (2001) which continue to challenge teacher educators fifteen years later:

(a) What are the central tasks of teacher learning in the early stages of learning to teach?
(b) How well do conventional arrangements for teacher preparation, new teacher induction, and early professional development address these central tasks …?
(c) What are some promising programmes and practices that promote reform-minded teaching …? (p. 1014)

The central tasks of teacher education continue to be the subject of vigorous debate. Given the lack of conclusive data in favour of particular models (Zeichner & Conklin, 2008), we acknowledge that there may be "a variety of effective pathways into teaching and a variety of elements of effective teacher education programs" (p. 285). We also recognize that there are pros and cons to any teacher education approach. Thus, we "need to move beyond the surface structural features of teacher education programmes in order to understand the key elements of programme effectiveness" (Zeichner & Conklin, 2008, p. 271).

Conventional teacher education is typically either traditional undergraduate programmes that combine subject knowledge and pedagogical courses or post-baccalaureate programmes that follow the completion of a degree programme. Alternative approaches are generally post-baccalaureate in nature, and tend towards practice-based orientations (Levine, 2006). Both alternative and conventional programmes vary greatly in content and structure, which means that "there is no such thing as a typical education school" (Levine, 2006, p. 7). Also, as programmes push beyond categories, there has been a growth in hybrid programmes and pathways that draw on multiple sources of expertise and experience (The Teacher Educator, 2011). Regardless, as Zeichner and Conklin (2005) concluded, "the evidence does not support the uniform adoption of a particular structural approach" (p. 704).

Integrated programmes that simultaneously address key elements in coherent ways can make a positive difference (Feiman-Nemser, 2001). Kosnik and Beck (2009) argued that:

> Learning to teach is a difficult and never-ending task; but a pre-service program that is prioritized, integrated and connected to practice—and that embodies its own priorities—can significantly enhance teachers' effectiveness in their initial years and beyond. (p. 11)

Kosnik and Beck (2011) make the case that teacher educators "often try to do too much" by covering "the waterfront in almost every subject" and, thus, "[s]tudent teachers are inundated with so much information that they have a difficult time organizing it both conceptually and physically" (p. 2). Conventional programmes are often problematic. While claiming to address all dimensions of education, often they are critically flawed on conceptual and structural grounds. As Feiman-Nemser highlighted (2001), they often have weak relationships between courses and field experiences, offer fragmented pedagogy, limited subject matter knowledge, lack teacher educators who practice what they preach, fail to link theory to practice, and do not "cultivate habits of analysis and reflection through

focused observation, child analysis, analysis of cases, microteaching, and other laboratory experiences" (p. 1020).

Organisation of the Chapter

It would seem reasonable to suggest that one of the most important tasks in responding to questions and issues about teacher education is to ensure that elements of excellence are understood and incorporated across various pathways (Zeichner & Conklin, 2008). In light of the inconclusive answers to Fieman-Nemser's first two questions, we primarily focus on identifying a range of teacher education programmes and practices with a view to understanding their strengths rather than attempting to assess their relative merits.

For the purpose of this chapter, we focus on the importance of three elements: theory, practice and reflection. We develop a framework that enables us to explore examples of programmes that primarily focus on one of these elements, as well as ones that attempt to systematically and thoughtfully integrate two or more elements. Approaches that focus on specific elements can help teacher educators "move beyond the simplistic traditional vs. alternative and other surface level comparisons that have dominated the literature and policy discussions" (Zeichner & Conklin, 2008, p. 284).

We have developed a three-dimensional model consisting of theory-, practice-, and reflection-oriented continua as a framework to situate initial teacher education (ITE) programmes and practices internationally (see Fig. 4.1). The three continua reflect the low to high engagement of ITE programmes with theory, practice, and reflection. Before we consider various programmes within the framework, each of the three orientations is now briefly described and further elaborated upon in later sections of the chapter.

In the context of this chapter, practice refers largely to the practical application of knowledge and skills within the school settings. The term theory is used broadly to refer the content of teacher education courses, including subject matter, pedagogy, human development, foundations of education and the social context if education. Reflection refers to the complex, active, and intentional meaning-making activities, rather than "everything that, as we say, is 'in our heads' or that 'goes through our minds'" (Dewey, 1933, p. 2). Approaches to teacher education that exemplify high engagement with a single element are examined in subsequent sections of the chapter, followed by approaches that attempt to integrate all three.

Context: Positioning Ourselves

As noted earlier, we write from the insider's perspective (Cochran-Smith & Villegas, 2015) as teacher educators in conventional teacher education programmes in Ontario, Canada. In Canada, teaching is a respected, well-paid, middle class profession and

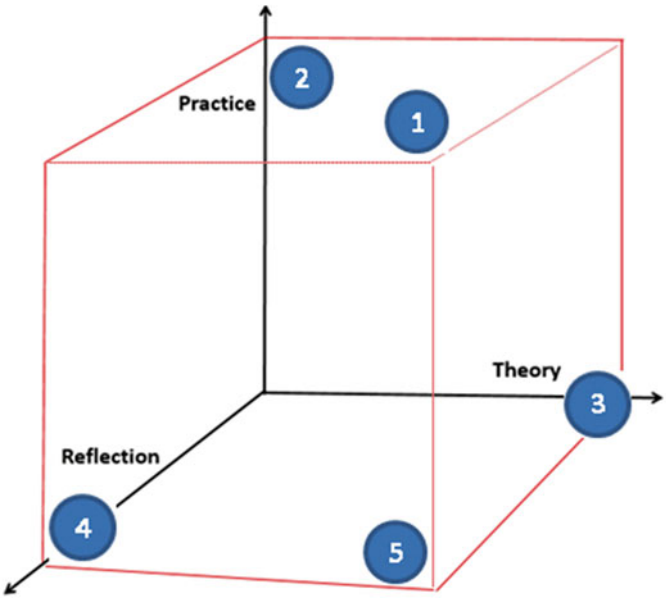

Fig. 4.1 Examples of positioning theory, reflection, and practice on three-pronged model of teacher education approaches (*1*) High in theory, reflection, practice (*2*) High in practice; low in theory and reflection (*3*) High in theory; low in reflection and practice (*4*) High in reflection; low in theory and practice (*5*) High in reflection and theory; low in practice

Canadian schools perform well on international standardized tests (Volante, 2013). While Canadian education has been influenced by neo-liberalism (e.g., Gidney, 1999), in contrast to other English-speaking nations, regulation and scrutiny of teacher education has largely been limited to establishing broad guidelines (Kitchen & Dean, 2010). Indeed, we have both been very involved in the extension of our current two-semester programmes by an additional two semesters in response to the provincial government's decision to mandate more rigorous university-based teacher education to "help more of our students succeed in school and take the next step in creating the world's best-educated workforce" (Ontario Premier's, 2011). While this makes us similar to our European counterparts, demands for accountability similar to those in other English-speaking countries make us ever mindful that conventional teacher education in Canada needs to demonstrate its success.

As former teachers, engaged teacher educators and programme administrators, we are aware of the practical challenges of delivering quality programmes that simultaneously address theory, practice and reflection. As researchers of both teacher education and our professional practices, we are very aware of both the strengths and limitations of the conventional programmes in our province, Ontario, and nationally. While both traditional undergraduate and post-baccalaureate programmes predominate in Canada (Crocker & Dibbon, 2008), with limited alternative programming in areas such as Indigenous Education, this could change if

politicians influenced by neo-liberal discourses decide to scrutinize teacher education. Thus, we think it is important to critique conventional teacher education from within, so that we can improve our practices and programmes.

We are aware, from the Canadian literature (e.g., Falkenberg, 2015) and our own experiences, that Canadian programmes attempt to address multiple facets of teacher education, including practice, theory and reflection. A recent examination of the ITE programmes offered in the 13 of publicly funded universities in Ontario revealed that most programmes claimed to the address the three continua of theory, reflection, and practice (Kitchen & Petrarca, 2015). This was evident from the vision statements mentioning commitment to research and scholarship, and implicitly or explicitly addressed theory, practice and reflection. These programmes, while meeting specific accreditation requirements established by the Ontario College of Teachers, are diverse and varied.

While independence and diversity are to be encouraged, it was difficult to ascertain the basis for the choices made. Identifying, comparing or assessing specific elements related to programme structure, course content, and practicum was challenging due to a lack of publicly accessible information on university websites or common means of reporting programme characteristics or measuring outcomes. If Canadian teacher education programmes address the common concerns about teacher education generally and do not demonstrate their effectiveness, they could be exposed to unwelcome scrutiny.

Our historical review of teacher education in Ontario (Kitchen & Petrarca, 2013) revealed that many of the issues today and the models under consideration have a long history. Normal schools administered by the provincial government, apprenticeship programmes run by school districts, and emergency certification are all part of our history. In Ontario, the shift to universities "fundamentally changed views on teaching, from technical practice to theories related to teaching and learning" (Gannon, 2005, p. 112). Expectations for learning, teaching and teacher education rose, but there was also much criticism as universities for making "theory and research appear more important than practice" (Sheehan & Fullan, 1995, p. 90). There was a struggle for control of professionalization between education colleges, which characterized "professionalism as the relationship between scientific research and practice" (p. 110) and other stakeholders which resulted in the Ontario College of Teachers, the self-regulating body for the teaching profession, assuming responsibility for the accreditation of all teacher education programmes and providers in 1998. The College regularly accredits teacher education programmes through a very rigorous and complex process focused on demonstrating compliance with the regulations for teacher education. Understanding the lessons of this history, which mirrors patterns internationally, makes us open to learning from a range of innovative approaches to teacher education.

With this background informing our thinking, we now explore ways in which these three orientations are positioned in programmes around the globe. While we offer critiques of the various programmes, we are mainly interested in how understanding a variety of approaches to teacher preparation can help those of us working in conventional programmes to improve our programmes.

Positioning Teacher Education Programmes from Around the World

We now examine a range of teacher education programmes around the globe and position them using the three-pronged continua as a framework (see Fig. 4.1). Drawing on our framework, we first consider teacher education programmes that incorporate: (a) practice then; (b) theory; and finally, (c) reflection. We then consider integrated programmes that attempt to incorporate all three elements at high levels of engagement. We had hoped to map programmes using these three-dimensions, but the lack of descriptive and comparative data makes it virtually impossible to compare teacher education programmes from various countries in a reliable manner. This was complicated by our reliance on English language sources. We experienced similar challenges when we prepared a review of teacher education programmes in Ontario (Kitchen & Petrarca, 2015). In situating international examples of teacher education within the framework, we base our positioning of these programmes on the information presented in the literature as well as materials published on teacher education programme websites. As researchers seeking to understand and learn from teacher education programmes, it would be helpful to have more programme descriptions and similar means of describing and reporting programme features and outcomes.

Part 1: Practice-Oriented Teacher Education

It seems as though the most politically effective critics of teacher education are conservative reformers in the United States and England who embrace alternative certification focussed on practical learning; often at the expense of university involvement. Isaacs et al. (2007) suggested that "public discussion surrounding alternative certification is best understood in the framework of the two confluent forces that fueled its creation: (1) an unprecedented and well-publicized scarcity of teachers and, (2) growing concerns over teacher quality" (p. 7). The scarcity of teachers, particularly in high needs communities, has been identified by many as a reason for alternative, practice-focussed programmes (e.g., Kee, 2012). Also, the underrepresentation of particular social, cultural and ethnic groups adds to the urgency for alternatives to conventional university–based models that reinforce privilege (Pilkington & Lock, 2012). A third confluent force is that of neo-liberal and neo-conservative belief in market forces, deregulation, choice, and suspicion of liberal university elites (e.g., Ballou & Podgursky, 1998; Cochran-Smith & Fries, 2001; Darling-Hammond, 2010; Labaree, 2010). Certainly, many stakeholders who are dissatisfied with teacher education have decided to 'work around' universities through alternative certification.

One approach of so doing is alternative certification that confers professional qualifications with limited formal teacher education. The most notable examples of this approach are intended to address underserved communities either by attracting

minority candidates or fast-tracking highly skilled university students (Humphrey, Wechsler, & Hough, 2008). A second approach is school-based teacher training with formal training contracted to external providers, such as School Direct in England (Furlong, 2013a). Finally, some conventional teacher education programmes have intensified their focus on practical experiences in schools.

Our interest is in understanding the practical turn in teacher education and learning lessons that might guide teacher educators in reforming conventional teacher education. While noting limitations, we mainly challenge conventional programmes to be more attentive to field-based practice. In puzzling over the issues raised, we reflect on our own educational context in Ontario.

Situating Practice-Oriented Teacher Education

A practice-oriented conception of teaching relates back to Aristotle's classifications of *poiesis* (making-action) and *praxis* (doing-action). Carr and Kemmis (1986) interpreted making-action as the "the kind of knowledge and enquiry appropriate to the productive disciplines was what Aristotle called *poietike*, which roughly translates as 'making action' and which is evident in craft or skill knowledge" (p. 32). The notion of *craft* is also evident in the description of the *practical model* put forth by Redman and Rodrigues (2014) as another approach when working with teacher candidates. "The practical model promotes what might be seen as the art and craft of teaching. The practical model may have a stronger focus on the practical techniques, or specific skills that a practitioner needs and uses" (p. 3).

Another useful term is phronesis (practical wisdom derived from understanding specific situations), which Kessels and Korthagen (2001) contrasted with episteme. The practice-oriented continuum of the model in Fig. 4.1 refers to the practical elements related to teacher education programmes, particularly the practicum in "a setting designed for the task of learning a practice" (Schön, 1987, p. 37). This is consistent with Zeichner's (1983) traditional-craft and Feiman-Nemser's (1990) practical teacher education paradigms. Real-world practice, it is hoped, will lead to the development of craft knowledge that can be applied later as a classroom teacher.

While a practicum reflects a view of professional knowledge as grounded in the realities of classrooms (Schön, 1987), there are many perspectives on the nature of that knowledge and how it plays out in a practice teaching setting. Theoretical and behavioural oriented teacher educators may envision the practicum as a laboratory in which one can apply facts, rules, theory, and procedures. Others may view practicum settings as dynamic and presume that facts, rules, and procedures cannot be applied without the development of phronesis.

Although practicum goals, formats, processes, and approaches vary considerably, several desired components are prominent in the teacher education literature. Darling-Hammond and Baratz-Snowden (2007) suggested that effective practica include: (1) clear and explicit goals regarding teacher candidates' practice; (2) associate teachers who model sound practice; (3) regular teaching opportunities for with

ongoing feedback; (4) regular opportunities to apply theory to practice; (5) a gradual increase of teacher candidate responsibility in all areas of classroom practice; and, (6) regular and structured opportunities for reflection on classroom practice.

While practicum experiences vary widely, teacher candidates typically consider the practicum the most important aspect of their learning (Darling-Hammond & Baratz-Snowden, 2007; Wideen & Holborn, 1990; Wilen & Hawthorne, 1975). This is a testament to "the apprenticeship of observation" (Lortie, 1975), the notion that individuals enter teaching after thousands of hours as students observing teachers. At the same time, as Lortie also noted, practice without propositional knowledge and deep understanding also leads to misconceptions, most notably of teachers as performers and experts. From this narrow "observational and non-analytical perspective view of practice" teaching falsely "appears to be simple action, guided either by custom (this is the way teaching is done) or by nature (this is the kind of person I am)" (Labaree, 2010, p. 232).

Practical knowledge is undoubtedly a critical component for teacher candidate learning (Feiman-Nemser, 2001; Levine, 2006). From meaningful field experiences, we can learn how to apply theory in practice and learn from experience. It is evident, however, that isolation of the practical from theory does not optimize teacher candidate learning. Practicum experiences are richer when the practical and craft elements are integrated with the theoretical. As Feiman-Nemser's stated:

> Observation, apprenticeship, guided practice, knowledge application, and inquiry all have a place in field-based learning. Teacher candidates need opportunities to test the theories, use the knowledge, see and try out the practices advocated by the academy. They also need opportunities to investigate problems and analyze situations that arise in the field. (p. 1024)

Alternative Teacher Education

Alternative certification was established in the United States in the 1980s in response to a dramatic shortage of teachers in predominately under-privileged and underserved communities (Humphrey et al., 2008). Although resembling discarded apprenticeship programmes from the nineteenth century (Kitchen & Petrarca, 2013), today's programmes represent a challenge to conventional teacher education. They address the shortage of teachers, while challenging the lack of diversity of graduates, the limited emphasis on subject knowledge, and the need for pedagogical expertise. While non-traditional alternative teacher certification programmes are not well regarded by teacher educators, research has suggested that they are graduating quality teachers who engaged in student learning, serving minority students and helping with teacher shortages in high needs areas (Ducharme & Ducharme, 1998). Certainly, as Adcock and Mahlios (2008) have suggested, alternative certification is a viable option when teacher shortages result in the emergency certification of unqualified teachers or the mis-assignment of teachers. Rather than compromising the education students need and deserve, alternative certification is a crisis response

that has the effect of upgrading professional standards degraded by teacher shortages (Stoddart & Floden, 1995).

Addressing the Needs of Underserved Communities

Alternative certification can expand the pool of qualified candidates who might not otherwise consider a career in teaching (McKibbin & Ray, 1994). Alternative programmes generally require one to two years of post-baccalaureate education, provide intensive mentoring and supervision, and offer summer, evening and/or weekend courses (Miller, McKenna, & McKenna, 1998). They may attract older, minority and male candidates with past experience in other occupations (Sholo & Martin, 1999), although Humphrey et al. (2008) counter that recruits are not very different demographically. Alternative programmes mainly focus on areas of teacher shortage, such as mathematics or science, and serve inner city or remote schools with minority students (Shen, 1997). They draw candidates with a wealth of life and work experience that make sacrifices in order to become certified and build careers in these communities (Manos & Kasambria, 1998). While such programmes claim to have more supervision and mentoring, Adcock and Mahlios (2008) found that traditional programmes were four times as likely to include experiences in internship schools. Humphrey et al. observed considerable variation in both programme components and in quality, as would be the case in a study of conventional programmes. Regardless, graduates are undoubtedly more effective than uncertified teachers (Darling-Hammond & Youngs, 2002).

The most notable programmes are designed to attract, prepare and retain minority teachers. For example, the Metropolitan Multicultural Teacher Education Programme (MMTEP) recruits teacher aides and paraprofessionals with bachelor's degrees already working in Milwaukee schools to a programme aimed at serving urban children living in poverty. MMTEP's recruiting strategy "results in new teachers who are committed to their communities and less likely to move on after a few years" (Humphrey et al., 2008, p. 7). A six-week summer session at a local university is followed by a year serving as the teacher of record, under weekly support of a trained mentor (Humphrey et al., 2008). MMTEP mentors are teachers whose full-time job is mentoring four or five teachers in different schools. In the Los Angeles Unified School District alternative certification candidates first secure teaching positions in predominately underserved schools, then complete coursework to help pass the statewide evaluation system while benefitting from school-based mentoring (Adcock & Mahlios, 2008).

In Northern Ontario, a partnership between Brock University and the Northern Nishnawbe Education Council provides local Indigenous people with the opportunity to earn an undergraduate degree alongside professional certification (Kitchen, Hodson, & Cherubini, 2011). This community-based programme is culturally-responsive through curriculum adapted to local needs, addresses the need for teachers who know the local language and culture, and attempts to reduce reliance on non-Aboriginal teachers who typically serve only for a year or two.

According to Humphrey et al.'s (2008) rigorous and extended study of seven alternative certification programmes, such targeted initiatives were often found to be effective. A key training component was "practical training focused on specific skills and knowledge that teachers need in classrooms" (p. 9). This was particularly important as trainees needed strategies they could employ immediately in their classes. Regular supervision and mentorship was also found to be very important. Also important was the school context, with strong principal leadership enhancing the experience and increasing retention. Interestingly, while Teach for America candidates arrived with much more subject knowledge, most of the initial differences in knowledge of mathematics and literacy pedagogical skills were eliminated within a year. In some programmes, given the nature of the local challenges, considerable coursework and mentorship opportunities directly related to literacy, numeracy, and improving the academic performance of urban youth are crucial.

Teach for America and Teach for All

There is a difference between alternative certification programmes intended to attract minority teachers to underserved communities and fast-track approaches to certification. As McConney, Price, and Woods-McConney (2012) wrote, "schemes characterized as fast track provide would-be teachers with a greatly accelerated programme of study and practical experience for gaining entry to teaching in schools" (p. iii). The most notable is the Teach for All (TFA) approach, conceived as Teach for America (TFAM), which is now established in some 20 countries. TFAM is a significant and large programme which had an intake of 4000 in 2009 and a core of 6000 members teaching 400,000 students (McConney et al., 2012).

TFA teacher training is typically five weeks of intensive learning followed by two-year teaching assignments, overseen by an on-the-job mentor in remote or low socio-economic area schools. The trainees are recent graduates from leading universities who begin with provisional contracts and conclude their terms with regular teacher certification. They serve as emergency relief during their two-year commitments, with the majority moving on to other opportunities. While they lack pedagogical training, TFA teachers are academically solid and, in subjects such as math and science, have much needed curricular expertise. Their academic aptitude makes them as successful (perhaps more) than the less able traditionally trained teachers working alongside them.

Teach for America innovatively markets to prospective applicants from elite universities, who complete an on-line application process. Appeals to altruism and social justice are balanced with prospects of career opportunity and financial compensation. Further screening culminates in day-long interviews to which candidates bring sample lesson plans, transcripts and references. Professional recruiters observe candidates for two hours, making this more rigorous than conventional teacher education admissions screening (Hutchings, Maylor, Mendick, Menter, & Smart, 2006). TFAM accepts only 11.7 % of applicants (Veltri, 2010).

Successful candidates then engage in intensive summer institutes on university campuses and local school districts. In the United States, the universities are used as classroom and dormitory spaces, not as partners in training, for five weeks of intensive training. For example, as Téllez (2011) reported, TFA recruits with two or more years of experience were invited to recount their experiences while locally available teacher educators were not asked to contribute. In the United Kingdom and Australia, universities and university instructors were more likely to be engaged as partners (Ofsted, 2008; Scott, Weldon, & Dinham, 2010). Also, in these countries there is a sixth week of intensive training in schools and time working with university instructors.

Afterwards, TFA corp members begin teaching in local schools on some form of temporary certification while working towards full certification. The details vary depending on state or national requirements. While they receive some mentoring, for the most part, they are on their own as teachers of record (Humphrey et al., 2008; McConney et al., 2012). Placements for TFAM corp are typically in underserved communities with high teacher attrition rates (Donaldson & Johnson, 2010), so their academic ability, pedagogical skills and character are quickly tested.

The evidence of TFA and TFAM success is mixed, as it is for most teacher education programmes. McConney et al. (2012), after reviewing the available literature, concluded that "other than Laczko-Kerr and Berliner's (2002) matching study in Arizona, there is little evidence to suggest that TFA teachers are systematically less effective in fostering or advancing student learning … In fact, a clear majority of the available evidence suggests an advantage for TFA teachers, particularly in the areas of Science and Mathematics" (p. 32). Laczko-Kerr and Berliner's concern about deficient student preparation is shared by Darling-Hammond, Holtzman, Gatlin, and Heilig (2005), who reached opposite conclusions (to McConney et al., 2012) after reanalyzing some of the data used to validate TFAM programmes. A greater concern may be the data concerning TFAM teacher retention especially so in light of TFAM's positions itself as a leadership programme rather than career development, at most fifty percent plan to remain as teachers beyond their initial two-year contracts (McConney et al., 2012). While TFA is helpful in addressing teacher shortages in the short-term, with an attrition rate similar to the rate at which other teachers in predominately low-performing schools either leave teaching or transfer to other schools (Isaacs et al., 2007), TFAM does not appear to be a long-term solution to a perennial problem. More effective than these programmes over time are the alternative certification programmes identified above and the school-based initiatives examined in the next section.

The rise of alternative certification programmes poses challenges and opportunities for teacher educators in conventional programmes. The success of such programmes in addressing labour shortages suggests that such pathways can prove useful in addressing short-term or localized needs. As the International Alliance of Leading Education Institutes suggest, there is a need for such innovative pathways, particularly when they can diversify the teaching corps by reaching non-traditional applicants, and better support learners with different languages, cultures and socio-economic circumstances (Tan, Wong, Fang, Devi, & Gopinathan, 2010). The

challenge of recruiting teachers is particularly acute in Africa, where "countries will need to recruit a total of 4 million teachers by 2015" (UNESCO, 2014, p. 1). Unfortunately, university educated people are in short supply, so alternative certification may be important in helping to address this need. Otherwise, disadvantages children will be further jeopardized by being taught by less educated and untrained teachers (UNESCO, 2014). On the other hand, while simultaneously addressing immediate shortages, Tanzania (Hardman, Abd-Kadir, & Tibuhinda, 2012) and South Africa (Samuel, 2014) are seeking to address the problem by providing rigorous teacher education programmes that prepare African teachers for extended careers. Problems in recruiting teachers for, and from, underserved communities remains a problem in England and the United States, so it is difficult to argue that large-scale projects such as School Direct and Teach for All, which are connected to discourses that downplay the expertise of teachers, can be viewed as genuine long term solutions. At the same time, conventional programmes, by doing more to build relationships with schools while strengthening university courses, may well do a better job of responding to legitimate criticisms. Particularly instructive are alternative programmes for minority teachers, which can be connected to university-based teacher education.

School-Based Teacher Preparation

Similar to alternative certification's direct pathway to schools are school-based programmes. While these are often folded in as one category (e.g., Humphrey et al., 2008), school-based programmes are a longer term market-place rival to conventional university programmes (OECD, 2010). It is an approach designed to attract university graduates seeking authentic *real world* experiences and appeal to schools and school districts interested in tailoring teacher preparation to their own contexts. It is an interesting experiment in teacher education that is being tried in England at a national scale. Successful or not, it could have profound implications for teacher education world-wide.

School Direct in England

The most radical experiment in practice-based alternative teacher preparation is currently unfolding in England as part of the control of teacher education has shifted from universities to schools (McNamara & Murray, 2013). A "wide consensus that a highly qualified and highly skilled workforce is a prerequisite for improving the standards of education in England" (Howson & Waterman, 2013, p. 5) has led to a broad deregulation of the education system and to the major political parties questioning the contributions of universities to education (Furlong, 2013a). This shift reflects several decades of policies that have led to a market demand-model of education generally (McNamara & Murray, 2013). The Department for Education

(2010) concluded that "[t]oo little teacher training takes place on the job" (p. 19). As a result, according to MacBeath (2011), "[a]t the very centre of teacher education there had to be a focus on government strategies, less theory and more practice, implementation rather than reading and reflection, less challenge and more compliance" (p. 378).

In 2012, School Direct was developed as an alternative to conventional teacher education. It was designed to provide aspiring teachers in England with the option of traditional university-based programme, university-based Postgraduate Certificates in Education (PGCE) or school-based PGCE through School Direct. All *teacher training*—the term used in government policies and websites—include:

- a minimum of 24 weeks in at least two schools to give you practical classroom experience;
- academic study to give you the knowledge and understanding to teach successfully;
- an assessment of your teaching skills (through being observed teaching classes).

Aspiring teachers all learn the national curriculum for their subject and/or age group; lesson preparation; classroom management; special education; and, assessment in order to earn qualified teacher status (Department for Education (England), 2015). A PGCE programme is typically a year full-time, with many programmes (in either route) leading to a master's level qualification. The government pitches School Direct as offering all the core elements of teacher training, including tuition support, along with many other benefits. Additionally, School Direct trainees benefit from "intensive support from experienced teachers in the classroom" (Department for Education (England), 2015), the possibility of salaried positions (for career-changers in high demand areas), and the expectation that they will be employed by a school in their School Direct partnership.

School Direct is a school-led initiative run in partnership between a lead school, partner schools and an accredited teacher training provider. Lead schools request places from the National College for Training and Leadership and commit to meeting the School Direct criteria (National College for Teaching and Leadership, 2014). They then promote their programmes through the University and Colleges Admissions Service. Programme can be customized to meet the needs of schools and trainees. Accredited teacher training providers could include universities contracted to provide the specific services required. The expectation of employment is not onerous, as there is currently a teacher shortage in England and programmes can be tailored to attract trainees in areas of need.

The School Direct programme shifted "much of the funding going to schools, which will be free to 'purchase' those services they need from a university of their choice or from another accredited provider" (Furlong, 2013a, p. 5), which will eventually lead to only a minority of teacher education being within the university. It is expected that both 3- and 4- year undergraduate programmes and 1-year postgraduate certificates will rapidly be replaced by alternative certification such as School Direct. Funding flows to schools, which then purchase services from accredited providers (including universities). These school-based programmes need to

adhere to "minimum but flexible standards … adapted to local need" (Furlong, 2013b, p. 44) as they provide basic instruction combined with mentorship, observation and practice. These programmes place an increased emphasis throughout on practice teaching—at least 18 weeks in primary school and 24 in secondary (Furlong, 2013b). There is also a second placement of six weeks and a day a week with a partner/provider. Jones (2015) claimed that one of the main benefits was "immediate immersion in school life … as active community members." While he conceded that trainees were somewhat "thrown in at the deep end," it was noted that participants started with initial observation followed by timetables of six hours a week building to 18 h or more a week.

The School Direct Model assumes that teaching is essentially a craft "rather than a complex intellectual activity; an apprenticeship model of teacher training … and related and highly questionable assumptions and that longer periods in schools leads to more relevant teacher training that can be located entirely in the workplace …" (McNamara & Murray, 2013, p. 14). This instrumental approach, as Murray and Passy (2014) backhandedly stated, "serve[s] as a good preparation to teach in a policy-driven, compliant and sometimes instrumental schooling system" (p. 499), but is decidedly limited in terms of the development of critical thinking, adaptability, and creativity, not to mention child development and curriculum design.

On the other hand, Hagger and McIntyre (2006) argued that this school-based approach demonstrated respect for teacher expertise and developed comprehension of practical realities so that "beginning teacher[s] do generally acquire basic practical competence" (p. 17) While they conceded that this approach to teaching as a craft, rather than as a profession, lacks critical and inquiry dimensions, Hagger and McIntyre also cited benefits to apprenticeship with experienced mentors, including observing/understanding complex classroom dynamics, and developing teacher knowledge in action.

There are challenges in the first years of the new teacher training context. McNamara and Murray (2013) expressed concern about the lack of safeguards for trainees and poor academic entry qualifications. Morrison (2014) noted that schools "are facing the most severe teacher shortage in a decade after a new training route has failed to meet demand" according to the annual report the Office for Standards in Education. Bell (2015) noted that the 17 % drop in enrolments in teacher training from 2009 to 2014, meant the system was 7 % below the number of places needed. The shortfall, which is particularly acute in secondary schools, particularly in math, science and technology, is exacerbated by School Direct. Bell argued that the preferred new route was "choking off the best BA-ed and PGCE courses and driving them out of business" as good schools "cream off the best trainees", placements do not reflect local and regional demand, universities cannot provide job security, and "the umbilical cord between education in schools and research in schools" is broken.

According to the Department for Education (from Get Into Teaching), School Direct training places had grown to 17,500 in 2014, which accounted for over half the total number of trainees. It is expected to grow much more, although there are growing pains. Howson and Waterman (2013) questioned these numbers noting that

many places were not filled, needs in primary schools were not addressed, and that School Direct was peaking well below expectations. Mainly, Howson and Waterman worried that the ad hoc decisions of school providers meant there was no coherent national strategy.

Interestingly, in contrast to England, Scotland reaffirmed its commitment to university-based teacher education in 2011 (Menter & Hulme, 2011). Conroy, Hulme, and Menter (2013), in describing a new 'clinical model' programme designed by the University of Glasgow in partnership with stakeholders, wrote: "we suggest that the development of professional craft knowledge and research-based thinking can be enhanced through collaborative inquiry into authentic pedagogical problems" (p. 564). Similarly, Wales and Ireland have also avoided the English path towards market-driven, school-based, practice-oriented teacher preparation (MacBeath, 2012; Murray & Passy, 2014).

School Direct has many implications for conventional teacher education programmes internationally. In some ways, the programme marks a return to nineteenth century teacher training, most notably normal schools and in-school apprenticeship programmes (Hagger & McIntyre, 2006; Kitchen & Petrarca, 2013). Normal schools, which began in Napoleonic France, were a response to low standards in most schools, economic change, and a need for teachers in a rapidly expanding school system. The term 'normal' meant according to rule, with the focus developing practical strategies for managing classes and delivering curriculum. For example, in Ontario, normal schools administered by the department of education over the course of five months concentrated on the rudimentary curricular knowledge and a range of practical strategies determined by school officials. Later, Ontario developed collegiate institutes in which prospective teachers learned in schools. Unfortunately, this 14-week programme—2 weeks of general theory and organization, six of observation and tutoring by experienced teachers, and six weeks of observation and practice teaching—was unsuccessful as it failed to address pedagogy effectively and instructors were ill-equipped to be teacher educators. Similarly, the attempt to address the shortage of teachers in Ontario through alternative certification through apprenticeships in county model schools was unsuccessful. While this helped address a teacher shortage, it also resulted in many elementary schools being staffed by ill-prepared and poorly trained teachers who did not remain teachers for long. Over the early twentieth century, Ontario and many other English-speaking jurisdictions developed more rigorous programming and slowly shifted into the university. Is School Direct destined to a similar fate?

On the other hand, we as teacher educators would be remiss if we did not assume some responsibility for this rejection of theory-oriented approaches. As Hagger and McIntyre (2006) remind us, conventional teacher education has often failed because it does not recognize that "classroom teaching expertise cannot in principle be derived from theoretical or idealized views of teaching" (p. 11) and "classroom teaching expertise is necessarily complex, subtle and sophisticated" (p. 6).

Clearly, there is a need for conventional teacher education programmes to become more practice-oriented. While more practical approaches and stronger links with schools are effective responses (e.g., Beck & Kosnik, 2006; Darling-Hammond,

2006b), a focus on practice is insufficient. In 1992, universities in England were required to enter into formal partnerships with schools (Whitty, 2014). Instead of satisfying critics, this now appears to have been a precursor to more dramatic interventions. Thus, it would appear, the practical may need to be integrated with theory and reflection for the reform of conventional university-based teacher education to be successful.

Implications for Conventional Teacher Education

Clearly, there is a need for conventional teacher education programmes to become more practice-oriented. As Darling-Hammond (2006b) argued, the shift from normal schools to education colleges led to "the apparent separation between theory and practice in many programs" (p. 152) with courses that ignored the realities of teaching and field placements that dismissed theory. While more practical approaches and stronger links with schools are effective responses, Darling-Hammond (2006a) cautioned that skewed visions of teaching developed by teacher candidates during their lifetime apprenticeship of observation (Lortie, 1975) needs to be challenged in the university so that the complexity of teacher decision-making is understood. Darling-Hammond (2006a) also cautioned about the challenge of enactment—e.g., how to present clearly, manage behaviour, weigh dilemmas, plan, make quick decisions—which can only be addressed through close links between theory and practice. Finally, Darling-Hammond (2006a) highlighted the challenge of complexity, which can only be addressed through a careful balance of theory, practice and reflection. The failure to address these three challenges has contributed to the shift to practice-oriented alternative certification programmes. On the other hand, conventional teacher education grounded in the practice of teaching is associated positively with teacher candidate achievement (Boyd, Grossman, Lankford, Loeb, & Wyckoff, 2009).

A limitation of the practice-oriented programmes described seem to dismiss the complexities of teacher preparation (Sykes, Bird, & Kennedy, 2010), replacing mere theory with mere practice (Friedrich, 2014). Thus, they provide trainees with survival skills rather than the skills needed to become adaptive experts (Bransford, Darling-Hammond, & LePage, 2005). In responding to the practice-oriented challenge, it is not sufficient to add more practice. In 1992, universities in England were required to entire into formal partnerships with schools (Whitty, 2014). Instead of satisfying critics, this now appears to have been a precursor to more dramatic interventions.

Instead, practice needs to be integrated with theory and reflection for the reform of conventional university-based teacher education to be successful. Teacher educators need to "resist the tendency … to view ourselves primarily as theorists in specialist areas, leaving practice to be addressed by others or figured out on their own" (Kosnik & Beck, 2009, p. 9). Teacher educators need to thoughtfully design clinical experiences that help candidates understand the contexts in which students learn

(Kosnik & Beck, 2011). Beck and Kosnik (2006), in their study of exemplary social constructivist programmes, identified innovative programmes at New York University, Stanford University and Bank Street College that connected theory to practice. These programmes, they suggested, were effective for five reasons. First, they spread field experiences through the programme (e.g., 3 days a week at NYU and Bank Street) and interspersed practica over several blocks. Second, they carefully selected mentors and provided them with professional development (e.g., workshops and interactions with faculty visiting schools). Third, they developed partnerships with a small group of school partners and cohorts of teacher candidates to enhance the university presence, and increase collaboration with mentors and visits with candidates. Fourth, they have course instructors serve as clinical supervisors to create opportunities to link theory to field experiences; Stanford, for example, has foundations and curriculum faculty supervise as well as engage in professional development, school reform and research at partner schools. Finally, meetings, seminars and assignments link the university to schools on an ongoing basis. Clearly, conventional programmes need to commit resources and institutional support to making practice-oriented reforms such as these (Beck & Kosnik, 2006). The challenges are particularly great for high enrolment programme in large universities.

Part 2: Theory-Oriented Teacher Education

The theory-practice divide has been a longstanding and contentious issue in teacher education. We examined theory-orientation in teacher education programmes, guided by research on exemplary teacher education programmes. Our interest is primarily in programmes that incorporate theory in a manner that reflects the complexities of what teachers are expected to know and do (Darling-Hammond & Baratz-Snowden, 2007). We focus on programmes that ground curriculum knowledge in subject-specific content, core practices across curriculum and social justice inquiry through strategies that enable teacher candidates to examine their assumptions about teaching and learning and adapt expertise to learning contexts (Darling-Hammond, 2006b).

As we examined various programmes internationally, we noticed a general shift over four decades from practice-oriented, craft approaches to more theoretical approaches. Giroux describes this as a shift from teachers as "high-level technicians carrying out dictates and objectives decided by experts far removed from the everyday realities of classroom life" (Giroux, 2002, p. 46) to teachers as knowledge-holders possessing an understanding of learning and development, research on pedagogy and content, and educational foundations. As Mayer (2014) observed:

> Even though disciplines like psychology, philosophy, sociology and history were introduced to support and enable this critical reflection, the central focus of many teacher education programmes was still teaching methods and the practicum, resulting in the theory–practice binary in teacher education that exists to this day, which positions in level of importance, the practical skills developed during the practicum against the theory that is developed in the campus-based components of the programme. (p. 464)

In this section, we situate theory within the teacher education context. Then we provide an example of a policy-based approach to enhance the theory-orientation in teacher education followed by examples of teacher education programmes that take innovative inquiry oriented approaches to teaching and learning.

Situating Theory-Oriented Teacher Education

The concept of theory dates back to ancient Greece where Aristotle classified human activity into three categories of *theoria* (contemplation about truths), *poiesis* (making-action), or *praxis* (doing-action) (Carr & Kemmis, 1986). In education, theory is developed both through contemplation and through episteme, propositional knowledge generalized from past practice (Kessels & Korthagen, 2001). The theory continuum within the framework in Fig. 4.1 refers broadly to include the theory and research employed in teacher education classes and programmes. For example, theory might denote theory and research related to educational disciplines such as philosophy and history, subject-specific course content, human learning and development, pedagogical principles, and social and cultural contexts (Darling-Hammond & Baratz-Snowden, 2007), as well as pedagogical principles. Redman and Rodrigues (2014) described the "theoretical model" as focused on the science of learning how to teach. This is consistent with Zeichner's (1983) behaviourist and Feiman-Nemser's (1990) academic and technological teacher education paradigms. Understanding and applying these propositions, it is hoped, might lead to effective classroom practice.

A theoretical orientation, while detached from direct practice, can be thoughtfully developed and can serve as a knowledge base for classroom practice. As Carr and Kemmis (1986) asserted, "the attitudes and practices of teachers must become more firmly grounded in educational theory and research" (p. 9) so that teachers develop a body of professional knowledge. Almost three decades later, "The role of teacher is more complex today than ever before, requiring an unprecedented range of knowledge, skills and experiences" (Crocker & Dibbon, 2008, p. 109). It can cause prospective teachers to think of learning as a simple transfer of information (Feiman-Nemser & Buchmann, 1989), reflecting what Labaree (2010) described as "an old and enduring problem that has long blocked the path to a truly professional education for teachers, that teaching is an enormously difficult job that looks easy" (p. 228).

Theoretical knowledge is undoubtedly a critical component for teacher candidate learning. From programmes that are well grounded in theory, we can learn how to most effectively infuse a substantive body of core knowledge about teaching and learning into learning experiences. Nonetheless, as Dewey (1933) said, principles are abstract and "become concrete only in the consequences which result from their application" (p. 20). Thus, while a theoretical orientation is helpful, Darling-Hammond (2006b) found that exemplary teacher education programmes connected

theory with practice in coherent and integrated ways through pedagogies that linked course work with clinical experience and critical reflection.

In thinking about theory-oriented teacher education, one should consider both foundational and methods courses. Foundational courses, such as human development and the philosophy, history and sociology of education, are particularly associated with theory as they generally offer core knowledge of the discipline rather than methods that might be used in classroom contexts. While often conveying core subject matter, methods courses are typically more focussed on the knowledge and pedagogy necessary for classroom teaching. Even so, too often these courses tend to teach about instructional strategies in isolation rather than in ways that can be enacted in context (Kosnik & Beck, 2009) such that a key challenge for both foundational and methods teacher educators is making their curriculum meaningful for teacher candidates in context (Grossman, Hammerness, & McDonald, 2009). "Teacher educators," according to Kosnik and Beck (2011), "need to be explicit about priorities and connections, not leaving so much for student teachers and beginning teachers to figure out on their own" (p. 3).

The following approaches to theory-oriented teacher education offer ways of deepening theoretical understanding, making meaningful connections to practice, and addressing larger social issues.

Problem-Based Learning

Theory-orientation is generally associated with teacher-directed transmission models of instruction. Around the world, most students in elementary and secondary schools receive what Freire (1970) calls *banking education*, direct instruction focussed on rote learning rather than critical thinking and discovery-learning. Even when educators move beyond this model, teacher candidates often maintain mental models (Anderson, 2005) that value memorization, reproducing what is expected by teachers, and teaching as a set of tips and tricks. Razzak (2012) vividly describes the narrow mental sets of University of Bahrain teacher candidates exposed to transmission models of education, yet similar patterns exist among the graduates of Western universities (Askell-Williams, Murray-Harvey, & Lawson, 2007).

Teacher educators may present new knowledge, skills and dispositions but these often do not register with teacher candidates. Problem-based learning (PBL) shows promise as a pedagogy in which teacher educators act as facilitators who guide teacher candidates towards presenting and utilizing knowledge in ways that are critical, creative and applicable to authentic practice contexts (Pourshafie & Murray-Harvey, 2013). As important, PBL challenges the mental models of teacher candidates. Currently, foundational and methods courses may 'come across' as offering new theories of little practical value; which only adds to the perception that teacher education is too theoretical. PBL challenges "students' prior understandings about teaching and learning" (Askell-Williams et al., 2007, p. 241) and provides

"imperatives for student[s] to engage with current prescriptions for best practice" (p. 241).

PBL, which is well-established in medical education, is increasingly being applied in teacher education. The first purpose is to promote self-directed learning and intellectual challenge through work in collaborative teams (Pourshafie & Murray-Harvey, 2013). The second purpose is to expose prospective teachers to inquiry-based pedagogy they might employ in their own teaching. The third purpose is to challenge teacher candidates' mental models in order to foster adaptive expertise.

Typically, two written case studies—sometimes supported by video clips—are examined using a seven-step problem solving procedure for PBL cases. Over several classes, the story of the case is disclosed by the teacher educator, who also provides necessary information and strategies through lectures, readings and classroom activities (Wood, 2003). The cases, written in consultation with teachers, relate to the course content and cover key knowledge, skills and dispositions. They are also designed to focus on challenges facing teachers, not on student deficits. Finally, the cases are authentic in their representation of relevant and meaningful pedagogical situations and dilemmas of practice (Pourshafie & Murray-Harvey, 2013). While group problem-solving and presentations are important, so are analytical and reflective papers by individuals.

Examples of PBL in Bahrain and Australia suggest that this is a means of addressing theory rigorously within the university classroom and without additional resources. This is evident from a number of themes that emerged from the research. First, student learning increased notably. Razzak (2012) reported evidence of greater effort, deeper understanding of educational issues and increased problem-solving. For example, one student reflected, "I have learned that I should be able to solve problems when I am in a difficult situation and that flexibility is needed in problem-solving" (Razzak, 2012, p. 140). Also, teacher candidates seemed better able to respond to diverse learning needs. Australian teacher candidates seemed more willing to challenge and unlearn previously held assumptions about learning and often reported substantial growth in knowledge about child development and pedagogy. Second, participants in both countries were highly engaged in and satisfied with the learning process. This made them more comfortable with collaboration and more likely to adopt similar approaches as classroom teachers. Third, they were more willing to become self-directed learners and teachers. An Australian participant commented, "These strategies have enhanced my confidence and my ability to communicate valid and well researched ideas … [they have] increased my ability and confidence in myself as a learner and future educator" (Askell-Williams et al., 2007, p. 256). Fourth, professional collaboration was identified as an important outcome. Razzak found that the majority of teacher candidates in Bahrain demonstrated teamwork skills, particularly in the second round of cases. Similarly, Askell-Williams et al. identified learning benefits among Australian teacher candidates in terms of overcoming discomfort with group work, learning to share workload, building shared understandings and the value of collaboration within schools. This shift in

mental models has the potential to increase the effectiveness of professional learning communities once novices become classroom teachers.

PBL is a robust model with demonstrated success in other professions. The greatest challenge for the implementation of PBL may be teacher educators, who must change their customary practices in order to teach (or facilitate) in a very different way (Pourshafie & Murray-Harvey, 2013). Innovative approaches, such as this and the more complex ones below, may be needed as responses to the perception that teacher education is too theoretical, or theoretical in the wrong ways. PBL is a promising change that can be implemented in a single class or a whole programme, and in well-resourced Western universities or poorly-resourced developing countries.

Core Practices and Pedagogies

The National Council for the Accreditation of Teacher Education (NCATE) (2010) asserted that teacher education needs to "shift away from a norm that emphasizes academic preparation and course work loosely linked to school-based experiences". This stems from a recognition that programmes tend to "align with acquisition models of learning in which teacher educators deliver information about teaching… [with the] onus on teacher candidates to carry that learning with them as they enter the field" (McDonald, Kazemi, & Kavanagh, 2013, p. 381). In place of this discredited yet lingering norm, NCATE proposes moving towards "programs that are fully grounded in clinical practice and interwoven with academic content and professional courses". In other words, better theory, better practice and the integration of the two.

In this section, we focus on how core practice and pedagogies can enhance teacher preparation through the implementation of rigorous content, disciplinary practices, and effective pedagogies. This realistic approach stands in contrast to alternative programme structures "in which novice teachers receive very little theoretical background and teacher education becomes more of a process of guided induction into the tricks of the trade" (Korthagen, 2011, p. 31).

In particular, we highlight the field of research of Magdalene Lampert and her partners in the Learning to Teach In, From and Through Practice Project. This project addressed the perennial challenge of theory-oriented teacher education by identifying core practices demonstrated to be effective. They applied these core practices with teacher candidates and novice teachers in sessions that were taped then systematically analyzed (Lampert et al., 2013). For example, the core practice of *eliciting and responding to students' ideas* was applied to elementary mathematics instruction through researching, planning, watching, and teaching routine instructional activities in university and school settings. Rather than learning mathematics concepts in isolation, teacher candidates develop "a common understanding of the concept of core practice so that the concept itself might become a field-wide tool for the organization and implementation of practice-based teacher education initia-

tives" (McDonald et al., 2013, p. 380). In this example, novice teachers learn to lead several instructional activities that prompt students to expand on their ideas. Rather than directing students to the correct answer, the emphasis is on the pedagogical process of eliciting. This requires the development of careful attention to clues about learning and the subject skills to be able to respond to elicited ideas rather than single-mindedly following a lesson plan sequence to completion. The teacher educator frequently interjects to prompt thinking and extend practice, with roughly half the time taken up with teacher educators responding to elements of the teacher candidate lesson. For example, in attending to the specific content goals of the math lesson, the teacher educator interjected, "Remember, we're pushing place value here. Raise your hand if you used tens in your strategy" (Lampert et al., 2013, p. 232). Content knowledge and pedagogical knowledge are explored by the teacher candidate, with connections made explicit through the interjections by the teacher educator. Although rehearsals are only simulations of practice with students, they "can be considered clinical because the novices engage in doing the work of teaching" (Lampert et al., 2013, p. 238).

The teacher educator is at the centre of practice reminding candidates of multiple dimensions of content, pedagogy and classroom dynamics, and helping them experience these elements in real time. The teacher educator combines more routine aspects of practice (e.g., where to stand or how to explain a term) with more complex aspects (e.g., how to orient students to one another's ideas), while adapting to individual students, situational factors, and choices about elements of the lesson to skip or reinforce (Lampert et al., 2013). The evidence from this ambitious research study suggests that rehearsals based on core practices lead to more *ambitious* teaching than in conventional theory or practice approaches. The teacher educator in the university classroom, unlike the supervising teacher in a practice teaching setting, supports the enactment of particular principles and practices in a deliberate mathematics interaction, and helps give attention to a complex range of demands. This has proven helpful to both the teacher candidate in the rehearsal and helps those observing to "to develop a shared conceptual framework that can enable adaptive performance" (Lampert et al., 2013, p. 239). Indeed, this shared and very public practice leads to "cultural norms of ambitious teaching as novices hold themselves and their peers responsible for principled enactment" (Lampert et al., 2013, p. 240).

Core practices is a robust approach that has been replicated in other subject areas and teacher education settings. McDonald et al. (2013) have outlined core practices learning cycles for controlled settings in university methods courses. These include videos of teaching, rehearsing by playing students, and videotaping efforts enacting practice teaching. They also offer a range of field-based approaches with methods classes in K-12 classes that blur the line drawn between theory and practice. In order to make the conversation among teacher educators more lively and coherent, they also propose the development of a common language of core practices and pedagogies. There are challenges to such an approach, as conventional teacher educators and teacher education programmes are reluctant to yield their autonomy. Also, the rigid separation of foundational from methods courses and of practice, theory and reflection make reform difficult. While this approach ultimately points in

the direction of integration, much work first needs to be done in shifting teacher educators and coursework in this direction. A final challenge is competing (and complementary) agendas for attention, including social justice inquiry and international standards movements.

Social Justice Inquiry

While theory-oriented teacher education is often associated with content knowledge, one powerful theoretical focus relates to equity, diversity and social justice. Such a theoretical orientation calls on teacher candidates to examine dominant group hegemony including, often, their own privilege (Banks, 2007). It encourages them to delve into the complexities of culture, identity, difference, prejudice and discrimination in order to form and enact new understandings of education for social justice (Banks et al., 2005). It also engages them in the mission of supporting achievement for all students regardless of background or circumstances (Banks et al., 2005). It illustrates how to prepare teachers to help students experience democracy in schools (Gay, 2000).

A social justice inquiry approach begins with the recognition that teachers face equity, diversity and social justice issues daily, whether or not they recognize or address them. Critical pedagogy provides teacher candidates with understanding and skills to challenge the predominant knowledge of the dominant culture "through the use of generative themes to read the word and the world and the process of problem posing" (Kincheloe, 2008, p. 15). It recognizes the need to learn from the perspectives of the marginalized, including Indigenous, racial, feminist and queer lenses.

In order to teach towards social justice, according to Kumashiro, Pinar, and Ladsons-Billings (2009), teacher candidates need to adopt one or more of four overlapping approaches to challenging schooling. First, they need to learn ways in which to transform schools so that they are safe, affirming places. Second, they need to provide students with knowledge that challenges false perceptions about people who are different. Third, they need to recognize and challenge privilege and marginalization. Fourth, they need to understand and disrupt prevailing common-sense notions of education. While programmes committed to social justice typically involve practice and reflection, they are also characterized by rigorous new knowledge, critical pedagogy, and the re-thinking of one's conception of the world.

The Developmental Teacher Education programme at the University of California at Berkeley is renowned for its social justice programming (Beck & Kosnik, 2006; Darling-Hammond, 2006b). Over two years, the twenty-five elementary and forty to fifty secondary post-baccalaureate graduates experience a spiral curriculum that combines human development with social justice across courses and in practical experiences. Throughout, child development is closely linked to social and ethical issues of paramount importance in diverse communities (Beck & Kosnik, 2006). Across courses, as a core mission of the programme, faculty "consciously work

with their students each year to engage these issues as they arise in the course of day-to-day practice, as well as in the planned and safer territory of courses" (Darling-Hammond, 2006b, p. 242). Some courses, such as the core seminar each semester, relate social justice to other elements of the curriculum. Other courses focus on diversity issues. For example, Education in Inner Cities explores the challenges of race and class in an intensive but introductory manner, while Teaching Linguistic and Cultural Minority Students "provides opportunities for students to construct practical answers" (Snyder, 2000, p. 118) to questions raised in earlier courses. Course work is also connected to complimentary field experiences. While reflection and practice orientations are also evident in this and other effective social justice inquiry programmes, the explicit attention to equity, diversity and social justice in the theory-oriented courses ensures rigor in explicitly challenging privilege, developing understandings of equity, and learning classroom strategies that promote academic success and social development for all.

Implications for Conventional Teacher Education

Conventional wisdom claims that teacher education is too theory-oriented. The teachers in Kosnik and Beck's (2009) longitudinal study of beginning teachers constructively challenged this common stereotype: "many felt the theory presented in their pre-service programmes was not explained clearly enough: they were often unable to understand what was being said" (p. 5). Rather than less theory, teacher candidates need more theoretical clarity and depth along with closer connections to practical teaching and learning situations. New teachers need a growing knowledge base to meet the demands of a diverse and changing world, but the kinds of knowledge, skills and commitments need to be carefully selected to address the practical needs of teachers as adaptive experts (Darling-Hammond, Bransford & LePage, 2005).

Conventional teacher education features a hodgepodge of approaches both within individual institutions, nationally and internationally. While much excellent teacher education is delivered by dedicated professors and sessional instructors, programmes often do not systematically address the limitations of theory-oriented teacher education. The approaches and examples in this section offer proven strategies for addressing the genuine critiques of theory in teacher education. Problem-based learning, which can be applied in any teacher education class, offers a way of reconceptualising the relationship of theory to practice and reflection. Core practices and social justice inquiry go further, but require shared commitment among instructors and programmes with clear visions of teaching and learning.

The challenge is great, particularly for high enrolment programmes in large universities, but it is one that must be acknowledged and embraced if teacher education is to thrive in tumultuous times.

Part 3: Reflection-Oriented Teacher Education

As we explored programmes that exemplify reflection-orientation to teacher education, we found that reflective practice is a challenging construct to isolate. This is not surprising, as reflection is an active, complex and intentional process that weaves theory and practice together (Redman & Rodrigues, 2014). As reflection facilitates the interplay of theory and practice, reflection-oriented teacher education programmes tend to be oriented to both theory and practice. Also, teacher education that is reflection-orientated goes beyond merely fostering opportunities to reflect by making explicit the *need for* and *value of* reflection to prospective teachers (Loughran, 2002). We direct our attention to specific ways teacher education programmes facilitate teacher candidates' reflective practices within courses and programmes.

First we situate reflection within teacher education. Then we offer examples of how the integration of reflective digital portfolios can foster critical reflection skills essential to the acquisition of artistry (Schön, 1987).

Situating Reflection-Oriented Teacher Education

The reflective-orientation in teaching weaves theory and practice together (Redman & Rodrigues, 2014). Recalling Aristotle's notions of human activity, reflection serves as the differentiating factor between *poiesis* or making-action, and *praxis* or doing-action, because reflective practice on *theoria*, shifts the action to a more "informed action" (Carr & Kemmis, 1986). Dewey (1933) described reflective thinking as "[a]ctive, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends" (p. 6). This is evident in descriptions of practica that optimize learning. For example, Darling-Hammond et al. (2005) wrote:

> typically, the ideal has been a placement in which student teachers are supported by purposeful coaching from an expert cooperating teacher in the same teaching field who offers modeling, co-planning, frequent feedback, repeated opportunities to practice, and reflection upon practice while the student teacher gradually takes on more responsibility. (p. 409)

The emergence of reflection-oriented teacher education stems from both dissatisfaction with conventional approaches and Schön's (1987) work on reflective practitioners. "Intentionality, activity, and reflection are essential to meaningful learning, especially in complex and new domains," according to Jonassen, Hernandex-Serrano, and Choi (2000, p. 111). Meaningful learning can occur when practitioners engage in cycles of reflection that include deliberate and active processes.

Common to most programmes committed to reflection, or reflective practice, is the existence of a problem or "a puzzling, curious, or perplexing situation" (Loughran, 2002, p. 33). They engage teacher candidates in reflection in- and on-action as critical to developing artistry needed to examine professional problems for which neat and tidy solutions are unavailable (Schön, 1987):

> Because the unique case falls outside the categories of existing theory and technique, the practitioner cannot treat it as an instrumental problem to be solved by applying one of the rules in her store of professional knowledge. (p. 5)

This is consistent with Zeichner's (1983) personalistic and Feiman-Nemser's (1990) personal teacher education paradigms.

Reflection should be present in both the practicum and university settings. Loughran (2002) suggested that it is "too easily overlooked" (p. 33) and that teacher educators should explicitly consider the nature, skill, and value of reflection in order to provide intentional guidance in opportunities to guide and support teacher candidates in developing reflective practice:

> This issue is perhaps at the heart of the nature and value of reflection, as clearly the "way in" to reflection—the need to reflect—the context, the nature of the problem, and the anticipated value of such reflection all impact on what is reflected on and for what purpose. Simply being encouraged to reflect is likely to be as meaningful as a lecture on cooperative group work. (Loughran, 2002, p. 33)

Reflection is a way of *being* for teachers, not just a practice. A reflective teacher embodies the five essential aspects of reflection identified by Zeichner and Liston (2013). S/he:

1. examines, frames, and attempts to solve the dilemmas of classroom practice;
2. is aware of and questions the assumptions and values he or she brings to teaching;
3. is attentive to the institutional and cultural contexts in which he or she teaches;
4. takes part in curriculum development and is involved in school change efforts; and
5. takes responsibility for his or her professional development. (pp. 6–7)

Reflective Digital Portfolios

Since the 1980s reflective practice has had a presence within teacher education programmes as a means of stimulating reflection so that teacher candidates can connect and theory to practice. It takes a variety of forms, from short reflection on experiences to large comprehensive portfolios. The most substantive and meaningful approaches employ portfolios as a culminating *thesis* through which teacher candidates' theory and practice, ideally through reflection-on-action processes (Schön, 1987) are captured. This stems from the view that meaningful reflective practice must be systematically structured by teacher educators through dialogue (Husu, Toom, & Patrikainen, 2008), guided and nurtured (Bolton, 2010), and developed in a manner that enhances a positive approach to reflection (Alger, 2006). In an extensive literature review of final thesis models in Europe, Rade (2014) found seven studies that demonstrated the potential for portfolios to develop reflective practice. Teacher candidates tended to agree that portfolio development can stimulate meaningful reflection about their teaching in general, but there is much to consider

regarding the nature and quality of reflection for the promise to become reality (Zeichner & Wray, 2001). After examining portfolio use in American teacher education programmes, Zeichner and Wray (2001) suggested several key areas around which to frame portfolio implementation to enhance teacher candidate learning. Considerations include: the purpose and structure of the portfolio; who determines what goes in the portfolio; the social interactions surrounding the portfolio creation; and, what happens upon completion of the portfolio.

The purposes of portfolios vary widely. They have been used to demonstrate learning throughout the duration of the teacher education programme, to demonstrate achievement of standards or outcomes for credentialing, and to showcase teacher candidates' best achievements when searching for teaching positions (Zeichner & Wray, 2001). The contents and the organization of the portfolio also vary depending on the purpose. For example, artifacts may include excerpts from course work assignments, teaching philosophies, examples of lesson plans and assessments, student work, reflective statements, narratives, and/or *best* work for showcase purposes. Portfolios will also vary depending on whether the content is determined by the programme, a teacher educator or the student.

Given the large variation in how portfolios are implemented within teacher education programmes, it is not surprising that claims about the effectiveness of reflective practice also vary. If reflective practice is to become effective in conventional teacher education programmes, teacher educators need to look to exemplars of reflective practice in teacher education. As Zeichner and Wray (2001) wrote, "We need to learn how to take advantage of their potential for promoting meaningful teacher growth" (p. 620). In the sections below, we focus on digital portfolios.

Digital portfolios or electronic (or e-) portfolios refer to web-based portfolios, that are becoming more prominent in initial teacher education programmes. With the increasing availability and development of web-based digital tools and resources, it is not surprising, that digital portfolios are gaining prominence in professional education. Within teacher education, the reflective purpose may be with the need to demonstrate to accreditation bodies that accountability and standards-based assessment criteria have been met by individual candidates and the programme (Strudler & Wetzel, 2005). Strudler and Wetzel (2005) described two broad approaches to digital portfolios in teacher education programmes: (1) web-based authoring platforms; and, (2) commercial database-driven portfolio platforms. Web-based authoring platforms refers to the digital, relatively easy-to-use, customizable, and typically, free web-based tools such as Wikispace, Weebly, or Wordpress. Database-driven portfolio platform approaches refer to commercially available or in-house digital portfolio platforms created for the purpose of allowing users to create portfolios using specific structures or templates, allowing for uploading, storing, and managing the user's information (Kimball, 2005; Strudler & Wetzel, 2005).

Moving to a digital format makes the portfolio more accessible to the user from any location with an Internet connection, and more convenient for the organization of artifacts and reflections. Barrett (2007) claimed that incorporating digital technologies enhances portfolios and learning processes in a number of ways. By using digital technology as the shell or container, portfolio creators can organize and work

a less linear fashion than with traditional paper-based portfolios. For example, they can now incorporate a wide array of artifacts and reflections via graphics, audio, video, or text to support and illustrate reflection-on-practice. The act of creating and interacting with technologies shifts the portfolio process from that of collecting, selecting, reflecting, and projecting to that of archiving, linking/thinking, storytelling, collaborating, and publishing, requiring a different, enhanced, and more reflective way of working through the portfolio process (Barrett, 2007).

Two examples of digital portfolios within teacher education are considered: an American programme specific digital portfolio; and, a pan-European portfolio.

The Johns Hopkins University Digital Portfolio

In 2005, in his examination of e-portfolio trends, Kimball (2005) found a growing number of database-driven portfolio systems with little consistency in purpose and meaning. He found a "boom in enterprise database systems" (p. 434) that were "named" portfolios but actually referred to a variety of initiatives ranging from assessment systems to scrapbook-like collections to records management for academia. And with the increased use of database-driven portfolio systems designed for teacher candidates to fill in, upload, click, and submit, several key trends emerged pointing to a drastic change in the "portfolio pedagogy" (Kimball, 2005). Such portfolio pedagogy refers to a "thoughtful collection of their work, organized and bound together by their own reflections and the metacognitive connections they have made through their learning experiences" (Kimball, 2005, p. 435).

Kimball (2005) found that although the database systems tended to use portfolio terminology (e.g., deliberate, reflective practice, collaboration, critical thinking, professional growth) he was unsure as to whether the portfolio could actually provide such opportunities within a rigid and standardized system of templates with little student control, used primarily for standards-based assessment. Most troubling to Kimball, and to us as teacher educators, was the decreased emphasis on reflective practice within the context of these database driven portfolio systems. Kimball found that only 53 % of the 48 systems examined included deliberate specifications for reflection, with systems based in academic institutions at 60 % and corporate-based systems at 39 %. Often prompts to reflect appeared only as a "final step before the submission of the so-called real work—a text box to fill out, typically with little guidance", process (Kimball, 2005, p. 450); suggesting that reflection had become an afterthought or window-dressing, rather than a central component to the reflective portfolio.

An example of a database-driven portfolio that attempts to provide opportunities for reflective practice is *The Johns Hopkins University Digital Portfolio* (n.d.). In 2001, Johns Hopkins replaced the traditional paper portfolio, in existence since the mid-1990s, with a digital version as part of the teacher education programme. The purpose of the portfolio is explicitly stated on the initial home page for the digital portfolio:

> The Johns Hopkins Digital Portfolio (DP) is a Web-based assessment and presentation application that allows users to demonstrate their capabilities and achievements in relation to a pre-determined set of principles or standards. (n.d.)

Four key objectives are also clearly stated, beginning with the notion of "developing quality content" through easy-to-use and template driven software that could be used anywhere and anytime (n.d.) reflecting the growing trend of enhanced portability Kimball (2005) found in database-driven portfolios. The second and third objectives are specific to enhancing consistent collaborative processes with peers and faculty, and the need for ongoing reflective practices, both critical in reflective portfolios (Zeichner & Wray, 2001). The philosophical underpinnings also appear to be grounded in reflective practice, with the website explicitly making reference to the need for teacher candidates to addresses personal biases as well as the need for structure and guidance, both important in cultivating teacher candidates' reflective practices (Loughran, 2002; Zeichner & Liston, 2013). The cyclical nature of the reflection is also made explicit on the webpage which does echo the notion of meaningful learning through deliberate and active cycles of reflection (Jonassen et al., 2003).

Given the database-driven and standardized nature of the portfolio, it is encouraging to see multiple descriptions regarding reflective practice included on the Johns Hopkins site. This, could, however also reflect the "talking the talk" trend, Kimball (2005) noted in his review where the stated philosophical underpinnings demonstrated "a commitment to portfolio pedagogy" (p. 443). Without access to the actual platform we are unable to comment upon the nature of the guidance, collaborations, and structures to help scaffold reflective processes, however, in an overview of e-portfolios in selected higher education institutions, Lorenzo and Ittelson (2005) described the rigorous Johns Hopkins Digital Portfolio assessment process as well directed by faculty who help teacher candidates make connections between their course work and assignments. The portfolio also includes a variety of artifacts such as research oriented work, statements of philosophy, and practicum-related work. So even though the portfolio appears to be achievement and showcase-oriented (Zeichner & Wray, 2001) in nature, there does appear to be an attempt to incorporate practices that facilitate feedback opportunities amongst peers and faculty, and continuous opportunities to reflect on various components of teaching and learning.

The European Portfolio for Student Teachers of Languages

The European Portfolio for Student Teachers of Languages (*EPOSTL*) (Newby et al., 2007) is one example of a portfolio process embraced by the European Centre for Modern Languages of the Council of Europe. The EPOSTL, developed by six European teacher educators from Armenia, Austria, Norway, Poland and the UK, emerged from the European Centre for Modern Languages of the Council of Europe as a way to promote coherence in European teacher education.

The *EPOSTL: Piloting and Implementing the European Portfolio for Student Teachers of Languages* website (2001) includes the portfolio document, background information, and related support documents and publications regarding the historical evolution, nature, purpose, and outcomes of the implementation thus far. *The EPOSTL: A reflection tool for language teacher education* (Newby et al., 2007) is a 92-page document that serves as framework for teacher candidate reflection and self-assessment for teacher candidates in language teacher education programmes. As Newby et al. stated:

> The European Portfolio for Student Teachers of Languages (EPOSTL) is a document for students undergoing initial teacher education. It will encourage you to reflect on your didactic knowledge and skills necessary to teach languages, helps you to assess your own didactic competences and enables you to monitor your progress and to record your experiences of teaching during the course of your teacher education. (p. 5)

The portfolio process has multiple aims. Most notably, it aims to encourage reflection "on the competences a teacher strives to attain and on the underlying knowledge which feeds these competences" (Newby et al., 2007; p. 5). The EPOSTL is intended to enhance reflection and learning of the teacher candidate throughout the individual's teaching career. Another explicit aim is the promotion of discussion amongst peers, faculty, and teachers in the field through the portfolio process, something Zeichner and Wray (2001) viewed as critical to a successful reflective process in teacher education.

EPOSTL is comprised of three key sections: (1) personal statement; (2) self-assessment can-do descriptors; and, (3) dossier. The personal statement section provides new teacher candidates with opportunities to reflect upon some general teaching and learning questions including prior experiences as students. The self-assessment section consists of 195 can-do statements for teacher candidates to reflect upon throughout the initial teacher education programme. The creators of EPOSTL explicitly stated that the statements should not be used as a fixed and prescriptive list requiring *checking-off* but rather as competencies within the teaching profession that teacher candidates and teachers alike could reflect upon in an ongoing manner throughout their careers (Newby, 2007). The statements are organized around seven general teaching and learning themes and within each thematic subsection, an introduction to the theme provides an overview and rationale for its inclusion. Lastly, the dossier section provides teacher candidates with an opportunity to include evidence to support their self-assessments as they progress through their teacher education programme.

EPOSTL has been adopted by 25 European countries and translated into 13 languages. A follow up document, *Using the European Portfolio for Student Teachers of Languages* (Newby et al., 2007) included 12 cases studies from teacher educators across Europe about how they used EPOSTL in their courses or programmes, as well as challenges they experienced, how the challenges were addressed, directions or suggestions for future use, and suggestions for implementation.

Newby (2011) maintained that EPOSTL was not a teacher training guide, and its use in teacher education courses or programmes is not intended to be prescriptive.

Teacher educators are encouraged to identify relevant components of the EPOSTL that might be integrated into existing courses or programmes including gathering feedback from the teacher candidates regarding its use. For example, Mäkinen (2011) focused on the personal statement section of the EPOSTL within the context of her language teaching methodology course and found that the teacher candidates enhanced their understanding of the reflective process. Other teacher educators found that the self-assessment component complemented the existing course work within their teacher education programmes and served as a tool to support teacher candidate reflection (Fenner, 2011; Orlova, 2011). Jones (2011) and Ingvarsdóttir (2011) reported that using the self-assessment competencies as focal points for discussion and reflection, enhanced teacher candidate awareness of their teaching practice. Fenner also found that the EPOSTL served as a common tool for guiding teacher candidates learning through reflective practice within the contexts of coursework and practicum.

Teacher educators who incorporated EPOSTL reported that it was most effective when all faculty and associate teachers employed it (Newby, 2011). Thus highlighting the importance of teacher educator collaboration; something often assigned less importance in teacher education than individual instructor autonomy.

Implications for Conventional Teacher Education

The two examples of portfolios, although different in purpose, structure, and processes, both demonstrate how portfolio-use in teacher education within two very different contexts, could promote reflective practice. However, as Zeichner and Wray (2001) noted, teacher educators must consider how this practice fosters "meaningful teacher growth" (p. 620).

From The Johns Hopkins Digital Portfolio, we learn that even in times of increased demands for transparency and accountability from accreditation bodies, teacher education programmes considering databased-driven portfolios might draw from this example of one teacher education programme that explicitly builds reflective processes into a standardized system of portfolio assessment. We might also learn to be more discriminating of commercial products claiming to be an "easy solution" to implementing portfolios. Portfolios are not meant to be easy. Learning is messy and complex and non-linear, requiring more than a simple "select, upload, fill-in, check-off" approach as seen by Kimball (2005) in some of the database-driven portfolio platforms he examined. Lastly, we need to also be aware of the underlying monetary drivers for this type of portfolio product. As Kimball suggested, if teacher education programmes were considering such commercial portfolio models, they need to ensure that the "product" does indeed reflect the pedagogical principles of reflective portfolios.

From the EPOSTL, although it is specific to language teacher candidates, conventional teacher education programmes could draw from its approaches in identifying clear purposes, its format, and underlying philosophies of continued learning

throughout a teacher's career. When teaching portfolios are structured as explicitly as in EPOSTL, they help beginning teachers think critically about teaching and learning through reflective practice.

Both the EPOSTL and The Johns Hopkins Digital Portfolio are examples of portfolios that provide intentional opportunities right at the onset of the teacher education programme with the continued opportunities for the intentional and deliberate cycles of reflection deemed necessary for meaningful learning to occur (Jonassen et al., 2003). Portfolios provide intentional opportunities at the onset of a teacher education programme for a serious consideration of various aspects of teaching and learning. Such learning, guided by teacher educators, helps teacher candidates develop reflective practice (Loughran, 2002). Furthermore, opportunities are provided to consider prior assumptions and experiences regarding teaching and learning, which is critical to becoming a reflective teacher (Zeichner & Liston, 2013). When applied as a reflective tool for use in the practicum setting, as well as course work, reflection is reinforced (Loughran, 2002).

The dossier section of EPOSTL, and the Digital Portfolio's required alignment of artifacts with standards through reflection (in consultation with peers and faculty), illustrate how teacher candidates might weave together theory and practice in self-assessment (Redman & Rodrigues, 2014). While reflection alone does not necessarily make for better teachers, systematic and rigorous approaches to reflective practice can enhance beginning teachers' understanding of their own growth, needs, and how to improve. Faculty must not assume that such "weaving" will happen on its own and that as a collective they must continuously guide and prompt their students through this process.

While we are not suggesting that all programmes implement a structured, standards-based digital portfolio or the EPOSTL, conventional programmes would be much improved if they applied similar reflective processes, structures, and tools in an ongoing manner to foster teacher candidate learning. In addition to enhancing teacher candidates' reflective practices, it might help teacher educators reflect on their individual and collective practices.

Part 4: Integrated Teacher Education

Recent experiments in practice-, theory- and reflection-oriented teacher education are all responses to the limitations of conventional teacher education. Our framework enables us to explore promising programmes that primarily focus on one of these elements. Approaches that focus on specific elements can help teacher educators "move beyond the simplistic traditional vs. alternative and other surface level comparisons that have dominated the literature and policy discussions" (Zeichner & Conklin, 2008, p. 284).

Criticism of approaches that fail to address the complexities of preparing teachers should be balanced with receptivity to the constructive lessons innovative initiatives offer. Our critical gaze should turn to our practices and the nature of the

programmes in which we teach. One response to these approaches to individual key elements of teacher education—and to the limitations of conventional programmes—is the integration of these elements to prepare teachers to become adaptive experts. For the development of adaptive expertise to occur, teacher candidates need to draw on purposeful clinical experience, apply theory to practice, and reflect on their professional experiences to address the learning needs of the students they serve and the communities in which they live (Bransford et al., 2005). Integrated teacher education approaches, such as the ones highlighted in this section, offer ways to make conventional teacher education more rigorous and meaningful.

Conceptual and structural fragmentation—programmes characterized as collections of unrelated courses lacking a common vision, connections across courses, or meaningful links to reflection or practice—is a consistent theme in teacher education research (Darling-Hammond & Hammerness, 2005). Darling-Hammond (2006b) identified three problems in learning to teach that she considered best solved through integration: (1) unlearning conceptions of teaching learned through the *apprenticeship of observation* (Lortie, 1975); (2) challenges in learning to enact theory in practice contexts; and, (3) confronting the multiple and complex academic and social goals in real time in classrooms. Integrated teacher education addresses these challenges and improves teacher candidate learning through a clear vision, rigorous content, extended field experiences, meaningful reflection, and methods that link learning to authentic problems of practice (Darling-Hammond, 2006b).

Five strategies for teacher education are proposed by Beck and Kosnik (2006) as a means of building and sustaining integrated teacher education. The first is a shared, explicit philosophy of teaching and learning that is precise, concise and fixed. This should be reinforced by "careful selection of students, appointment of suitable faculty, and institutional support" (p. 104). The second is a collaborative faculty team that share commitments to the philosophy and are committed to taking time and effort to collaborate. This requires the integration of contract faculty, full-time teacher educators, and other professors involved in the programme. The third is explicit attention to integrating the campus programme so that students can more easily make connections within courses and across courses. The fourth is connecting the campus programme to field experiences through interspersing practica with courses, carefully selecting mentor teachers, establishing close partnerships with schools, and involving instructors in clinical supervision. Finally, the programme needs to model an integrated approach to life and learning.

There are many structural, contractual and cultural challenges to implementing these strategies, which Beck and Kosnik (2006) acknowledge; it also accounts for why most of their and Darling-Hammond's (2006b) exemplars are small programmes. Their cases, and the ones highlighted in this section, show that it is possible to have successful integrated teacher education programmes, if teacher educators and institutions are willing to make solid commitments. The single most important aspect is the appointment of programme and cohort leaders "who have the vision, ability, and specific mandate to bring the different elements together in a systemic, integrated manner" (Beck & Kosnik, 2006, p. 52).

In this chapter, we have highlighted teacher education and approaches that exemplify commitments to practice, theory and reflection orientations. Integrated teacher education is challenging as it extends beyond assembling all the necessary elements—something conventional programmes largely do—to carefully weaving them together so that the elements inform each other in deep and meaningful ways.

Situating Integrated Teacher Education

Integrated programmes that simultaneously address key elements in coherent ways can make a positive difference (Feiman-Nemser, 2001). Kosnik and Beck (2009) argue:

> Learning to teach is a difficult and never-ending task; but a pre-service program that is prioritized, integrated and connected to practice—and that embodies its own priorities—can significantly enhance teachers' effectiveness in their initial years and beyond. (p. 11)

Kosnik and Beck (2011) make the case that teacher educators "often try to do too much" by covering "the waterfront in almost every subject" and, thus, "[s]tudent teachers are inundated with so much information that they have a difficult time organizing it both conceptually and physically" (p. 2). Conventional programmes—traditional and post-baccalaureate—are often problematic. While claiming to address all dimensions of education, they are critically flawed on conceptual and structural grounds. As Feiman-Nemser highlighted (2001), they often have weak relationships between courses and field experiences, offer fragmented pedagogy, limited subject matter knowledge, lack teacher educators who practice what they preach, fail to link theory to practice, and do not "cultivate habits of analysis and reflection through focused observation, child analysis, analysis of cases, microteaching, and other laboratory experiences" (p. 1020). All the elements may be present but more rigour needs to be applied to selection, placement and integration of the elements. More consideration needs to be given to the growing professional consensus and research evidence "on *teacher learning* and teacher education to suggest some strategies that may help new teachers learn this material more effectively" (Darling-Hammond & Bransford, 2005, p. viii).

A strong conceptual framework, by providing "a guiding vision of the kind of teacher the programme is trying to prepare" (Feiman-Nemser, 2001, p. 1023) is the cornerstone of any coherent programme and helps teacher educators "to be explicit about priorities and connections" (Kosnik & Beck, 2011, p. 3). In their book of their longitudinal study of new teachers, *Teaching in a nutshell: Navigating your teacher education program as a student teacher* Kosnik and Beck (2011), they offered seven elements that might serve as priorities in teacher education. Their book is most interesting for the explicit choices they make based on those priorities. For example, for the assessment element, they considered the nature of the problem, identify principles and strategies, develop a feasible programme (rather than mere coverage), and demonstrate a clear understanding of the implications of teacher learning on the choices teacher educators need to make.

In addition to a clear vision, Levine's (2006) study of exemplary programmes identified carefully structured curriculum and cohesive practicum as essential to the application of theory to practice. Similarly, Darling-Hammond (2006a) highlighted coherence and integration, as exemplified in extensive, well-supervised clinical experience linked to courses that employed pedagogies that link theory and practice.

Integrated teacher education necessitates the development of a pedagogy of teacher education through which teacher educators understand teaching and learning about teaching (Loughran, 2006). It requires teacher educators who purposefully examine the complex interplay between elements both within courses and across a programme. As Loughran wrote, teaching about teaching goes beyond modelling to:

> Unpacking teaching in ways that give students access to pedagogical reasoning, uncertainties and dilemmas of practice … to make clear how the teaching approach purposefully encourages learning and how learning influences teaching in action … (p. 6)

Integrated Teacher Education in a Specialized Programme: Wheelock College

Wheelock College is as small college in Boston, Massachusetts with a focus on improving the quality of life for children and their families through teaching, social work and hospital services. Its elementary teacher education programmes are identified as exemplary and examined in detail by both Darling-Hammond (2006b) and Beck and Kosnik (2006). Wheelock graduates 150 students from its undergraduate programmes and from its graduate division.

The guiding principle at Wheelock is the development of children-centred, family-focused, and community-oriented teachers through a programme that emphasizes subject matter knowledge, pedagogic skill, multiculturalism, and supervised clinical experiences. According to its then-president Marjorie Bakken:

> Everything grows for the child. You are the curriculum builders. You watch, you look, and you see, you create. You allow the child to create. Methods are not so important as the child. The child comes first. The curriculum of the college clearly reflects the commitment to a human development perspective. (Darling-Hammond, 2006b, p. 47)

All elements of the programme are guided by this philosophy. Subject matter course requirements ensure breadth across humanities, social sciences and sciences, with the college's vision guiding curricular choices. All majors include a set of multicultural courses and field experiences, along with a core eight-credit sequence of human development courses linked to field experiences. According to Darling-Hammond (2006b), "The tightly integrated curriculum explicitly links theory and practice, emphasizing the needs and strengths of diverse learners" (p. 48).

The faculty team at Wheelock are committed to the philosophy and take the time needed to collaborate with each other. The curriculum is developed carefully from course to course so that themes are reinforced. For example, there is a sequence of

courses on inclusive curriculum development, teaching and advanced curriculum design. The weekly practicum seminar involves course instructors who draw explicit links between incidents and course content. The instructors are also selected for their multicultural awareness and commitment to enacting it in curriculum, reflective writing by teacher candidates and field experiences. Throughout, faculty integrate across courses, including subject matter courses. Also, according to teacher candidates, the faculty model the children-centred approaches they advocate (Darling-Hammond, 2006b).

As important to the Wheelock integration model is field work linked to core courses. For example, the introductory *Children and Their Environments* course features a thirty-hour fieldwork component. The fieldwork assignments in this course give explicit attention to observation and reflection. Also, many teacher educators co-plan with school teachers, with some courses taught in schools by faculty or school-based personnel. Practica are spread throughout the year and are closely supervised by faculty, who check in with teacher candidates weekly and require structured observations and reflections. One assignment required close observation of a student's thinking process in order to promote deeper understanding of learning emerging within the child. Other assignments attend to implicit and explicit approaches to inclusion in schools.

Finally, the teacher educations programmes build community at Wheelock and beyond. The university programme, with deeply engaged faculty and teacher candidates committed to children-centeredness and inclusion, fosters collaboration within courses and in the programme. More significantly, community is built beyond Wheelock. Faculty work closely with school partners, including collaboration on school-based reform efforts in challenging communities. It "has intensive collaborative partnerships with nine urban schools, four of which involved the school as a whole" (Darling-Hammond, 2006b, p. 174). Teacher candidates, through non-school field experience come to know better the communities they serve. Also, they are "prepared to transcend and challenge the roles and boundaries of their profession by coming to understand how an urban community functions [and] how to be a member of the community" (Darling-Hammond, 2006a, p. 175).

The children-centred approach delivered by a dedicated faculty was developed over many years. The inclusion focus emerged later as the college responded to changing social needs. Wheelock College's programmes offer glimpses as to what is possible in terms of integration. The next example, University of Newcastle (Ourimbah Campus), is both an example of integrated teacher education and the limits of reform without full internal and external support.

Integrated Teacher Education in a Conventional University: University of Newcastle

Other examples of integrated teacher education are the 4-year elementary and secondary programmes at the University of Newcastle (Ourimbah Campus) in Australia (Reynolds & Brown, 2010). The core concept of the programme is LiNKS, a long

term professional experience component that enables teacher candidates to work with one school over the four years of their programme. There is a strong relationship between the social justice inquiry approach in university courses and the commitment to social justice in the partner schools. Fourteen courses in the programme have assignments attached to LiNKS schools, which allows teacher candidates to observe and reflect on how theory is implicitly and explicitly enacted in schools. The integration is made meaningful by doing one thing well—linking theory and reflection to practice through school partnerships—and making all aspects of the programme maximize the benefits of such partnerships. While select programmes such as Wheelock College offer powerful stories of integration, the Ourimbah Campus of the University of Newcastle, with over 12,000 students, is both an example of solid integrated programmes and of the challenges of integrated teacher education in conventional universities.

Six aspects identified by Reynolds and Brown (2010) illustrate the benefits of a focus on a specific model of integration, rather than the conventional tendency to touch on everything. First, the field experiences are integral to the programmes, not an add-on. For example, teacher candidates "enacted skills of behaviour management, integration of special needs students, and dealing with culturally diverse students in courses dedicated to those areas and considered these in their schools" (p. 414). Second, an effort was made to make social justice a priority for all instructors. As these are large programmes with many academic and sessional instructors, the level of commitment to social justice varied from profound to minimal. This limitation, which may be avoided in smaller institutions such as Wheelock College, diminishes opportunities to enact social justice pedagogy. Third, a commitment to varied experiences with diverse communities provides opportunities to develop community outreach skills. Of course, given the size of the programmes and the number of people involved, these links are not as strong as at Wheelock College. Fourth, a decision to admit students from diverse backgrounds (both from affluent communities and disadvantaged) allows for interesting discussions and sharing. The course assignments applied to school settings are designed to raise cultural awareness. Fifth, the main focus for most course assignments tied to LiNKS is social justice, which helps teacher candidates develop critical insights into equity and diversity. Careful design and re-design has led to explicit guidance to direct teacher candidates to probe social justice issues. The challenge in a mainstream university is that teacher candidates do not self-select into social justice programmes. Thus, they are less likely than carefully selected Wheelock College to notice null and implicit curriculum or to incline toward inquiry rather than scripted answers. The sixth aspect, engagement with the larger community, was not met as "many schools did not engage with their community or in many cases [teacher candidates] were not involved in that aspect of school events" (p. 415).

The commitment of University of Newcastle (Ourimbah Campus) to integration of theory, reflection and practice with a social justice focus is worthy of note. It is evident that the programme is integrated and making concerted efforts to address social justice issues. It is a successful programme with potential for improvements over time. For us as teacher educators in conventional programmes, it is helpful to

frame the challenges and limitations around Beck & Kosnik (2006) five strategies for building and sustaining integrated teacher education.

The Ourimbah Campus programmes had shared, explicit philosophies, but in large programmes it was not possible to carefully select students (who were largely drawn to programmes close to home) or instructors (who were hired in large numbers to teach specific subjects). Also, most faculty shared the integrative philosophy, most were open to collaborating in assignments, and many had some level of commitment to social justice. Nonetheless, the breadth of involvement made it difficult to have a team with shared commitments. The degree of collaboration, despite this challenge, suggests the presence of dedicated programme leaders and core teacher educators. A dedicated social justice cohort, such as Beck & Kosnik (2006) at University of Toronto, would solve this problem, but then integration and social justice would be limited to a select group. The University of Newcastle programmes, however, are notable for their level of integration on significant course assignments, both across courses and with schools. The teacher education programmes also deserve credit for the establishment of strong school partnerships. Of course, as a large mainstream university, University of Newcastle cannot be as selective as Wheelock College in its partner teachers and schools. Finally, although unsuccessful at the time, integration life, learning and community were steps in the right direction.

Whereas the example of University of Newcastle (Ourimbah Campus) illustrates that integration is possible on a larger scale, despite resistance, the Finnish teacher education system suggests that integration on a large-scale may be possible when there is societal support for teacher education.

Integrated Teacher Education at the National Level: Finland

Most exemplary programmes are small and narrowly focused. Meaningful improvements to teacher education, however, need to occur in large programmes and, ideally, nationally. Integrated teacher education needs to be achieved at scale. This would seem a quixotic quest were it not for the example of Finland. The Finnish education system is regarded as a model for advanced countries thanks to its performance on international assessments and its commitment to teacher autonomy. Sahlberg (2011) identified "the daily contributions of excellent teachers" (p. 70) as the main factor. In Finland teaching is a "noble profession—akin to physicians, lawyers and economists—driven by moral purpose" (Sahlberg, 2011, p. 71). Finland maintains a strong guiding vision for a high-quality education for all of its citizens (Tirri, 2014) that is reflected in the national professional code, which describes teachers as "key actors in promoting human rights, justice and democracy in a global world" (Niemi, 2012, p. 33). In schools, learning is integrated with commitment to the holistic and equitable welfare of all students, regardless of background (Niemi, 2012). A national commitment to equity is evident from government financial support that is uniform and inclusive (e.g., free meals, school nurses, social workers, and psychologists integrated into the life of schools). This is in contrast to Wheelock

College, which selects exemplary partners, and University of Newcastle (Ourimbah Campus), which deals with partners that do not share its vision.

Within this cohesive cultural and social context that honours equity and inclusion (Tirri, 2014), it is not surprising that "Finland's commitment to research-based teacher education means that educational theories, research methodologies and practice all play an important part in preparation programs" (Sahlberg, 2010, p. 4). Although each university is independent and maintains its own mission and vision, they share a "strong national vision of the importance of equal basic education [which] is seen as promoting intellectual and social capital as well as prosperity within the whole nation and its individuals" (Kumpulainen & Lankinen, 2012, p. 70).

The *Finnish advantage* is that the best select teaching as a profession, and receive a rigorous education that integrates practice, theory and reflection (Sahlberg, 2011). The admissions process is rigorous, with much competition for entry into the profession. Teacher education takes place at the masters level, as a second degree. Elementary teacher candidates need to have completed a baccalaureate degree with solid breadth requirements, while secondary candidates need to have completed a baccalaureate degree and work on a masters in their discipline. Programmes in all universities share commitments to the theory of education, pedagogical content knowledge, and subject-specific teaching knowledge and practice (Sahlberg, 2011), aligning with or exceeding the Bologna standards, with all elements linked to current research (Hokka & Etelapelto, 2014).

While each university is autonomous, each has "a detailed and often binding strategy for improving the quality of their teacher education programs" (Sahlberg, 2011, p. 83). For example, multiculturalism is increasingly emphasized as Finland becomes more diverse. There is also close collaboration with subject faculties, with a high level of interdependence and many subject professors who specialize in teaching. Teacher candidates are also guided in explicitly reflecting on their practice, with assessing one's own practice and student learning being core elements of teaching nationally.

Integral to the system is practical preparation in municipal field schools and teacher training schools (TTS). Both are specialized institutions with highly credentialed and skilled teachers with "curricula and practices similar to ordinary public schools" (Sahlberg, 2011, p. 85). Clinical experiences in these schools are seen as opportunities to explicitly integrate theory, reflection, and practice (Sahlberg, 2010). TTS, in particular, possess additional skills and competence to work with teacher candidates as mentors (Sahlberg, 2011) and typically participate in research with university partners and the development of educational materials. While this integrated and collaborative approach ensures high standards of clinical supervision, Niemi (2012) notes that critics wish to see more practicum placements in public schools. Niemi noted that:

> The aim of guided practical studies is to support students in their efforts to acquire professional skills in researching, developing and evaluating teaching and learning processes. In addition, teacher students should be able to reflect critically on their own practices and social skills in teaching and learning situations. (p. 34)

Field experiences are scaffolded, with a gentle immersion leading to the gradual release of responsibility as candidates progress through intermediate and advanced placements (Sahlberg, 2010). This begins with classroom and school observations of classrooms, students, and schools before assuming increasing responsibility for subject matter and student learning (Niemi, 2012). In addition, the practicum might also connect with teacher candidates' research and thesis (Niemi, 2012), demonstrating the integration and cohesion of the programme and reflection, theory, and practice.

The completion of a thesis on education, often a practical study, is an exit requirement that reflects the "professional basis for teachers to teach and work in a complex knowledge society" (Sahlberg, 2011, p. 94). Sahlberg identified this research orientation as a key characteristic that differentiates Finnish teacher education programmes from others. Since 1979, all primary and secondary school teachers must possess a master's degree to enter the profession. This requirement has led to both rigorous content and to a research-orientation in all programme: "the importance of teacher's pedagogical thinking, personal practical theory, reflection, and inquiry-orientation" (p. 97) is emphasized during both academic and practical studies (Jyrhämä & Maaranen, 2012).

The required master's thesis is comprised of research seminars, independent research, and a final research study. Jyrhämä and Maaranen (2012) in their study of how 135 Finnish teachers understood inquiry and applied it in their classrooms and schools, found teachers described an inquiry-orientation as "an individual's everyday work, most of all this means that the teacher develops as a teacher, and tries to educate him/herself" (pp. 101–102). While formal research plays a large part in Finnish teacher education, Finnish teachers' conceptions of an inquiry-oriented teacher mainly centre on how research informs practice: "teachers think that inquiry-orientation is an individual's everyday work" (Jyrhämä & Maaranen, 2012, p. 101), which demonstrates the integration of practice, theory, and reflection in a truly authentic manner. These findings also demonstrate wide acceptance among educators of an overarching goal of Finnish teacher education: "to educate pedagogically thinking teachers who can combine research findings about teaching with the profession's practical challenges" (p. 603). Theory, practice and reflection are integrated through the three phases of programmes: basic, advanced and final practice. Throughout, the teacher candidate "thereby builds an understanding of the systemic, interdisciplinary nature of educational practice" (Sahlberg, 2011, p. 83).

Evidence suggests that this integrated teacher education approach, contextualized within a larger education that is both internally cohesive, provides educators "with opportunities to pursue their own education and implement their innovative projects" (Hokka & Etelapelto, 2014, p. 43). This, along with an education system that respects teacher professionalism and autonomy, has led to a high level of teacher engagement and the common view that professional learning is integral to daily practice. While the teacher education system is well integrated, Hokka and Etelapelto suggest that more could be done to increase teacher educator autonomy and collaboration in order to ensure continued progress. They could learn from strategies employed by exemplary programmes. Nonetheless, the Finnish system

offers hope that integrated teacher education is attainable on a large scale and can make a positive impact on teaching and learning.

Implications for Conventional Teacher Education

The examples of integrated teacher education in this section offer possibilities for teacher educators in conventional programmes. Working collaboratively with colleagues can enhance learning more than merely attending to one's own courses. University learning can be reinforced when teacher educators link their courses to the field through school-based assignments, reflective writing, and closer relationships with teachers and schools. An investment in close collaboration with school partners can lead to innovative practices and responsive teaching by teacher candidates. The standard perception of universities as ivory towers is dispelled if we choose to engage deeply as individuals and collectively as colleges of education.

This may require changes in how teacher education programmes operate within the university and in the community. Reflecting on our experiences as teacher education professors with administrative responsibilities, we are very aware of the challenges. We are both deeply committed to teacher education, yet we find ourselves pulled away by graduate programmes, research projects, writing projects and administrative tasks. Our colleagues hired for specialized knowledge may not share our philosophy, let alone be willing to invest time and energy in collaboration. Part-time sessional instructors, while very competent, have limited time and often replicate practice in the field. The university's priorities do not necessarily promote excellence in instruction or in teacher education programmes. We struggle to find time to invest in relationship building and, when we do, are often thwarted by university structures or school district policies concerning field experiences and partnerships. Our partner school districts have different agendas, and there is no local or provincial commitment to viewing education as a system that needs to be nurtured at all levels. The respect for teaching in Finland is lacking in many parts of the world. Finally, resources of time and money often seem wanting.

Quality integrated teacher education is possible, as the above examples illustrate. While there are many external challenges, there is much we as teacher educators can do, and much that we can do together in order to build integrated programmes. There are also many difficult questions to be raised at the university and government levels.

Conclusion

In this chapter, we have explored a range of teacher education programmes from around the world. The purpose of the journey was to discover approaches that can contribute to the improvement of conventional teacher education programmes. We

were guided by Feiman-Nemser's (2001) questions, which remain relevant today. As professors teaching in conventional programmes, we are aware of their strengths and limitations. While teacher education programmes are staffed with skilled educators who are generally effective in preparing new teachers, we share Feiman-Nemser's concern that the central task of teacher education could be better realized. We observe teacher education that poorly connects theory and practice, opts for breadth not depth in curriculum, lacks deep reflection by teacher candidates, and poorly combine individual course. We see few strong, integrated programmes.

Following in the footsteps of Feiman-Nemser and other teacher education researchers, we ventured out to discover what promising programmes are doing. In mapping out our journey, we identified three important orientations—towards practice, theory and reflection—and sought out programmes that attempted to address at least one orientation in depth. Once the problem was framed and the orientations situated, the bulk of the chapter detailed and critically examined exemplars. We then focused our attention on three teacher education approaches that attempted to integrate all three orientations at a high level. Throughout, we asked how understanding these programmes could help improve conventional teacher education programmes.

In studying practice-oriented programmes, we learned the importance of clinical experiences where aspiring teachers observe authentic learning situations and witness effective teachers assisting students in learning. We discovered alternative certification models that responded to the need for knowledgeable teachers in high needs areas. We discovered school-based programmes in England that give primary responsibility to schools to prepare teachers. While these models had strong practical and experiential elements, they tended to address theory- and reflection-orientations in minimal ways.

In studying theory-oriented programmes, we learned that there are better ways to make knowledge and pedagogy meaningful as theory, and in relation to practice and reflection. Problem-based learning offers robust and authentic ways of organizing subject matter and pedagogy. More promising were core practice and social justice inquiry, both of which require teacher education to truly shift from being collections of courses to becoming carefully conceived programmes with a clear vision and sharp focus.

In studying reflection-oriented processes in teacher education programmes, we learned that reflective portfolios have the potential to guide a teacher candidate's formal learning journey right at the onset of the teacher education programme by addressing initial assumptions about teaching and learning. Through thoughtful and consistent use of the portfolio throughout the duration of the programme, the process might help teacher candidates and faculty understand reflection as a way of being (Zeichner & Liston, 2013) rather than a specific event or isolated occurrence. The portfolio could also serve as a foundation for continued building well into a teacher's career, as seen in the EPOSTL or used at the end of the programme to showcase their learning as seen in the digital portfolio. We also learned that reflective portfolios have the potential to serve as tangible or physical tools to weave the practical and theoretical into an explicit process, however, the process must be guided, scaffolded, and made deliberate by faculty.

In studying integrated teacher education programmes, we learned that integration is difficult but not impossible. Wheelock College taught us that a dedicated team with a clear vision can transform teacher education by integrating theory, practice and reflection and by building community internally and externally with schools and communities. University of Newcastle (Ourimbah Campus) demonstrated both the possibility of integrated teacher education in conventional universities and the challenges that need to be addressed over time to realize that potential. Coming to understand the *Finnish advantage* reminded us that teacher education works best in partnership and in a society that supports and values teachers. Finland also revealed that the community-building needed for integrated teacher education can be done on a large scale.

The challenges of delivering high quality, integrated teacher education on a large-scale in conventional comprehensive universities are great. Developing better individual courses is relatively easy to achieve, but relationships across a programme, with teacher and school, and in communities is daunting. This is especially true given the multiple duties of teacher education and the focus on research and graduate studies. Zeichner (2014) suggested that a new hybrid structure for teacher education is required, and that the ongoing traditional versus alternative argument requires reframing. Such a hybrid structure would require responsibility for teacher education shared by a range of expertise housed in schools, universities, and communities. Such a model is unlikely, given that universities are in a privileged position and most alternatives outside universities have too narrow a focus on practice. Instead, teacher educators and their institutions need to develop new visions for teaching and learning that serve as the foundational element that guides how we *do* teacher education (Darling-Hammond & Baratz-Snowden, 2007).

We need to recognize the limits of current practice and find ways to break down the barriers to more practical elements, deeper theory, richer reflection, and integration. If we do not take up the challenge to respond to legitimate criticism, then calls for alternatives such as school-based teacher training will continue to grow. The best way to counter the neo-liberal agenda is to improve the work we do. In doing so, we also improve student learning, schools and communities at a time when education is critical to living in a diverse and changing world.

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Chapter 5
Teacher Education Curriculum

Maria Assunção Flores

Introduction

Quality teachers matter for quality teaching in schools and classrooms, and quality teachers depend, to a great extent, on the quality of teacher education programmes. However, it is possible to identify different ways of understanding teacher quality and teacher education quality in diverse contexts (Darling-Hammond & Lieberman, 2012a; Hilton, Flores, & Niklasson, 2013). For instance, in Europe, quality teachers have been described as those "equipped with the ability to integrate knowledge, handle complexity, and adapt to the needs of individual learners as well as groups" (EC, 2013, p. 7) and quality Initial Teacher Education (ITE) is associated with "teachers' knowledge, skills and commitment" (EU, 2013, p. 8).

A cross-national study of teacher education in nine countries, namely Ireland, Northern Ireland, Scotland, England, Finland, USA, Poland, Singapore and New Zealand suggested that ITE quality had become a major issue (Conway, Murphy, Rath, & Hall, 2009) in those countries. The report identified a number of principles underpinning quality teacher education, particularly the quality of knowledge integration, opportunities for observation, thoughtful feedback and critical reflection on classroom and school situations, and professional values and identity. If there is consensus on the importance of quality ITE for improving teaching and learning, there is less agreement on how to define and assess quality. Cultural differences, traditions and historical and social factors have to be taken into account in order to understand how teacher education has evolved over the years in different contexts.

By and large, teacher education has been seen paradoxically as the panacea to improve education, and teaching and learning in schools, and at the same time it has been subjected to criticisms which call into question its effectiveness in preparing

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high quality teachers for the twenty-first century. A look at the international literature reveals that teacher education has gone through various restructuring processes aimed at enhancing its quality. However, although teacher education is seen as a key element in efforts to improve teaching and student learning and achievement, diversity in its content and form, including different modes of government intervention, has been identified in Europe and elsewhere as an area for more serious consideration (Darling-Hammond, 2012; Darling-Hammond & Lieberman, 2012b; Ellis & McNicholl, 2015; Flores, 2011; Flores, Vieira, & Ferreira, 2014; Goodwin, 2012; Hammerness, van Tartwijk, & Snoek, 2012; Imig, Wiseman, & Neel, 2014; Mayer, Pecheone, & Merino, 2012). Contradictory trends co-exist in many contexts, for instance, a move towards higher qualifications for teachers at a Master degree level (e.g., Finland, Portugal, France, Malta), much of the time being associated with greater emphasis on the research component, whilst at the same time the development of a more pragmatic, short and school-based orientation (e.g., some ITE programmes in the UK, USA and Australia).

Improving teaching and learning needs investment in universal high quality teacher education with extensive clinical experience and coursework (Darling-Hammond, 2013). However, teacher education is not an isolated variable in the effort to improve education for all. A systemic view is needed in order to fully understand ITE philosophy, rationale, curriculum and goals, encompassing, amongst others, the nature and goals of school curriculum itself, the conception of the teacher as a professional and its role in curriculum development, teachers' professional status and issues of recruitment, selection and retention, the view of education or training that is advocated, the political, economic, social and cultural context in which it is embedded – clearly a complex and highly inter-related set of issues and ideas. For instance, in Europe, it is possible to identify different scenarios when it comes to teacher surplus (e.g., Portugal, Spain, Czech Republic and Poland) and shortages of teachers (e.g., Germany, UK and the Netherlands) with obvious implications for teacher recruitment and education.

The need to conceptualise teacher education as a 'lifelong enterprise' (Vonk, 1995) and as a 'long continuum' (Develay, 1996; Marcelo, 1994; Perrenoud, 1993) has been reiterated in the literature over the last decades. Within this view, ITE is seen as the first step (preparation for entry into the profession) in a career-long process. Induction and continuing professional development of teachers are also viewed as crucial elements of the *continuum* (Bolam, 1987; Marcelo, 1999). Such an holistic view calls for different approaches to teacher education and professional development. However, practical and institutional constraints may be identified (González, 1995), namely the difficulty in integrating theory and practice and in articulating two institutional settings – schools and universities – in the preparation of teachers.

Considering the background (outlined above) the aim of this chapter is twofold: (i) to identify and contrast the ways in which different key components are articulated in the curriculum of ITE programmes; and, (ii) to analyse the rationale and underpinning assumptions of given models of teacher education, particularly the views and focus of the curriculum itself and the governmental intervention in the design of ITE programmes.

The chapter will consider the nature of the teacher education curriculum from an international perspective and draws upon existing international literature and the analysis of curriculum plans of ITE in Europe, Africa, Asia, Middle East and Americas. Examples of ITE programmes from countries as diverse as Angola, Australia, Brazil, Canada, Czech Republic, Denmark, East Timor, Estonia, Finland, France, Japan, Malta, Mozambique, New Zealand, Norway, Oman, Portugal, Spain, Singapore, South Africa, Sweden, UK and USA have been included in the analysis. However, due to space limitations a detailed analysis of the content of the curriculum plans is beyond the scope of this chapter. Rather the focus is on the key features of ITE curriculum programmes internationally in order to look for similarities and differences.

Revisiting the Purpose of Teacher Education: Views of Teacher Professionalism

ITE has been subject to a long and sometimes controversial debate, most of the time associated with its curriculum, its rationale and key components, and with its impact on the education and professional learning of pre-service teachers (e.g., Darling-Hammond, Newton, & Wei, 2010; Flores, 2011; Ingvarson, Beavis, & Kleinhenz, 2007). As Cochran-Smith and Fries (2008, p. 1051) argued, "teacher education has been a contested enterprise, and research has often played a prominent role in disputes by documenting the current status of the profession, suggesting directions for change, and providing ammunition for major debates".

The preparation of prospective teachers for life in schools and classrooms – the main goal of ITE – has been discussed, re-defined and re-framed as a result of the social, cultural and political transformations in society. Thus, understanding teacher education curriculum, in its form and content, entails an analysis of the ways in which teacher professionalism is understood which raises a number of important questions, such as: What kinds of teachers are to be trained? How is a teacher's role in curriculum development understood? What are the key competences, attitudes, dispositions and knowledge required of a teacher? How do the different components of the curriculum articulate and impact on preservice professional learning? How does ITE curriculum support student teachers' identity development?

In a review of a set of international papers on changes in ITE around the world, Townsend (2011) identified a number of major factors that have impacted education, and as a result, teacher education. The factors include rapid technological change, increasing globalisation and movement from one country to others, and a focus on standards for schools, for teachers and for teacher education. In the same review, issues such as teaching as a craft or a profession, with implications for teacher educators and teachers' views and the lack of trust in both teachers and teacher educators being shown by politicians and communities were also identified.

In the USA, Cochran-Smith and Fries (2008) identified teacher education historically as a changing problem, beginning a as curriculum problem (1920s–1950s), then as a training problem (1960s–1980s), followed by a learning problem (1980s–2000s) and finally as a policy problem (1990s–present). Cochran-Smith (2004) previously asserted that teacher education is also a political problem in which values and ideology are played out. She identified the emergence of a "new teacher education" that has been constructed as a public policy problem, based on research and evidence and driven by outcomes (Cochran-Smith, 2005). The author made the case that this new teacher education was both for better and for worse and urged teacher educators to challenge the narrowest aspects and build on the promising elements.

ITE has undergone significant transformations as a result of different ways of seeing teaching and teachers' work in schools which have been confronted by: new challenges such as increasing roles and responsibilities (resulting from the multicultural settings in which they have to work and a broadening of their role, which goes beyond the traditional boundaries of subject matter); changes occurring in social agencies (for instance, families who have witnessed deep transformations in recent years with implications for the role of schools and teachers); greater influence of the mass media in the education of children and young people; the co-existence of different educational models in a multicultural society; the fragmentation of teachers' work; growing opportunities for learning outside school owing to the development of information and communication technologies; and, the increasing accountability, bureaucracy and public scrutiny (Day, 1999; Esteve, 2000; Estrela, 2001; Hargreaves, 2001). New expectations and demands have been placed on schools and teachers even if their working conditions, their education and professional development, and the resources allocated to them (in many countries) have not been congruent with their needs.

Estrela (2001, p. 122) drew attention to the "clear unrealistic social pressure on teachers" and Esteve (2000) referred to the tendency to attribute to teachers all the responsibilities for that which is wrong in education – becoming a sort of 'scapegoat' of the educational system. Gimeno (1991) highlighted the 'hyper-responsibility' placed upon teachers for the quality of teaching. When discussing the opportunities and threats in teaching, amongst other features, Hargreaves and Fullan (2012, p. 43) noted that there was "more interactive professionalism among teachers" but they also warned that it "can turn into hyperactive professionalism as teachers are thrown into hurried meetings to devise quick-fix solutions that will lead to instantaneous gains in student achievement results".

As the above suggests, teachers' work appears to have become characterised more by "ruptures rather than continuities" (Carlgren, 1999, p. 44) within an outcome-led conception of teaching which includes pre-specified and standardised learning goals to be obtained through a linear process in which effectiveness and efficiency emerge as key words in assessing its quality. From that perspective, teaching is seen as a highly controlled activity and teachers are viewed as technicians or 'doers' who implement curriculum directives according to a top-down perspective (Flores, 2005; Gimeno, 1995). Such technical rationality, it is argued, militates

against teacher professionalization and represents a narrow view of professionalism.

Intensification and bureaucratisation, increased forms of managerialism, and greater accountability and public scrutiny are but a few examples of the changes to the teaching profession (Day, 1999; Estrela, 2001; Helsby, 2000). Such changes have led to a decrease in teacher motivation, job satisfaction and sense of professionalism. Research has shown an increased level of teacher stress, fatigue and burnout as a result of the bulk of changes, which have affected teachers' work (see, for instance, Esteve, 1991; Flores, 2014a).

In a nationwide survey carried out in Portugal, in which 2702 teachers participated, Flores, Ferreira, and Parente (2014) concluded that recent policy initiatives, associated with a context of austerity and economic crisis, led to a decrease in teachers' motivation, to greater control of their work, to an increase of their workload and bureaucracy and to a deterioration of their working conditions including their social economic status. The same nationwide study also indicated that teachers have been subject to greater public scrutiny and that the image of teaching and teachers in the media has contributed to the deterioration of the teaching profession.

In many countries, teachers are blamed for what goes wrong in public education but they are simultaneously seen as the key-holders to its success (Flores & Shiroma, 2003). Nevertheless, if their involvement and participation is recognised, at the rhetorical level, as a key variable to the success of reforms, in practice, in many contexts, they have been left out of the public debates (Flores, 2012). In the context of ITE in England and Wales for instance, Furlong, Barton, Miles, Whiting, and Whitty (2000) found that "in the course of just 15 years, the system had been moved from one of diversity and autonomy to one of homogeneity and central control" (p. 149). The shift Furlong et al. (2000) described suggests that a narrower concept of teacher professionalism, based on a restricted notion of professionality, has gradually been achieved. More recently, Murray and Passy (2014) argued that there were still a number of unresolved issues in ITE in England, namely the need to foster a more developmental and inquiry stance.

The restricted view of teacher professionalism relates, in many contexts, to the 'technicisation' of teaching, to the 'technical' view of curriculum (in which norms and top-down directives are key features) and to the fragmentation of teachers' work, which, it has been argued, has led to a decrease in teacher status (Gimeno, 1991; Imbernón, 1994). This depiction co-exists, however, with a more positive (and proactive) vision of teacher professionalism in which teachers' sense of agency and their moral purposes in improving the quality of education provided for pupils and young people are key features (cf. Flores, 2012). Sachs (2000, p. 84) identified five 'fundamentals' upon which a "proactive and responsible approach to teacher professionalism" could be built:

- *Learning* – Learning both as an individual and a collective process (with other colleagues and students as well) becomes the 'core activity' of school life which reshapes the social relations amongst teachers, between teachers and learners and between teachers and their communities;

- *Participation* – Teachers become active agents in their own professional agendas;
- *Collaboration* – Both as an internal (within the school) and external (between the school and other education stakeholders) activity it brings together groups of people working collaboratively for the improvement of the educational enterprise;
- *Co-operation* – Collaborative work amongst teachers brings about opportunities to develop a shared language and technology for documenting and discussing practice and its outcomes;
- *Activism* – Teachers engage both individually and collectively in issues related directly or indirectly to education and schooling, responding to the moral purposes of their profession, an enterprise which requires risk-taking, determination, passion and energy.

This view of professionalism entails a perspective of teaching which goes beyond the mere delivery of curriculum within the boundaries of classroom and subject-area. It implies new sets of professional relationships and new forms of approaching the work of teachers – who become key elements in determining the nature of their professionalism. It is therefore essential to overcome the "naïve view of teacher quality" which has been associated with "a linear relationship between policy and educational outcomes without accounting for school culture, resources and communities" (Mayer, 2014, p. 471).

A look at international contexts indicates that contradictory trends do co-exist ranging from a broad perspective which views the teacher as a "professional" who makes decisions in curriculum development, and who is a key player in improving teaching and learning in schools through a more engaged perspective, towards a restricted view of the teacher, despite the rhetoric of the teacher as a professional, as a doer or technician who implements, in a rather simplistic and rigid way, external impositions on teaching and curriculum, in the light of an outcome-oriented view, sometimes identified as a set of narrow standards to be met. These views have implications for teacher education.

The Definition of Standards and/or Competences

The last decades have witnessed a wide array of policy initiatives which have introduced significant changes in ITE in many countries (e.g., Darling-Hammond & Lieberman, 2012b; Flores, 2014b; Gilroy, 2014; Mayer, 2014; O'Meara, 2011; Townsend, 2011; Zhou, 2014). Central to these are the transformations in educational systems worldwide, resulting from government policies in an attempt to raise the standards of education and pupil achievement.

Many countries around the world (e.g., USA, UK and Australia) have focused on a standard-driven education system "as a means of improving the quality of education provided and to increase student achievements" (Townsend, 2011, p. 488).

Standards are widely seen as "part of the general move in the direction of accountability based on notions of performance (performativity) and have been seen as unnecessarily restrictive" (Menter & Hulme, 2011, p. 394). This trend relates to increasing government intervention in the definition of a set of competencies and criteria against which the training of prospective teachers is to be set up and evaluated. This prescriptive view, identified in many ITE programmes, is said to represent a 'drawback' in the professionalisation of teachers (Gilroy, 1999; Vonk, 1995).

Different ways of conceptualising teacher professionalism highlight the role ascribed to teachers (ranging from 'doers' and 'technicians' to 'researchers' and 'curriculum developers') and the views of teaching underlying a given teacher education programme. One of the major issues in redefining teacher education curriculum relates to the definition of standards and/or competences for teachers. Again, a diversity of meanings may be identified in the international context varying from a more instrumentalist and narrower view of standards and competences towards a more open and flexible orientation (cf. Townsend's summary, 2011).

In general, standards are seen both as a way to improve the teaching profession and to control teachers' practice. Issues such as external regulation, compliance, imposition from the government, accountability are often associated with the definition of standards. On the other hand, improving the teaching profession, self-regulation, activism, definition of standards of professional practice from inside the profession, etc. are also identified in the literature (Flores & Van Nuland, 2013; Sachs, 2012).

In Europe, the European Commission (2013) states that teacher education reforms need to be "founded upon a shared agreement in each education system about what it takes to be a high quality teacher: what competences (knowledge, skills and attitudes) they need, how those can be understood, described and deployed – and what policies and practical provisions can support teachers to acquire and develop them throughout their careers" (EC, 2013, p. 5).

While USA and England are obsessed with standards with Australia following close behind (Townsend, 2011), in other countries a set of competences for teachers and teacher education has been identified. For instance, it has been argued that Scottish standards tend to be less restricted than those in the UK (Hulme & Menter, 2008) which may be related to the traditional values placed on teacher professionalism (Menter & Hulme, 2011).

Struyven and Meyst (2010) referred to the attractiveness of the concept of competences in linking theory and practice, and to preparing students employability and for lifelong learning. In Portugal, for instance, the frame of reference for the professional performance for teachers, which provides the rationale for teacher education programmes, includes the following four dimensions: ethical, social and professional; development of teaching and learning; participation in the school and relationship with the community; and, professional development within a lifelong perspective (Decree-Law n° 240/2001).

The introduction of professional standards and competences in ITE for secondary school teachers in England, France and Germany has marked education reform in these countries with implications for teacher educators, teachers and student

teachers: "the concept of standardised teacher education feeds into the idea that there is some convergence towards a uniform teacher ideal" (Page, 2015, p. 180). Page goes on to contend that a close examination of skills required of teachers in these three countries reveals differences. For example, Whitty (2014) argued that new teaching standards in England are the most prescribed part of "an official 'national' professionalism" (p. 471). The identification of a set of skills and competencies focused on what teachers have to be capable of doing (overlooking dimensions such as on how they think) has led to the rise of "performative professionalism" (Evans, 2011, p. 861) within a reductionist view of the role of the teacher aligned with a narrow view of school curriculum in which an outcome-led orientation is prevalent. In England, in 2010, the government white paper, *The Importance of Teaching*, outlined proposals for how teachers should be prepared (DfE, 2010). The English model is linked to the 'apprenticeship' or 'craft' model of teaching, with an emphasis on practical skills for the classroom. In Scotland, the General Teaching Council established three sets of standards for ITE and induction for registered teachers and for those who wish to take leadership roles. A wider view of the role of the teacher is identified, which is described in the report published in 2011, entitled *Teaching Scotland's Future:*

> teachers as increasingly expert practitioners whose professional practice and relationships are rooted in strong values, who take responsibility for their own development and who are developing their capacity both to use and contribute to the collective understanding of the teaching and learning process. It sees professional learning as an integral part of educational change, acting as an essential part of well-planned and well researched innovation (Donaldson, 2011, p. 15).

In other countries, a set of competences for teachers and ITE has been identified: France has the "référentiel des compétences professionnelles", in Portugal competences (related to professional performance), and in Belgium (Flanders) competences (Struyven & Meyst, 2010) as well as in the Netherlands (Hammerness et al., 2012).

Teaching is a complex practice (Grossman, Hammenrness, & McDonald, 2009) and the cultural, social, historical construction of the teaching profession is a key element in understanding ITE and its curriculum both in its form and content. In the face of common pressures different ways of responding to them may be identified in different countries (Page, 2015). The notions of standards and competences are therefore open to discussion, they are not strict terms, and they are used in different ways in different countries (McMahon, 2014; Page, 2015) leading to the co-existence of different kinds of teacher 'professionalisms' (Whitty, 2000).

A report on teacher education in the European Union (Piesanen & Valijarvi, 2010) indicated that there was much variation between countries with regard to how, and to what extent, the skills and key competences for teaching related to general components such as subject or pedagogical competences or integrating theory and practice. The same report concluded that ITE curricula are defined mainly at national and institutional level, or at both levels, and that there is a need for solid research base. Pedagogical competences have been found to be more important for primary school teachers than for secondary teachers (Piesanen & Valijarvi). The ways stan-

dards and competences are defined therefore need to be understood within the context of the cultural, social and historical differences among the member states in the European Union and elsewhere.

Understanding the curriculum orientation of a given ITE programme implies a discussion of its rationale and of the articulation of its various components. Different ways of looking at teachers and the ways in which they need to be educated embody different philosophies and conceptions of the teacher's role, of teaching and of school curriculum (Marcelo, 1994). For instance, in Portugal the identification of a long list of "curriculum goals" to be met by students each school year has been the subject of debate about their relevance and practicality. Different visions co-exist in this regard dependent on the views and expectations of different stakeholders. However, a narrow view of curriculum focusing on content to be learnt and goals to be met is prevalent (see Decree-Law 139/2012, 2012) with implications for teacher education. In many cases, such a view has been accompanied by a "back to basics" logic, a restricted view of school curriculum, with a focus on the mother tongue and mathematics, and a greater focus on high-stakes testing regimes (e.g., Day, Flores, & Viana, 2007; Flores, 2005; Flores, 2014a).

A recent study carried out in Australia indicated that the testing regime has led to a reduction in time spent on other curriculum areas and adjustment of pedagogical practice and curriculum content to mirror the tests (Polesel, Rice, & Dulfer, 2014). Teachers' curricular practices have been marked by the logic of "teaching to the test" along with a reduction in the kinds of learning experiences that are provided to students in schools and classrooms. Thus, in many contexts, the rhetoric of teachers as professionals does not match the reality of their work and their role in curriculum development and the ways in which education is designed. For instance in the USA, it is possible to identify an alignment between school practices with high-quality content standards and teacher education in the light of greater focus on accountability measured by "large-scale test results with persistent efforts to find ways to measure teacher education using similar measures or performance indicators" (Imig et al., 2014, p. 66).

In Europe, the Bologna Declaration (1999) has been a key element of Higher Education policy. It has led Higher Education institutions across Europe to undergo a process of restructuring degrees and courses – the so-called Bologna process (although the pace and priorities of the reforms vary from country to country). Amaral (2005) was of the view that policy directives related to the Bologna process had more to do with structural features and solving economic problems rather than enhancing the quality of education.

In general, in the European context, the education of teachers has been identified as a priority for improving the various education systems as they (teachers) have been seen as "key players in how education systems evolve" (EC, 2005, p. 1). The European Commission's policy document 'Common European Principles for Teacher Competences and Qualifications' (2005) specified the common European principles for teachers' competence and qualifications, namely that teaching must be: (i) a graduate profession; (ii) a profession within the context of lifelong learning; (iii) a mobile profession; and, (iv) a profession based on partnerships. As for the key

competences for teachers, the same document stressed that teachers needed to be able to: (i) work with information, technology and knowledge; (ii) work with their fellow human beings (learners, colleagues and other partners in education); and, (iii) work with and in society at local, regional, national, European and broader global levels. These issues have been reiterated in Education and Training 2020 (ET, 2020), the strategic framework for European cooperation in education and training. Its main goals are: (i) to make lifelong learning and mobility a reality; (ii) to improve the quality and efficiency of education and training; (iii) to promote equity, social cohesion and active citizenship; and, (iv) to enhance creativity and innovation, including entrepreneurship, at all levels of education and training.

By and large, two main models of ITE may be identified depending on the ways in which the general and professional components of the curriculum are organised: the concurrent model, in which the general and professional components are delivered concomitantly; and, the consecutive model, in which the professional component follows the general component (Piesanen & Valijarvi, 2010). However, the analysis of the organisational features of ITE, including the so-called alternative routes into teaching, goes beyond the scope of this chapter the focus of which is to look at the curriculum of ITE, both in its form and content from an international perspective.

Convergences and Divergences in ITE Curriculum Internationally

Changes in teacher education worldwide have been driven by globalisation and by governmental pressure to enhance the quality of teachers and teaching and to align it with changes in school curriculum, in many cases as a result of international assessments, but also as a consequence of the social, scientific, technological and cultural transformations which make teaching a much more complex profession. Thus, understanding the nature of the changes in teacher education curriculum entails the consideration of the role of school, the conception of curriculum itself and teachers' role in its development, the views of education and teaching and the vision of the outcome for citizens.

Despite the diversity of programmes in Europe and elsewhere, ITE has been recognised as a key issue in raising teacher status, improving the quality of teaching and fostering professional development – which is seen as a continuum including the induction phase as well as the in-service education and training of teachers (Bolam, 1987; Marcelo, 1999).

The articulation of two institutional sites for professional learning, i.e., schools and universities, especially in contexts in which a university-based model is prevalent has been reiterated in the literature. Zeichner and Conklin (2008) pointed to the complexity of ITE programmes and their various components, and argued for the need to discuss their significance in terms of their content and structural charac-

teristics. Not only does teacher education need to be understood within the political, social, cultural and economic contexts in which it is embedded but it also requires cognisance of the conceptual and epistemological assumptions underpinning its curriculum models and organisational systems.

In general, studies in education, subject matter along with pedagogical content knowledge, and practice are included in teacher education programmes, but, according to Kansanen (2014, p. 281), focusing on the Finnish context, "how to build a dynamic and successful curriculum founded on these elements is apparently the key to getting good teachers into the education system of the country". This section of the chapter considers the key components of teacher education curriculum drawing upon the analysis of existing curriculum plans drawn from international research literature.

Diversity of ITE Curriculum Both in Its Content and Form

On the one hand, ITE has witnessed great diversity in terms of its structure, focus and pedagogy worldwide (with varying modes of governmental involvement), on the other hand, it has been considered a key topic in political debates (Flores, 2011, 2014c; Hökkä & Eteläpelto, 2014).

A report on teacher education curricula in the European Union points to considerable variation in the skills and competences required for the teaching profession in the official documents in different countries (Piesanen & Valijarvi, 2010). The same report reveals that subject competences, pedagogical competences, and the integration of theory and practice are mentioned in all the EU countries' relevant documents, whereas quality assurance, mobility, leadership, and continuing and lifelong learning are often left out. The same report also indicates that whereas in most EU countries, national documents, laws and regulations stipulate general guidelines and frameworks for the organisation of teacher education, higher education institutions are granted a degree of autonomy to develop their own curricula.

In a nine-country study (Ireland, Northern Ireland, Scotland, England, Finland, USA, Poland, Singapore and New Zealand) of teacher education the diverse ideological orientations to teaching and teacher education were highlighted both within and across countries (e.g., social efficiency, deregulation, and social justice), as well as the variety of routes into teaching and the diversity of length of ITE programmes (Conway et al., 2009; Vidovic, Domovic, & Drvodelic, 2012).

In a recent comparative study of teacher education programmes in Denmark and in Top-3-performing countries Canada, Finland and Singapore in international comparisons such as PISA and TIMMS, Rasmussen and Bayer (2014) pointed to the relative homogeneity of the programmes in the four countries as professional knowledge comprised a significant proportion of the teaching content. However, two clear differences were identified. The first difference was associated with the philosophically oriented professional knowledge, much of which was normative and formed an extensive part of the content of the ITE programmes in the Danish

context; but was not the case in the other three countries. The authors suggested that the difference could be related to diverse institutional placements, structure and duration of ITE programmes, as the Top-3 countries' ITE was located in research-based universities; that was not the case in Denmark. The second difference they noted was that in Canada and Singapore teaching materials combining research-based professional knowledge with practical guidance and experiences were identified but in Denmark and Finland such types of knowledge were kept separate.

Further to this (above), ITE programmes in Canada were characterised by variation in structure and duration across provinces, ranging from 8 months to 5 years (Van Nuland, 2011). Both consecutive and concurrent structures carried implications for the ways in which curriculum components were integrated, but all included some kind of field experience in a school setting, during which teacher candidates "observe and practise teaching in a school and apply theoretical, practical, and experiential knowledge to construct understanding of professional issues" (Van Nuland, p. 413).

Existing literature also highlights the diversity with regard to the role and responsibility of universities and schools in the teaching practice component, ranging from schools playing a host role (work placement model) to shared responsibility between both institutions, through to schools providing the entire training (school-based training) (Conway et al., 2009).

Fragmentation versus Integration of Different Components

The fragmentation and/or integration of ITE curriculum components and between schools and universities as sites for professional learning have been widely discussed in the literature (e.g., Aydin, Demirdogen, Akin, Uzuntiryaki-Kondakci, & Tarkin, 2015; Cardoso, 2012; Clarke, Lodge, & Shevlin, 2012; Duda & Clifford-Amos, 2011; Elstad, 2010; Flores, Santos, Fernandes, & Pereira, 2014; Goodwin, 2012). Discrepancies between that which student teachers learn in their programmes and their experience in clinical practice (Wan, Odell, Klecka, Spalding, & Lin, 2012) as well as a binary opposition between schools and universities (Wilson & l'Anson, 2006) have been well identified.

A brief glimpse of the international literature pertaining to curriculum plans reveals that subject knowledge, subject didactic knowledge, general education studies and practicum are generally present in ITE programmes, but there is great variation in regard to its location in the programme and to their interaction to enhance preservice teachers' professional learning. In most cases, it is up to preservice teachers to make the necessary links between the different ITE curriculum components.

It is possible to identify, especially in consecutive models, a separation between subject knowledge, pedagogy and professional practice. This is the case, for instance, in the Master Degree in Teaching for secondary school in Portugal (a 2-year programme after completion of a Bachelor's degree in the subject matter

(e.g., Maths, Biology, etc.)). This new configuration of ITE, as a result of the implementation of the Bologna process in European universities, is seen (at least in theory) to represent a drawback in terms of what was called an Integrated Model of Teacher Training (Flores, 2011; Flores et al., 2014). In the integrated model (noted above), the subject area (e.g., English, Biology, etc.) and the pedagogical component were distributed simultaneously throughout the 5-year course including 1 year of practicum in a school. The new model (a 2-year master degree programme) emphasises the subject knowledge and didactics, the professional practice occurring mainly at universities (which implies less time at schools) within a formal technical rationality (Canário, 2001). Added to this is the prevalence of the academic logic in detriment to the professional (Canário, 2001; Formosinho, 2009a), the nature of the academic culture (namely the departmental organisation at university and the valorisation of research to the detriment of teaching in terms of Faculty career progression, and the individualistic working patterns related, in many cases, to promotion), which makes curriculum articulation and the coherence of ITE rather difficult. Also, the separation between two institutional sites for learning – schools and universities (Braga, 2001; Estrela, Esteves, & Rodrigues, 2002; Flores, 2000), and consequently, the ways in which professional practice is understood and put into practice are also identified. Again, the lack of articulation between discourse and practice is prevalent. In other words, ITE curriculum is marked by fragmentation and a lack of articulation among its key components (mainly professional practice which tends to be undervalued from an academic cultural stance) within a view of that which Roldão (2001) described as a "mosaic plan" within a cumulative logic to the detriment of a project-driven perspective.

Fragmentation has also been associated with the historical curricular separation between foundations and methods courses within ITE and in particular the disconnect between theoretical and practical knowledge (Grossman et al., 2009), as well as the tensions between the professional and academic logic of teacher education and the curricular organisation of the time and space of each component in ITE curriculum (Formosinho, 2009a). Problems in ITE in Brazil have also been reported in terms of the lack of direct connection between theoretical studies and the practical world, the lack of inclusion of practical knowledge and expertise developed by successful teachers, and the debates with regard to ITE quality and the introduction of national curriculum parameters (Marcondes, 2013).

In a report of ITE in six countries (Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine), Duda and Clifford-Amos (2011, p. 94) found that they were "still more concerned with teaching specific subjects rather than the provision of integrated programmes of study for preparing teachers as modern professionals". The authors highlighted the need for competence-based developments in order to move beyond isolation of ITE from real practice of schools, and for clear standards for ITE and criteria to assess them. They also identified the need to improve organisation, content and methodological issues, support for classroom practice and research in and on ITE.

A recent study carried out in Portugal, after the restructuring of ITE programmes there (Flores, Santos et al., 2014), illustrated that as a result of the implementation

of the Bologna process, student teachers pointed to the relevance of the curriculum content, namely teaching practice, and the role of teacher educators as positive aspects of their experience along with the guidance and support they received. However, they also identified negative aspects such as the lack of connection between given subjects/modules, the gap between theory and practice, duplication of content, the length of the teaching practice, the lack of articulation between university and school, the lack of coordination amongst departments, supervisors and coordinators of the teaching practice, and the mismatch between given subjects/modules in Year 2 and student teachers' needs during their practicum.

Internationally, it is clear that there is a need to achieve greater curricula coherence and a better articulation of its different components (Flores, Santos et al., 2014). There is also a need to take into account "the amount of emphasis placed upon different components of the curriculum such as subject matter preparation and preparation in pedagogical knowledge as well as amount of time spent in supervised clinical experiences" (Zeichner & Conklin, 2008, p. 278).

Didactic-Oriented Versus Research-Based Approach

In some European countries the implementation of the Bologna process "has been used as a pretext for reducing the content and the length of TE programmes" (ETUCE, 2008, p. 26). In some, prescribed curriculum and pedagogies have been identified. A recent study in Spain highlighted a number of shortcomings in ITE – namely the lack of quality, inadequate practices, difficulties in promoting learning, and a lack of preparedness for entering the teaching profession (Sancho, 2014).

The new configuration of ITE in countries such as Portugal due to the Bologna process organised according to a two-cycle study (a 3-year degree in a given subject plus a masters degree in teaching) emphasises subject knowledge and specific didactics (Flores, 2011, 2014c; Flores et al., 2014). Teaching practice mainly takes place at universities, which implies that less time is spent in schools. This approach to professional training results in a more fragmented curriculum including reduced time and space for teaching practice (which occurs only at masters level, usually in Year 2) with implications for the pedagogical activities in which student teachers are able to engage. Within that context, Moreira and Vieira (2012, p. 97) argued that "the impact of this structural change is not yet clear; will second-cycle student teachers take teaching more seriously because they had more time to decide to become teachers, or will they take it less seriously because their training is shorter? And will they be able to integrate subject and pedagogical knowledge now that these curricular components are clearly separated?"

The new legislative scenario in Portugal, for instance, stipulates as key components of ITE curriculum subject matter, general education, specific didactics, ethical, social and cultural dimensions and professional practice. By and large, emphasis is placed on specific didactics and professional practice. For instance, for secondary

school (Master degree in Teaching with 120 credits in total[1]) ITE programmes include the following credits: subject matter (minimum of 18 credits); general education (minimum 18 credits); specific didactics (minimum 30 credits); and, professional practice (minimum 42 credits). The ethical, social and cultural dimension receives no credits and it is to be developed within the context of the other components of the programme.

In many ITE programmes around the world, it is possible to identify courses and modules with a more didactic perspective and without a real research orientation. As Niemi and Nevgi (2014, p. 132) argued, "preparing for research-based work in the teaching profession can also be undermined because of the pressure to provide new teachers with skills that are measured through students' learning outcomes in high-stakes testing". In Portugal, the most recent legal changes point to an increase in the importance of subject knowledge and specific didactics along with longer programmes for initial teacher education at Masters degree level (Decree-Law No. 79/2014, 14 May).

Training in school subjects aims to consolidate and further student teachers' knowledge and academic training in the field in which they intend to teach. General education training includes knowledge, skills and aptitudes required by teachers and relevant to their work in schools and classrooms. It includes developmental psychology, curriculum and evaluation, the school as an organisation, special educational needs, and classroom organisation and management. Specific didactics relates to the pedagogy of a given subject and level of teaching. Professional practice includes classroom observation, collaboration in teaching under supervision, planning, teaching and evaluation from the angle of trainees' professional development. The cultural, social and ethical dimension is intended to "raise awareness of the big problems of the contemporary world, including key values of the Constitution such as liberty, the freedom of speech and religion, respect for ethnic minorities, and the equality of gender" (Decree-Law No. 79/2014, 14 May).

The research component which was present in the previous legal framework (Decree-Law No. 43/2007, 22 February), although without any specific credits, was removed from the curriculum in the most recent restructuring process of ITE in Portugal (Decree-Law No. 79/2014, 14 May). Despite the strict legal framework under which higher education institutions have to organise their ITE programmes, it is possible to make the best of it at the institutional level namely as far as the research component during practicum is concerned (Flores, Veira, Silva, & Almeida, forthcoming). At the University of Minho, the goals of the practicum are: (i) to promote a critical understanding and intervention in pedagogical contexts; (ii) to deepen the development of subject matter and pedagogical competencies; (iii) to develop a research culture and collaboration in professional training; and, (iv) to develop the integration of cultural, social and ethical aspects in professional training. In addi-

[1] The credits represent the workload of a student in a given module or course, including contact hours (teaching), independent study, tutorials, practicum, assessment, etc. At the University of Minho, one credit represents 28 h of student workload. The number of credits to be obtained per year is 60.

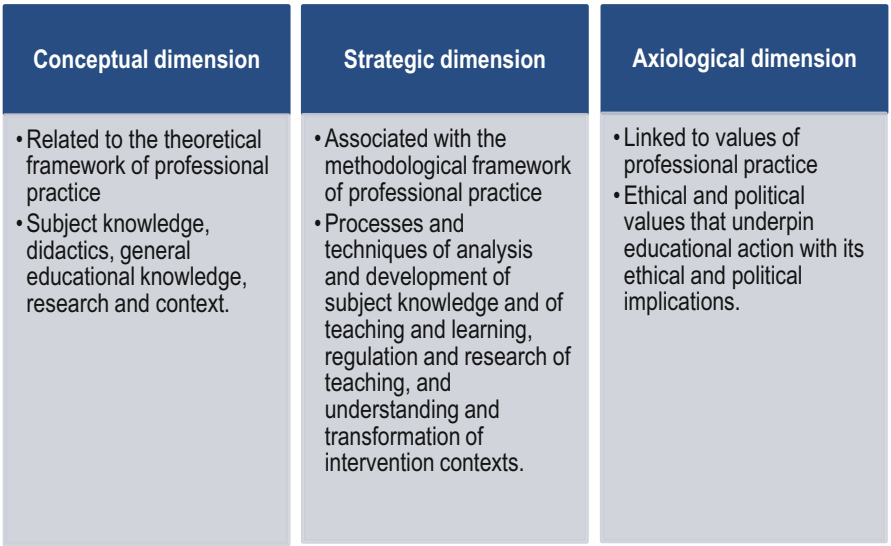

Fig. 5.1 The three dimensions of professional practice (Internal document governing practicum at the University of Minho)

tion, three main dimensions associated with the professional profile of preservice teachers (see Fig. 5.1) are also identified: the conceptual dimension (which relates to the theoretical framework of professional practice); the strategic dimension (associated with the methodological framework of professional practice); and, the axiological dimension (which deals with the values of professional practice).

It is noteworthy that preservice teachers are to be evaluated through a portfolio that they will develop throughout their practicum and they will also be expected to write a research report about a pedagogical intervention they developed at school (which is to be discussed in a public viva-voce examination). One of the major challenges within the new legal framework for ITE was to "design a model for practicum within a tradition of practicum without any model" (Vieira et al., 2013) namely in regard to the lack of definition of the role of supervisors, the nature and goals of practicum strategies in terms of training and supervision, as far as observation was concerned, lack of connection between theory and practice and between research, training and teaching, lack of stability of university-school partnerships and lack of dialogue and inability to promote educational change (Estrela et al., 2002; Flores et al., 2014; Formosinho, 2009a, 2009b).

The aforementioned frame of reference for practicum was developed and it was in place for the first time in 2008/2009. Its main underpinning principles and assumptions related to the complex and ideological nature of the teaching experience as a transforming and challenging praxis (Flores et al., 2014; Vieira et al., 2013). The model for practicum aims at articulating teaching and research and lends to professional practice a transformational and emancipatory nature in line with the creation of a "third space" (Zeichner, 2010) in which preservice teachers, teachers

and supervisors may educate by doing research and investigating by educating. One of the main difficulties in implementing a model for teacher education resides in the co-existence of different views on the part of teacher educators, namely in regard to the role of research in practicum (Flores, 2011; Flores, 2014c; Flores et al., 2014; Vieira et al., 2013).

The most paradigmatic example of a research-based orientation to ITE is the Finnish case. In general, it consists of:

> i) major studies (approximately 30 % of the MA programme), in educational sciences including educational foundations, psychological, sociological and cultural knowledge for teachers' work, including a BA and MA thesis involving research methodological studies; ii) pedagogical studies (approximately 20 % of the MA programme), including guidance to teach different subjects consisting of teaching practice and research-based orientations in the teaching profession; iii) minor studies (approximately 20 % of the MA programme) including multidisciplinary studies in primary school and for secondary other subject matter than the major.; iv) additional minors (approximately 10–20 % of the MA programme) consisting of subject disciplines with the aim of qualifying to teach them or school-related optional studies; v) communication and ICT studies (approximately 10–12 % of the MA programme) providing generic skills and optional studies depending on students' personal interests. (Niemi & Nevgi, 2014, p. 134)

This broad-based teacher education curriculum encompasses "well-balanced knowledge and skills in both theory and practice" (Sahlberg, 2012, p. 9) according to a "systematic continuum from the foundations of educational thinking to educational research methodologies and then on to more advanced fields of educational sciences" (p. 11).

A report on teacher education in nine countries (Ireland, Northern Ireland, Scotland, England, Finland, USA, Poland, Singapore and New Zealand) also stresses the need to promote reflection and inquiry to enhance knowledge integration (Conway et al., 2009). The findings suggest that in order to promote greater coherence and knowledge integration in ITE curriculum, reflective practice has been complemented by a growing emphasis on the inquiry/research dimension.

Theory and Practice in ITE and the Role of Practicum

The classical theory-practice divide is well documented in international literature (Flores et al., 2014; Korthagen, 2010; Van Nuland, 2011). Indeed, one of the major issues in ITE has been the (lack of) articulation between theory and practice. It has been identified as one of the most critical issues or, as Korthagen (2010) described it, "the perennial problem" of ITE, which he related to the socialisation process into existing patterns in schools, to the complexity of teaching, to the nature of the learning process in ITE, to the kind of knowledge valued (associated with the tension between practical and formal), and to the ways in which the affective dimension is overlooked within a technical- rationality perspective.

The idea that ITE is mainly theoretical and disconnected from the real world of schools has been addressed in a number of studies (see for instance Ebby, 2000;

Flores, 2001, 2006). In some contexts, that trend has been associated with the *universitisation* of ITE which relates to the "passage to higher education, typically to university education, of all the components of teacher education programmes for all levels of schooling" (Formosinho, 2002, p. 3). Formosinho (2009a) stressed the emphasis on the academically oriented logic prevailing in many ITE programmes in contrast to the professional oriented perspective. The former is associated with knowledge fragmentation and the existence of subject-related territories linked to university departments (Formosinho, 2009a) which, in turn, hinders teaching coordination and curriculum articulation in ITE programmes (Vieira, Flores, & Ferreira, 2012), whereas the latter recognises the specific nature of learning to teach in which the practical and professional dimensions (including workplace learning) are of paramount importance.

In the international research literature, the location, length and focus of the so-called practice (which is largely viewed as the practice teaching component of ITE) varies according to the philosophy of the programme and the contexts in which it occurs. The most recurring form it can take in ITE programmes is practicum. Although practicum is recognised as a key element in ITE curriculum, there is no consensus about its goals, the view of education underpinning it, the formative strategies that it involves, the required professional competences and ways of assessing them and its connection with the other ITE curriculum components (Flores, 2014c; Flores et al., 2014). In other words there is a wide array of "teaching practices" in different ITE programmes. In some cases they may occur throughout the ITE programme taking different forms, such as observation, data analysis, in other cases, it happens mostly at the end of the programmes (Cardoso & Flores, 2014).

In general, the reduced time for practice, and more specifically for practicum, and its location at the end of the ITE programme, has been one of the major concerns in countries as it is the case of Angola, Portugal and elsewhere (Cardoso, 2014; Cardoso & Flores, 2014; Vieira et al., 2013). Other critical issues relate to the quality of supervision of both cooperating teachers and university supervisors and the lack of timely and formative feedback (Cardoso, 2012; Flores, 2006).

A recent survey conducted in Portugal, after the implementation of the new legal framework as a result of the Bologna process, focusing on practicum or professional practice indicates that the most problematic aspects relate to the lack of articulation of the different modules and their connection to professional practice at school, lack of time to design and implement the pedagogical project, lack of coordination amongst the teacher educators involved in the professional practice, and inadequate modes of assessment within each module (Vieira, 2014). Despite this, the practicum is largely viewed by student teachers as the most meaningful experience in their ITE programme in terms of professional learning through which the articulation of theory and practice is seen to take place (Flores, 2014c). The opportunity the practicum offers makes it possible for student teachers to get to know the 'real world' of schools and classrooms and what it means to interact with students, their problems and challenges (Al-Hassan, Al-Barakat, & Al-Hassan, 2012; Cardoso, 2012).

Teaching practice as a key component of the ITE curriculum is thus marked by ambiguity and diversity. Although there is consensus concerning the vital importance of teaching practice in the process of learning to teach, there is less agreement with regard to its aims, the approaches to education and professional training underpinning it, the strategies and professional competencies to be developed, the role of the various key players, and the location and articulation of teaching practice with regard to other components of the ITE curriculum (Flores et al., 2014).

In a systematic analysis of the curriculum policy documents for teacher education in Brazil, Dias and Lopes (2009) concluded that practice was a key vehicle in ITE for articulating all the other curriculum components, but it has also been seen as an "empty space" due to its different and sometimes contradictory meanings on the part of the different stakeholders. The role and place of practice is therefore subject to dispute within the framework of academic and disciplinary models, of integrated models and of research-based models. The authors noted that multiple meanings have been attached to practice in which fluctuations and contradictory views emerge, including: practice as the real space and contact with the reality, teacher as reflective professional, the specific nature and valorisation of professional knowledge; interaction with students' knowledge; and, as a locus for political dispute against the proletarisation of the 'teacher as professional'.

The persistent criticism of teacher education as being too theoretical relates to student teachers' assumptions regarding the concept of theory which appears to affect how they engage with it (Sjolie, 2014). As Korthagen (2010, p. 420) suggested, it is crucial to connect different types of knowledge with practical problems, in order to "make students aware of the problematic relationship between theory and practice, and help them understand why theory initially often does not seem to match their experiences and gestalts". Several programmes have been restructured in order to link theory and practice, such as bringing aspects of reality shock into the programme, the realistic approach and through "authentic learning" linking learning to real contexts and experiences (Hammerness et al., 2012).

The role of university-school partnerships (Conway et al., 2009; McMahon, 2014) draws attention to the key importance of the practicum as a form of workplace learning (Flores, 2014c; Groundwater-Smith, Deer, Sharp, & March, 1996). However, simply considering location of practice as being confined to schools is not sufficient when it comes to going beyond the so-called theoretical knowledge. A different understanding and role of practice within ITE is needed which may be fostered by an emphasis on the research orientation. In fact, the research dimension has been identified as a way of moving beyond the theory-practice divide in ITE curriculum programmes.

The Research Component in ITE

One of the paradigmatic examples of research in ITE recently coming to prominence in the international literature is the Finnish research-based model of teacher education (Kansanen, 2014). It has been identified as one of the most important variables in explaining Finland's success in international assessments – the "Finnish miracle" (Sahlberg, 2012). Hökkä and Eteläpelto (2014) highlighted the strong focus on a "research-based curriculum" in ITE in Finland which includes the study of research methods and the writing of a masters thesis aiming at training "autonomous and reflective teachers capable of adopting a research-oriented attitude toward their work" (p. 42). In the Finnish ITE curriculum, research studies encompass the "theoretical basis for research work (e.g., reading and reviewing research literature and learning research methods) and conducting authentic research projects" (Niemi & Nevgi, 2014). In other words, "when teaching and research on teaching are integrated, we can speak about a research-based teacher education programme" (Jyrhama et al., 2008, p. 3).

Recent empirical work has demonstrated that Finnish student teachers value research experiences which promote the development of professional competences and support their growth toward evidence-based practice and twenty-first century skills (Niemi & Nevgi, 2014) – all of which corroborates earlier research (Jyrhama et al., 2008). Active learning experiences in ITE reinforce the view that conducting research studies have a positive effect on professional competences, "student teachers' professional competences were much higher when both research studies and active learning experiences supported them" (Niemi & Nevgi, 2014, p. 140).

Worldwide, curriculum plans illustrate a diversity of ways of integrating research into teacher education programmes as well as ways of integrating it into practice. The introduction of research into the curriculum in France has been seen as a strong feature (Lapostolle & Chevaillier, 2011) and the research (action-research) component in the practicum has been seen as a positive aspect of the Master Degree in Teaching in Portugal (Flores, 2014c; Flores et al., 2014).

In ITE programmes in Europe and elsewhere the research component varies: in some cases it is non-existent; in other cases it is not explicit in the curriculum but it is up to the training institutions to foster the development of student teachers' research competences, for instance during practicum; and, in other cases, an explicit curriculum unit on research methods is included in the curriculum as well as an inquiry approach to the practicum. There are clear variations across programmes "from one compulsory methods course to a critical reading of research papers and use of databases for policymaking recommendations" (Niemi & Nevgi, 2014, p. 132) to the development of a pedagogical intervention project with a research component (action research) during the practicum in a school (Flores et al., 2014). Thus, the research component has taken different forms in different countries.

In Brazil, in order to foster the establishment of partnerships between schools and universities and to enhance the research dimension of teacher education, the *Pibid* (*Programa Institucional de Bolsa de Iniciação à Docência* – Institutional

Programme for grants to initiate teaching) was launched in 2007. The principles underpinning the Pibid included: (i) basing teacher education on teachers' work at school and on real experiences; (ii) combining theoretical and methodological teacher knowledge of higher education institutions and the practical and experiential knowledge of teachers in schools; (iii) paying attention to the multiple dimensions of the daily work of school and to research aimed at solving practical situations and innovations in education; and, (iv) promoting dialogue and collaborative work fostering the social nature of the teaching profession (Brazil, 2012). In 2014, a total of 49,321 grants were in place, of which 40,092 were granted to student teachers, 3052 to coordinators and 6177 to supervisors (Hardoim, da Pessôa, & Chaves, 2014). It seems reasonable to suggest that a diverse array of research conceptions have been realised through such a process (e.g., some no doubt more school-related, others more university-centred and others led by academics in collaboration with student teachers). In fact, recent empirical work pertaining to Pibid has demonstrated the contribution it has made to the grant holders' (*bolsistas*) identity development as a form of preliminary induction into teaching (Hardoim et al., 2014), through raising awareness of current complex conditions of being a teacher and the valorisation of the teaching profession (Santos & de Silva, 2014), as well as fostering collaboration between schools and universities and the consolidation of teacher professional knowledge (Cruz, Oliveira, & da Campelo, 2014).

In France preservice students are more research-oriented as they study for a Masters degree but that does not infer that they do not face a number of challenges in trying to combine "research training, professional training and preparation for recruitment [through] competitive examinations" (Lapostolle & Chevaillier, 2011, p. 454). As noted earlier, the research dimension was removed from the ITE curriculum in Portugal. However, an action-research approach has been developed in the context of the practicum in year 2 of the Masters degree in Teaching. Moreira and Vieira (2012) identified cultural, methodological and personal constraints in promoting pedagogy for autonomy through action research during the practicum. Amongst other issues, they specifically highlighted: the dominant culture of schooling as transmission; the dominant culture of teacher education as technical instruction; the dominant culture of research as production of academic and generalisable knowledge; the diversity of supervisory styles/agendas; time constraints; diverse expectations; and, resistance to public exposure.

In a recent study on the role of research in practicum in the context of the Masters degree in teaching at the University of Minho, Portugal, 28 final reports were analysed (Vieira et al., 2013) which pointed to the relevance of research in developing pedagogical practice focused on the quality of teaching and learning. However, it also identified the co-existence of different modes of articulating research and teaching which are associated with diverse views of teacher education and the role of research in practice and in the (re)construction of professional competences. As the main positive issues, the authors identified the exploration of diverse approaches framed in current and updated views of education within a democratic perspective and being change-oriented, the mobilisation of different kinds of knowledge, the

articulation of pedagogical and research purposes in practicum, and the diversity of data collection methods and assessment modes designed to better understand student and teacher development.

In general, Vieira et al.'s (2013) study illustrated that reflective practice emerged from the practicum reports in which research is used to understand and transform education and was seen as the central element in the (re)construction of the thinking and practice of teachers-to-be. As for the constraints, amongst others, the study revealed that more needs to be done in terms of making more explicit the ethical and conceptual framework underpinning the pedagogical projects, the mobilisation of knowledge about research in justifying the methodological options and data analysis, integration of theory and practice and reflection about the limitations and recommendations for training, supervision and research on teaching.

Overall, as the range of studies (noted above) make clear, further developments are needed to improve the research dimension within the ITE curriculum in a more explicit and articulated way in the light of two main purposes: the conception of professional development underpinning student teachers' pedagogical projects and learning experiences; and, the training of preservice teachers in research methods.

Internationalisation of Teacher Education

More recently, issues of globalisation and internationalisation have become key themes in the teacher education literature (e.g., Gray, 2010). A key element in the general European framework is the issue of mobility, which is regarded as a "central component of initial and continuing teacher education programmes" (EC, 2005, p. 3). The same document stresses the importance of providing student teachers with opportunities to study European languages during ITE and in continuous professional development programmes as well as the need for "greater trust and transparency of teacher qualifications within Europe to allow for mutual recognition and increased mobility" (p. 5).

In a similar vein, another EC document (2007) highlights the importance of reflective practice and research in order for teachers to take charge of their own development as professionals within a lifelong learning perspective. The need for a well-qualified profession and the idea of a mobile profession based on partnerships have hence been identified as key principles at a European level but also elsewhere. As such, the qualification of teachers in Europe plays a prominent role in the European Qualifications Framework, which implies the notion of learning outcomes (defined in terms of knowledge, skills and competences reflecting what trained teachers ought to know and be able to do). Extensive subject knowledge, solid pedagogical knowledge, and the skills and competences necessary to guide and support students' learning and understanding of the social and cultural dimension of education have been identified as core elements in teacher education (EC, 2007).

Based on the EC documents, Piesanen and Valijarvi (2010) identified a number of clusters of skills and competences as core elements in teacher education

programmes: (i) subject competence; (ii) pedagogical competencies; (iii) the integration of theory and practice; (iv) cooperation and collaboration; (v) quality assurance; (vi) mobility; (vii) leadership; and, (viii) continuing and lifelong learning. Although an analysis of these clusters is beyond the scope of this chapter, it is important to note that issues such as research-based learning, self-development, student exchange, learning European languages, understanding different European cultures, etc. are of paramount importance for internationalising teacher education in Europe. It is also significant that subject competences, pedagogical competences and integrating theory and practice occur more frequently in European Member States' documents, to the detriment of mobility, leadership, and continuing and lifelong learning, which have received less attention (Piesanen & Valijarvi). In Norway, for example, mobility has become a key issue within the new reform and student teachers should have the opportunity to study elsewhere after 2 years (Munthe, Malmo, & Rogne, 2011).

Czerniawski and Ulvik (2014, p. 51) drew attention to the fact that "A European agenda for improving the quality of teacher education is, for a variety of reasons, problematic when considering the variety of ways in which teachers in different European countries are trained, educated and inducted into the profession." Moreover, Kissock and Richardson (2010) highlighted the need to internationalise teacher education and the difficulties in doing so, stating that "within the current narrowly defined framework of standards, the internationalisation of teacher education is essentially non-existent" (p. 92).

By and large, internationalisation is seen as a "gain, which enables flexibility and mobility helping student teachers to visit other countries, to strengthen their intercultural competence while they have the opportunity to earn credits (ECTS)" (Peterson & Carslen, 2014, p. 136). Olmedo and Harbon (2010) were of the view that

> internationalising teacher education means viewing education from the perspective of a global citizenry, thus not only broadening the knowledge base of teachers but also sensitising them to different perspectives on issues that can affect children, families and communities, and having those perspectives inform the way they teach. (p. 77)

There is room for improvement in this field by providing student teachers with more opportunities to study other languages during ITE, developing a multicultural and inclusive view of education, and also fostering student teacher mobility within Europe and beyond.

Another important aspect of ITE is the development of collaborative initiatives regarding not just field experience but also the development of solid partnerships between schools and universities within a consistent view of education and training. Issues such as research-based training, learning other languages, understanding different cultures, fostering mobility and collaboration are among key features that could enhance the internationalisation of teacher education. So doing might help to enhance the development of other aspects of ITE such as issues of diversity, inclusion and social justice, which are less evident in some curriculum plans, although these issues no doubt deserve further attention (Cochran-Smith et al., in press; Zeichner, 2014).

Reconsidering the Teacher Education Curriculum

This section of the chapter aims to summarise the main features of ITE curriculum and highlight some of the issues that deserve further analysis. ITE is the first step in preparing prospective teachers for entry into the teaching profession; something that needs to be reiterated more than ever in face of the challenging times for the teaching profession. Teacher's work is multidimensional and complex and the teacher plays a number of different and challenging roles: instructional manager; caring person; and, generous expert learner and cultural and civic person (Conway et al., 2009). Analysing the role of the teacher in six countries, Duda and Clifford-Amos (2011, p. 29) highlighted the following dimensions: key participant in society; enabling an individual model of work with every child to develop his/her abilities; a source of cognitive and moral growth in pupils; capable of spiritual and moral development; self-motivated; user of ICT; key person laying the foundations for life in complex, diverse and uncertain socio-economic conditions; a conveyer of traditional values and civil society; and, a model of exemplary conduct in society. The expectations on teachers can most certainly be described as challenging.

Taking an international perspective, Townsend (2011) suggested that from the policy, research and practice points of view, ITE stakeholders are "on a quest" in an era of increasing accountability framed by conditions when:

> … governments are seeking to limit the level of funding provided for teacher education activity, while increasing the range of expectations required; when think-tanks propose new models for the education of teachers that will impact on the jobs of those previously involved in this process; and when many teacher education staff within universities are being asked to increase their research output to make up for funding challenges brought on by government responses to the global financial crisis. (p. 483)

Teacher education needs to respond to the increasing uncertainties and complexities of teaching in the twenty-first century. What is apparent in most of the recent policy initiatives is an attempt to re-think the teaching profession by introducing significant changes in the way in which teachers are trained, whether they encompass an extension of the formal training or a greater emphasis on a school-focused apprenticeship model. The bulk of the changes in teaching are occurring alongside new and more demanding expectations in relation to teachers' role in society which calls for new ways of training them.

In a recent review aimed at charting the landscape of teacher preparation in relation to larger social, political and economic forces and resulting ideologies that have shaped education over the last 50 years, Cochran-Smith and Villegas with Abrams as well as Chavez-Moreno, Mills and Stern (in press) identified three major trends: (i) unprecedented attention to teacher quality and accountability; (ii) changing conceptions of how people learn and what they need to know to thrive in a knowledge society; and, (iii) increasingly diverse student populations coupled with growing social and school inequality.

Teacher education in many countries is facing major challenges and in the USA it is facing an uncertain future – taking into account the different visions of

university-based teacher education challenged in terms of costs, focus, effectiveness, structure and format, and ideological orientation (Imig et al., 2014). Some research points to a more optimistic view of ITE in terms of formal professional learning and its impact upon student teachers by introducing innovative strategies into the courses (De Jong, Korthagen, & Wubbels, 1998; Koetsier & Wubbels, 1995; Korthagen & Wubbels, 1995; Wood, 2000), namely within a realistic model of training (see Korthagen, 2010) and an accountability model (Ludlow et al., 2010).

Teacher education exists at "the nexus of multiple institutional and policy contexts" (Grossman & McDonald, 2008, p. 185) and it entails the paradox of being seen as fundamental for quality teachers and quality teaching, but at the same time, it has been subjected to criticism in regard to its effectiveness and impact on student teacher learning. There is a need to rethink education and its main goals (Sancho, 2014) and therefore a concomitant need to reconsider teacher education.

Some of the concerns with ITE are political and deal with national policies but others are micro-political in nature and relate to programme quality (Munthe et al., 2011). Some critical issues relate to the integration and coherence of ITE curriculum, the relevance of its components and the interaction amongst them, and the tensions visible in trends towards a more didactic-oriented perspective and a research-based approach. In Norway, one of most critical issues is the coherence and progress in teacher education and the research orientation (Munthe et al., 2011) as is also the case in some other countries around the world (e.g., Portugal, Mozambique, France, etc.).

In the context of academic and university-based ITE in Finland, Hökkä and Eteläpelto (2014) identified three major challenges: (i) obstacles in renegotiating professional identity; (ii) internal competition between subject-matter groups within the department, and, (iii) discrepancies between individual agency and organisational development. The authors argued that teacher educators' individual and collective agency needs to be supported to enhance their continuous professional learning and organisational change.

A cross-national study (Conway et al., 2009) of teacher education in Ireland, Northern Ireland, Scotland, England, Finland, USA, Poland, Singapore and New Zealand identified a number of principles underpinning quality programmes: vision (common and clear vision of good teaching practice); knowledge of learners linked to curriculum; integration of foundations, methods, and teaching practice; addressing the apprenticeship of observation; strategies to examine culture and schooling (cultural homogeneity, diversity and change); strong relationships, common knowledge and shared beliefs (built on university-school partnerships); and, integration focused projects (e.g., case studies, portfolios).

As noted earlier, in order to fully understand the nature and purpose of ITE, it is necessary to take into account the political, social, cultural and economic environment in which it is embedded. Figure 5.2 summarises the key elements that influence teacher education as well as the core issues in reconsidering its curriculum. The ways in which different countries look at teacher quality, teacher competences and standards and the priorities for ITE depend upon the wider context as well as the policy context, i.e., the legal framework for teacher education and school cur-

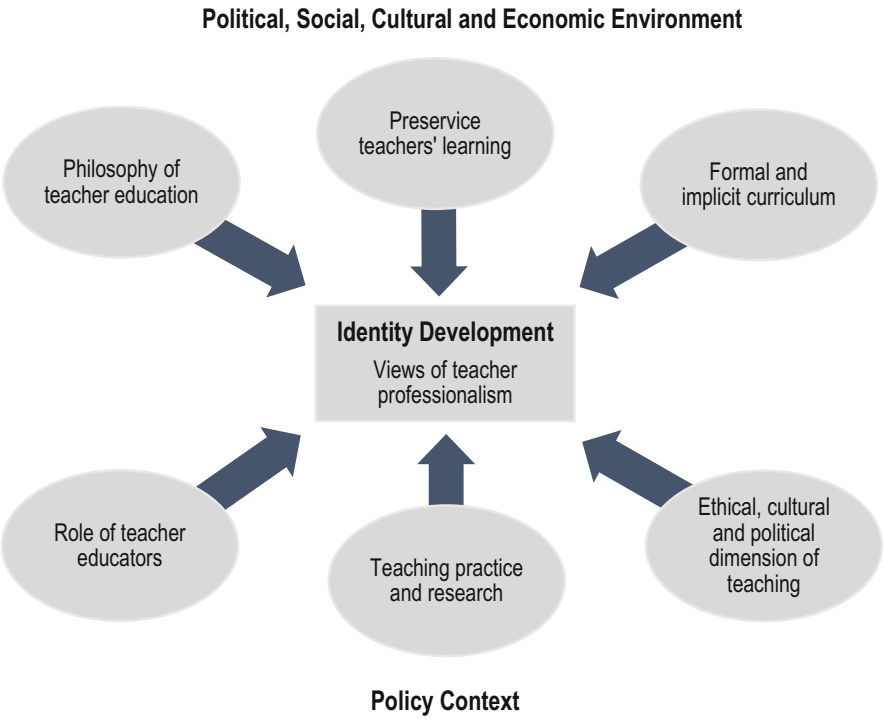

Fig. 5.2 Key elements in reconsidering teacher education curriculum

riculum, the role ascribed to teachers in curriculum development, the goals and priorities of school curriculum which, although they tend to be very much linked to international assessments, are designed and implemented differently in national contexts. A paradigmatic example of this is the European context where the Bologna process was implemented and in which 'Common European Principles for Teacher Competences and Qualifications' were issued (2005).

A wide diversity of programmes and curriculum organisation and content exists across countries and within the same country. Of importance are the policy documents regulating the education of teachers in light of national priorities which encompass certain ways of looking at teacher professionalism. Similarly, the nature and process of school curriculum – and the role ascribed to teachers in its development – along with a given view of teaching and learning are also important elements in defining teacher professionalism and the ways in which teachers are to be trained (Gimeno, 1995).

Focusing on England, Maguire (2014) highlighted the need to ensure teacher quality "by reforming teaching at source by regulating and controlling ITE" (p. 779). She discussed the "technology of erasure" which relates to "the erasure of the work of progressive and reforming teacher educationalists who have in different times attempted to produce new ways of using school-based experiences to produce new

forms of teacher (and trainee teacher) knowledge" (p. 780). Also of importance is the nature of preservice teachers' learning combining a wide array of knowledge (content, pedagogy, curriculum, philosophy of education, beliefs, attitudes, etc.) and the kinds of opportunities provided during their ITE programme.

If ITE is to be reconsidered in the face of both internal and external pressures for quality and effectiveness, teacher identity development is pivotal as well as the ways in which it is explicitly included in ITE curriculum both formal and implicit (e.g. Flores, 2014d). This is certainly a big challenge in the case of shorter and more compact ITE programmes within the context of the consecutive model as in the Portuguese 2-year Masters degree in Teaching. Sachs (2001) described identity as a negotiated, open and shifting process stating that "for teachers this is mediated by their own experience in schools and outside of schools as well as their own beliefs and values about what it means to be a teacher and the type of teacher they aspire to be" (Sachs, 2001, p. 154). As such it is neither a stable nor a fixed entity. It is not a "taken-for-granted process nor a product … It is a space of struggle and conflict, and of construction of ways of being a teacher" (Nóvoa, 1992, p. 16). As such, the development of teacher identity in ITE becomes a core element in reshaping its curriculum as is also the views of teacher professionalism advocated. These are influenced by the kinds of opportunities which are provided to student teachers for professional learning and development of dispositions, attitudes, behaviour and skills in both the formal and implicit curriculum of ITE. Also influential to the development of preservice teacher identity is the philosophy of teacher education held by teacher educators and within ITE curriculum and the ways in which it is coherently and explicitly enacted in a given institutional setting. If a professional view of the teacher as a curriculum maker is to be advocated and put into practice, attention needs to be given to both the explicit and implicit curriculum of ITE, including teacher educators' practice, as well as to more effective connections between research and teaching practice and to the ethical, cultural and political dimension of teaching and teacher education.

The literature draws attention to the influence of ITE in shaping teacher identity in different ways (Beauchamp & Thomas, 2009; Flores, 2013, 2014d; Flores & Day, 2006; Friesen & Besley, 2013) that prompt a number of important questions, such as: "What has been the impact of the new contexts (and curriculum) for improving the quality of ITE?"; "What kinds of teachers are being trained under the new framework?"; and, "What kinds of teachers need to be trained?" Central to these questions are views pertaining to teacher professionalism which are embedded in the explicit and formal curriculum components of ITE but also in the implicit curriculum and the curriculum of processes understood as practice in ITE (Formosinho, 2009b). These include the curriculum practices and the organisational features of teaching (the former relates to the syllabi and teaching methods and assessment; the latter includes, for instance, ways in which the different kinds of courses and modules are organised).

Attention needs to be paid to the explicit articulation and integration of the key components of the formal curriculum, but also to the ways in which the curriculum is put into practice within the institutions which calls for the key role and status of

teacher educators, another central element in reconsidering teacher education, to be better understood through questions such as, "Who are the teacher educators?"; "What are their views about teaching, teacher education and learning?" and, "How do they connect the key components of ITE curriculum in their practice explicitly?" In that regard, another issue that deserves attention is the philosophy of training held by teacher educators but also explicitly advocated in formal documents and in the practice of ITE in the institutional settings. The departmental structures and the hierarchical prevailing logic make it difficult for cooperation to occur. Political and departmental-led interests sometimes prevail in detriment to the pedagogical and scientific logic in negotiating and debating ITE. Thus, the role of teacher educators, the practice and research components and the ethical, cultural and political dimension of ITE need serious consideration.

The (In)Visibility of Teacher Educators' Work

Teacher education as a "late arrival" to the academy has implications for its status (Maguire, 2014) which has been a highly scrutinized as those associated with teaching practice are consistently buffeted by the demands of research and its status in the academy. Concerns with impact on performativity, funding challenges and external compliance have had implications for academics and also for teacher educators: "competition rather than cooperation came to be seen as a key driver of quality with accountability measured by performativity and compliance with raising achievement as key" (Alcorn, 2014, p. 447). This is also true for teacher educators in countries facing economic and financial crises such as Portugal and Spain (and where a teacher surplus exists) as well as for those experiencing alternative routes to teacher education (e.g., USA, UK and Australia) which can lead to a struggle to recruit student teachers. In the English context, Maguire (2014) called into question an "attempted erasure of the role of university-based teacher educationalist as a knowing expert and the valorisation of practical experience, craft and skills" (p. 782).

In some instance, the perpetuation of structures, namely departments, and an academic culture that fosters separation between the university teachers of the foundational courses and those of pedagogical practice, associated with hierarchical ways of functioning, can militate against curriculum articulation, coordination and coherence and in fact reflect the perceived "lower" status of practice within ITE. In general, university teachers of curriculum, didactics, and pedagogical practice see themselves as teacher educators, i.e., the effects of teacher educators' teaching practices on students' learning how to teach (Formosinho, 2009a). Further to this, Formosinho was also of the view that university teachers may not always fully apprehend the demands of being a teacher educator and so could function as uncommitted researchers within their communities, professional groups and organisational contexts. It is not difficult to see that the specific and crucial work of teacher educators needs to be made more explicit and visible within institutions in order to not only promote the status of ITE but also as a way of fostering cooperation and

catalysing curriculum integration. For that to be the case, it is crucial to take into account the peculiar status of university teachers as teacher educators.

Korthagen, Loughran, and Russell (2006) asserted that:

> … so long as teacher educators advocate innovative practices that they do not model, illustrate, and read as text in their own teacher education classrooms, teacher education reform will continue to elude us. (p. 1036)

The "narcissistic view of individual autonomy" within institutions of ITE (Formosinho, 2009a) can make it difficult to collaborate due to fragmentation and to a culture of separation in departments and knowledge territories along with the perverse effect of teacher educators' practice on preservice teachers' professional learning (Formosinho, 2009b). Thus, the reconceptualisation of teaching implies the need to attend to the clinical aspects of practice which in turn need teacher educators to add "pedagogies of enactment" to an existing repertoire of pedagogies of reflection and research (Grossman et al., 2009). For that to happen there is a need to overcome historical divisions namely the curricular divide between foundations and methods courses as well as the separation between universities and schools.

In China, Zhou (2014) identified a number of challenges for ITE:

> … changing content from context-free knowledge and a knowledge of disciplines to disciplines' knowledge in practice, improving the quality of teacher educators and changing their indoctrinated instructional approach, joint help from the university faculty and cooperative teachers for student teachers to develop practical knowledge, using research-based evidence to evaluate programmes. (p. 521)

Further to what can sometimes appear to be a paradoxical position of teacher educators in relation to their practice, Moreira and Vieira (2012) noted that:

> Teacher educators frequently avoid direct participation in making decisions about the future of teacher education – some have no convictions about the direction it should take, some fear confrontation between perspectives and prefer to keep silent, and others just don't care. (p. 102)

Clearly then if such actions prevail across the system, then serious questions arise such as: "Who are the teacher educators?"; "What do they do when they teach how to teach?"; "What kinds of learning experiences do they promote in their teaching?"; and, "Why are they teacher educators?"

As a personal response to concerns with the development of ITE at University of Minho, Portugal, a number of teacher educators engaged in a study group in order to investigate the ITE model and to discuss and disseminate their practices. The initiative gathered together 25 teacher educators who volunteered to participate in the group and to conduct a self-study. The potential of the self-study of teacher education has been recognised in the literature over the last decade, pointing to its key role in understanding and challenging teacher education programmes, processes and practices (see, for instance, Loughran, 2005, 2009; Kitchen, 2005; Schulte, 2005). However, challenging the institutional status-quo and changing existing practices, especially those which imply a "profound cultural shift in the existing views of teacher education which is often threatening to experienced educators" (Korthagen, 2010, p. 419) are difficult processes which, in many cases, mean teacher

educators going beyond their 'comfort zone'. Despite the adverse circumstances, the study created a relevant space for sharing and looking beyond one's own individual practices and for co-training and professional development as teacher educators (e.g., Vieira, 2013, 2014).

Teacher educators' "special and unconventional role" means there is a need to: be able to create suitable learning experiences for student teachers; be competent at promoting further awareness and reflection; and, be able to offer theoretical notions from empirical research (Korthagen et al., 2006). In addition, there is a need for more explicit pedagogies of identity development and collaboration if preservice teachers are to become reflective and collaborative professionals. Therefore, there is a need for preservice teachers to be educated within a context in which explicit articulation of formal and implicit curriculum and relevant pedagogies are to the fore (Flores, 2014d). ITE curriculum articulation is far too important to be left to individual preservice teacher to have to make 'possible connections' throughout and across their preservice education programme.

The pedagogies that student teachers experience are crucial in shaping their understanding of their sense of identity, as well as the importance of pedagogical reasoning, and understanding learning about teaching through an inquiry stance (Loughran, 2014). Teacher educators need to "model transformative curricular and pedagogical practices" (Olivier & Oesterreich, 2013, p. 414).

In Finland, Tryggvason (2009) found that teacher educators promoted theoretical and pedagogical aspects of teaching by using them in their own teaching which itself was research-based; demonstrating further the importance of promoting the pedagogical voice and productive learning in ITE (Russell & Martin, 2014).

> … every teacher candidate takes a unique personal set of messages from the shared experiences of an education course. The single most important influence on what candidates take away is the nature of the relationship that is developed with the teacher educator. (Russell & Bullock, 2013, p. 216)

The Centrality of Practice and Research in ITE

The missing link between theory and practice is one of the critical elements in ITE (Elstad, 2010). As noted earlier, the literature highlights the gap between theory and practice and the sense of inadequate preparation felt by student teachers in dealing with the realities of schools and classrooms (see, for instance, Flores, 2000; Flores & Day, 2006). However, teaching practice is recognised by student teachers as a crucial component of professional learning (Flores, 2014c; Flores, Santos et al., 2014). As a key structural component of ITE, teaching practice and research need to be given more attention not only in regard to the role of cooperating schools and universities, but also to the reflective component geared toward student teachers' professional development within a democratic view of education, and the relationship between theory and practice and between teaching and research (Flores et al., 2014). Thus, despite ITE facing many challenges, integrating research into the

practicum can been seen as a window of opportunity through which gains might be made in post-Bologna teacher education (particularly in Portugal, see Flores et al., forthcoming).

Tang, Wong, and Cheng (2012), in their study of professional learning in ITE, found that student teachers attending a Bachelor of Education Programme in Hong Kong held a constructivist vision and conception of teaching and learning based on student construction of knowledge and a capacity for lifelong learning. That outcome was the result of their learning experiences during the ITE programme, including the core components of the formal curriculum (coursework), informal and hidden curriculum (student teachers' experiences both in coursework and fieldwork, namely, the interaction with faculty and cooperating teachers and the participation in activities beyond the formal curriculum), field experience (classroom teaching), and non-local experiences. In terms of the degree of influence on their conception of teaching and learning, field experience was the most influential, followed by the formal, informal and hidden curriculum.

Teaching practice is generally regarded as a key element of the ITE curricula not least because of the possibilities of bridging the theory-practice divide but also due to the connection between the two sites of professional learning (schools and universities) which offer opportunities for collaboration between university supervisors, cooperating teachers and student teachers, and the possibility of linking and putting into practice knowledge and competencies (see for instance Al-Hassan et al., 2012; Dawson & Norris, 2000; Flores, 2000). However, whilst teaching practice is viewed as a vital part of the initial teacher education curriculum, the lack of consensus about what it entails is revealed by its diversity of form, content, duration and focus (Flores et al., 2014; Wilson, Floden, & Ferrini-Mundy, 2001). If, for example, improvement in the quality of practicum learning is to occur, there is a need to challenge the implicit assumptions about the nature of school-university partnerships (Russell & Martin, 2013). No quick fix initiatives will overcome the complexities of teaching and of the role of the practicum in preservice teachers' professional learning. Long term commitment and solutions are needed which require strong collaboration between schools and universities as sites for professional learning through active and collaborative partnerships between teacher educators, cooperating teachers and student teachers. In so doing, it may well contribute to challenging existing teaching professional cultures and foster more collaboration.

Nóvoa (2013) was an advocate for teacher professionalism through which professional knowledge might be developed as an aspect of a pedagogical journey in which reflection and experience play a key role. The implementation of research studies, active learning experiences, quality of supervisors and integration with other studies have been identified as crucial elements in the positive evaluation of ITE in Finland (Niemi & Nevgi, 2014) and further reinforce notions of collaboration and development of professional knowledge. Kansanen (2014) stressed teacher education as a twofold practice comprising teaching and researching, and the integration of theory and practice in professional learning in the workplace mediated through the key role of university practice schools. It is interesting how important the

research component in ITE curriculum is, yet its integration into the practicum varies within and across countries (Flores et al., 2014; Munthe & Rogne, 2015).

Reporting on a review of existing research, Cochran-Smith (2005), in the USA, asserted that consistent vision, strong collaborations between universities and schools, school/community fieldwork, and effective use of certain teacher education strategies were amongst the most distinctive features of ITE programmes. Similarly, Korthagen et al. (2006), based upon an analysis of three teacher education programmes in Australia, Canada and the Netherlands, identified seven principles they suggested were foundational to quality ITE, they were: (i) learning about teaching involves continuously conflicting and competing demands; (ii) learning about teaching requires a view of knowledge as a subject to be created rather than as a created subject; (iii) learning about teaching requires a shift in focus from the curriculum to the learner; (iv) learning about teaching is enhanced through (student) teacher research; (v) learning about teaching requires an emphasis on those learning to teach working closely with their peers; (vi) learning about teaching requires meaningful relationships between schools, universities and student teachers; and, (vii) learning about teaching is enhanced when the teaching and learning approaches advocated in the programme are modelled by the teacher educators. In other words, the authors stressed the importance of coherence between three components: views of knowledge and learning; programme structures and practices; and, quality of staff organisation in order for ITE to make a difference.

Thus, a redefinition of university and school roles with a growing emphasis on strong, coherent and supportive partnerships is clearly at the heart of challenging the binary of theory and practice and might be possible through a research-based design. As such combining teaching and research and promoting teaching practice as a space of transformation rather than a process of adaptation or of application of theory may well represent a move forward towards a more consistent, coherent and solid practicum along with explicit connections with the other ITE curriculum components.

The Relevance of the Ethical, Cultural and Political Dimension of Teaching and ITE

Literature on the ITE curriculum internationally highlights a strong emphasis on subject knowledge and subject didactics in many programmes, in some cases following a narrow view of curriculum within a competence-driven logic and a task-oriented perspective (for teachers to learn how to deal with given activities and meeting given goals previously set up by government). As Maguire (2014) described it, preoccupations with raising standards and measured attainment have been prevalent for "ensuring that curriculum, pedagogy and the teaching force are managed in order to 'deliver' these demands" (p. 778). In a similar vein, in the USA, Zeichner (2014, p. 559) argued that "Many of the early-entry alternatives that currently exist

are often closely linked with a mostly technical view of the role of teachers and with efforts to erode teachers' autonomy and collegial authority".

In many contexts, it is possible therefore to identify an alignment between a restricted view of school curriculum in which an outcome-led orientation, along with, in some cases, a back to basics movement, prevails in ITE curriculum within a didactic-orientation leaving behind the ethical, cultural and political dimension of teaching. However, as mentioned above, other perspectives co-exist within a view of teachers as professionals and as curriculum makers largely within a research-based orientation to ITE.

Teaching entails a technical dimension but it also goes well beyond that:

> … more importantly, [teaching is] an intellectual, cultural, and contextual activity that requires skilful decisions about how to convey subject matter, apply pedagogical skills, develop human relationships, and both generate and utilise knowledge. (Cochran-Smith, 2004, p. 298)

Teaching is also about making moral judgements and taking decisions in context in face of the complex situations with which teachers have to deal on a daily basis; learning how to do that in ITE means that:

> … learning to teach entails a constellation of factors. It is a process that goes beyond the mere application of a set of acquired techniques and skills. Not only does it imply the mastery of practical and more technical issues, but it also encompasses the construction of knowledge and meaning in an ongoing and challenging dialogue with the practice. (Flores, 2001, p. 146)

Thus teacher education needs to focus not only on what teachers should know and be able to do but it also needs to address the ways in which teachers as agents of change think and how they are able to transform education. Their work, including the ethical, cultural and political dimensions needs to be recognised and nurtured. Therefore, ITE needs to focus on what it means to be a teacher as teaching is also about values, beliefs, actions and commitments. Ball and Forzani (2009), argued that:

> … the work of teaching includes broad cultural competence and relational sensitivity, communication skills, and the combination of rigour, and imagination fundamental to effective practice. (p. 497).

Clearly, then, all of these expectations point to a need for ITE to take into account information and communication technologies, the changing and complex nature of teachers' work and core issues such as critical reflection, social justice and use of professional judgment if it is to genuinely develop a curriculum that serves the needs of the profession (Jasman, 2003).

ITE curriculum needs to provide preservice teachers with opportunities to think and reflect upon their role as teachers in transforming education and on the implications of their actions as teachers and to rethink and challenge narrow views of teachers as doers or implementers in many contexts. Their goal is not to develop the school curriculum in context but to deliver and manage the prescribed curriculum in order to meet the demands and goals set up by governments. In order to go beyond a "didactisation" or didactic-orientation perspective of ITE curriculum,

attention needs to be paid to the ethical, cultural and political dimension of ITE. As Tryggvason (2009) argued, ITE curriculum should provide students with opportunities to learn how to take responsibility for ethical choices.

Reflecting on the English context, Maguire (2014) suggested that the curriculum:

> more and more [focused] on successful in-school experience, technical skills such as teaching literacy through centrally prescribed methods, behaviour management, familiarity with testing regimes, etc. Other matters, for example, those of commitment, values and judgements are frequently side-lined, made optional or simply omitted. (p. 779)

Tirri (2014, p. 15) nominated as one of the major challenges in Finland the need for a set of competencies for "professional and ethical" teachers in the light of the moral dimension of their work in dealing with a rising number of immigrant students and children with difficulties. In the USA, Zeichner (2014, p. 560) argued that "the teacher as a professional view goes beyond providing teachers with teaching and management skills". There is little doubt that teachers must be able to exercise a significant degree of professional autonomy, their work involves a "complex matrix of knowledge and competences", including transversal competences related to learning to learn as well as social and civic competences (ETUCE, 2008).

If ITE is to make a difference it requires careful programme design, an elaborated view of the intended process of teacher learning, specific pedagogical approaches and an investment in the quality of staff members (Korthagen et al., 2006). Besides the need to develop further the educational research competences, the coordination and articulation of the various ITE components, the shared reflection of pedagogical practices (and of the content of each of the ITE components) amongst teacher educators within the same programme, and the integration of teaching and research in practice, the inclusion of the ethical, cultural and political dimensions is also of paramount importance. If that were the case, then ITE could be seen as seriously seeking to make a difference through the lens of teachers as professionals with ITE as a space of transformation.

Conclusion

This chapter set out to analyse initial teacher education curriculum from an international perspective. It has revisited the purpose of teacher education in the light of different views of teacher professionalism and the changing and complex nature of teaching in the twenty-first century. Contradictory trends were identified with views ranging from a broad perspective of the teacher as a "professional" who makes decisions in curriculum development through to a more restrictive view of teacher as a doer or technician who implements, in a rather simplistic and rigid way, external curriculum impositions in light of an outcome-oriented view, sometimes identified as a set of narrow standards to be met. Thus the definition of standards and/or competences in ITE internationally is associated with a diversity of meanings varying

from a more instrumentalist and narrower view of standards and competences towards a more flexible orientation.

The chapter also identified a number of convergences and divergences in ITE curriculum internationally, namely in regard to the inclusion of subject knowledge, subject didactic knowledge, general education studies and the practicum. However, diversity of ITE curriculum both in its content and form as well as fragmentation *versus* integration of its different components was identifiable across a range of different contexts. A great deal of variation in regard to the location of various components and to their interaction to enhance preservice teachers' professional learning was also identified. As the chapter demonstrated, it is possible to look at programmes in which a more didactic-oriented view of ITE curriculum prevails, especially in the case of consecutive models, whilst in other cases a research-based perspective is clear and advocated. Also of interest was the role of the practicum in ITE as a space to link theory and practice. In general, as a key component of the ITE curriculum, the practicum was marked by ambiguity and diversity. Although there is consensus concerning its vital importance in the process of learning to teach, there is less agreement with regard to such things as its aims, the approaches to education and professional training underpinning it, the strategies and professional competencies to be developed. Further developments in this regard are needed to improve the research dimension within the ITE curriculum in a more explicit and articulated way in light of two main purposes: the conception of professional development underpinning student teachers' pedagogical projects and learning experiences; and, the training of preservice teachers in research methods.

The chapter concluded with a reminder of the need to reconsider the teacher education curriculum in order to respond to the increasing uncertainties and complexities of teaching in the twenty-first century. The development of teacher identity in ITE is seen as a core element in reshaping its curriculum as well as the views of teacher professionalism advocated in a given institutional setting. Also, the specific and crucial work of teacher educators needs to be made more explicit and visible within institutions in order to not only promote the status of ITE but also as a way of fostering cooperation and catalysing curriculum integration.

Teaching practice and research are two crucial elements which need long term commitment and solutions require strong collaboration between schools and universities. In so doing, it may well lead to challenging existing teaching professional cultures and foster more collaboration. A redefinition of university and school roles with a growing emphasis on strong, coherent and supportive partnerships is clearly at the heart of challenging the binary of theory and practice and might be possible through a research-based design. As such combining teaching and research and promoting teaching practice as a space of transformation rather than a process of adaptation or of application of theory may well represent a move forward towards a more consistent, coherent and solid practicum along with explicit connections with the other ITE curriculum components. The ethical, cultural and political dimension of teaching and ITE also deserves more attention in relation to teachers as professionals and teaching as a complex profession. There is a need to focus not only on what teachers should know and be able to do but also to the ways in which teachers

as agents of change think and how they are able to transform education. Teaching is without doubt about values, beliefs, actions and commitments. Therefore, ITE needs to focus on what it means to be a teacher if it is to be seen as seriously seeking to make a difference when viewed through the lens of teachers as professionals where ITE is a space for transformation.

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Chapter 6
The Practicum: The Place of Experience?

Simone White and Rachel Forgasz

Learning in practice does not just happen on its own … it is important to recognise that practice alone does not make perfect or even good performance. Opportunities to connect practice to expert knowledge must be built into learning experiences for teachers. (Darling-Hammond & Bransford, 2005, p. 415)

Introduction

Across the international teacher education literature, the practicum appears time and again as a key component of initial teacher education programmes. Ferrier-Kerr (2009) declared it as one of the most influential components of initial teacher education; Haigh and Ward (2004) named it the centre of the teacher education programme; and Graham (2006) claimed it is an important rite of passage in a teacher's career. Darling-Hammond (2006) described the practicum as a bridge between theory and practice in the learning of teaching and the place where pre-service teachers develop a personal teaching competence. The practicum is both 'eagerly and anxiously anticipated by pre-service teachers, and later remembered as a significant milestone' (Graham, 2006, p. 1118), with beginning teachers often identifying the practicum as the most powerful aspect of their teacher preparation (Hollins & Torres Guzman, 2005; Wilson, Floden, & Ferrini-Mundy, 2002).

Many different terms are used to describe pre-service teachers' practicum experiences, for example: student teaching; teaching practice; practice teaching; field work; professional experience; internship; teaching round; and, more recently, clinical practice. Each term carries with it a host of assumptions and expectations about the place, purpose, and nature of practice within initial teacher education pro-

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grammes. As authors, we prefer the nomenclature of 'professional experience.' Drawing on the work of Le Cornu and Ewing (2008), we understand 'professional experience' to imbue the pre-service teacher with a greater sense of professional responsibility, and the experience itself with a more expansive sense of purpose, than 'practicum' which connotes only practice teaching as the work to be undertaken during the pre-service teacher's time in schools. Nevertheless, throughout this chapter, we use the term 'practicum,' as it is the term most commonly used and understood in the international literature. In particular, we follow Zeichner (1992) and use the term 'practicum' to denote:

> all varieties of observation and teaching experiences in a pre-service teacher education program: field experiences that precede professional education course work, early field based experiences that are tied to professional courses and student teaching and internship experiences. (p. 297)

Whatever terminology is used to describe it, the practicum continues to be viewed by the majority of pre-service teachers across a range of international contexts as the most valuable factor in preparing for the teaching profession (see Campbell-Evans & Maloney, 1997; Le Cornu & Ewing, 2008; Smith & Lev-Ari, 2005; White, Bloomfield, & Cornu, 2010). One exception appears in Campbell and Hu's, 2010 study which found that pre-service teachers in China did not value the practicum as highly as their counterparts in other international contexts. Rather than positive practicum experiences, 'higher grades' (p. 241) were more highly prized by Chinese pre-service teachers and their teacher educators as markers of achievement. At the other end of the spectrum, a large-scale longitudinal Australian study titled 'Studying the Effectiveness of Teacher Education' (see Mayer et al., 2014) found that no matter the teacher education institution they attended, the Australian graduates (n = 4907) who completed the survey claimed upon reflection that the practicum was *the* most important component in their initial teacher education and the graduates and their principals alike called collectively for 'more time in schools' as part of initial teacher education.

While the practicum is clearly a highly valued component of teacher education, it is also highly scrutinised and contested, with different stakeholders weighing in to debates about the place of practice in philosophical, pedagogical, procedural, and policy terms. Questions have long been posed by different stakeholders, for example: "At what stage of their teacher education programme should pre-service teachers engage in practicum or professional experiences in schools?"; "Which schools should they attend and for how long?"; "What should they do while they are there?"; "What will they learn?"; "How will they learn it?"; and, "Who will assess whether sufficient professional learning has been achieved and demonstrated?" These questions have, in turn, led to different views, models and approaches to the age old dilemma of how best to prepare teachers for diverse contexts and, ultimately, of the purpose and place of practicum experience in initial teacher education programmes.

The Purpose of Practice

An examination of these questions began in earnest at the beginning of the twentieth century. At this time, Dewey (1904) distinguished between two very different purposes for, and approaches to, what he called 'practice work': the 'apprentice' model; and, the 'laboratory' model. These powerful metaphors continue to characterise the contrasting pedagogical purposes described in more contemporary discussions of the practicum too, for example, Zeichner's (1992) and Le Cornu's (2010) theorising of the 'traditional' model versus the 'reflective' model. As such, we return throughout this chapter to the metaphorical conceptions of the apprentice and laboratory models as we explore the persistent tensions and dilemmas of the practicum across time and contexts.

In Dewey's account of the apprentice model, the pre-service teacher is positioned, as the name implies, as an apprentice to a 'master teacher' and encouraged to learn to respond quickly to classroom situations by essentially imitating the effective strategies modelled by the co-operating teacher. The primary focus in this model is on developing classroom teaching skills and techniques, those which are sometimes referred to as teaching 'tips and tricks'. In the laboratory model, on the other hand, the practicum is treated as a site of inquiry, reflection and experimentation in which the pre-service teacher learns about teaching through focused observation, examination, analysis and interpretation of classroom events. The primary focus here is more on reflection and theory-informed practice. Dewey (1904) explained the differences as:

> On one hand, we may carry on the practical work with the object of giving teachers in training working command of the necessary tools of their profession; control of the technique of class instruction and management; skill and proficiency in the work of teaching. With this aim in view, practice work is, as far as it goes, of the nature of apprenticeship. On the other hand, we may propose to use practice work as an instrument in making real and vital theoretical instruction; the knowledge of subject-matter and of principles of education. This is the laboratory point of view. (p. 1)

It is worth noting that for Dewey, the two models are not mutually exclusive; in fact, he reflects that elements of each are evident in the other. At the same time, however, he proposes that the apprentice and laboratory models represent different understandings of the purpose of practice within teacher education. Indeed, the philosophical differences between apprentice and laboratory practicum models go to the very heart of recurring international teacher education debates about the best place for experience (see Gilroy, 2014; Zeichner, 2014), debates which have been played out in numerous reviews of teacher education (see for example, Furlong, Cochran-Smith, & Brennan, 2013; Louden, 2008). Is teaching a craft with a set of technical skills to be honed and mastered through practice, passed on from master to apprentice? Or is teaching a discipline with a discrete knowledge base, developed and refined through ongoing laboratory processes of experimentation and reflection? Or does it reflect elements of both?

Dewey advocated the laboratory model with its emphasis on inquiry, as the best approach to preparing teachers. He believed that the apprentice model problematically reinforced a technical–rational approach to learning to teach, reducing the complex decision-making of informed professionals to a series of generic, technical manoeuvres. Dewey cautioned that a focus on the acquisition of technical skills would come at the cost of ongoing professional growth and development. Schon (1992) likewise troubled the distinction of 'theory' from 'practice,' noting that for practitioners, 'their performance does not fit the criteria of technical rationality; it cuts across the dichotomies built into the positivist epistemology of practice' (p. 53). He further agreed with Dewey in acknowledging:

> In the unstable world of practice, where methods and theories developed in one context are unsuited to another, practitioners function as researchers, inventing the techniques and models appropriate to the situation at hand. (p. 53)

Many other teacher education scholars over time have similarly critiqued the 'apprentice' model. It is synonymous with Zeichner's (1992) 'traditional' model of practicum, which he criticizes as one 'based on a view of teaching as an applied science' with 'little theoretical learning and little learning of any kind, beyond mastering the routines of the cooperating teacher's classroom' (p. 297). Le Cornu and Ewing (2008) ascribe similar problems to the apprentice model, adding that assigning the pre-service teacher to a single mentor teacher in a single classroom further contributes to the undesirable consequence of fostering a craft-based view of teaching. Le Cornu and Ewing (2008) prefer the nomenclature of 'professional experience' as it symbolises a move away from the individual to reflect a more expansive and collaborative learning approach, conceived within a 'communities of practice' (Lave & Wenger, 1991) framework.

According to Le Cornu and Ewing (2008):

> [t]he traditional view of professional experience is inherent in the language that was used to describe it: teaching practice. The widely held view was that student teachers put their newly acquired knowledge from their studies at university into practice during their time in schools. The process of learning to teach was conceptualised using a theory–practice dichotomy that is, when student teachers were at college or university they learnt 'the theory' and when they were in schools, they 'practised teaching'. (p. 1801)

Simpson (1992 as cited in Ryan, Toohey & Hughes) also noted that:

> the traditional approach to pre-service teacher education results in poor articulation between practice teaching and the campus based academic programs. Students tend not to draw upon the theory covered in campus classes in their teaching practice. In addition, they tend to perceive the theory as merely an "academic exercise" with little or no relationship to teaching in a "real school situation". (p. 360)

This perception of theory as unrelated to practice is very likely exacerbated by University coursework or programme structures which, according to Darling Hammond (2006):

> have often had students taking batches of front-loaded course work in isolation from practice and then adding a short dollop of student teaching [practicum] to the end of the program—often in classrooms that did not model the practices that had previously been described in abstraction. (p. 307)

Despite the numerous cautions noted in the research literature, the apprentice-based model appeals in many ways to employers, bureaucrats, government and policy makers as it is viewed as an effective solution to variable market forces. The apprentice model meets the immediate supply and demand needs of the teaching workforce at a given time, producing 'job ready' graduates, whose approach to teaching is to replicate prevailing teaching practices, thereby contributing to the function of schooling for social reproduction (Bourdieu & Passeron, 1990). This primarily economic imperative has been critiqued as largely short-sighted, with its focus on meeting the needs of the classrooms of 'today' without consideration of the classrooms of the future. Furthermore, preparing teachers to fit seamlessly into the function and mechanisms of schooling, as they currently exist, risks beginning teachers unwittingly reproducing prevailing values, attitudes and practices that might not best serve the needs of all students. Zeichner (2014) particularly cautioned against producing teachers 'as technicians to implement the teaching scripts with which they are provided, in the belief that the preparation these teachers receive and the subsequent scripting of instruction will lead to improvements in pupils' standardised test scores (p. 552).

Zeichner and Tabachnick (1981) also cautioned against preparing teachers for a one size fits all classroom as though all classrooms were the same. They highlighted that the:

> induction of beginning teachers is highly context specific, related in each instance to unique interactions of persons (who possess varying levels of skills and capabilities) and school contexts (which differ in the constraints and opportunities for action they present to beginning teachers). (p. 4)

Vick (2006) best describes this historical tension between employers and initial teacher education providers as striking a balance between preparing 'teachers who might enter classrooms adequately equipped to deal with immediate classroom and school challenges, but with the richness and depth of understanding to generate better practices than those already in place' (p. 194). It is a tension well documented in the Australian archives:

> Prospective employers were anxious that they [pre-service teachers] should take up their positions able to acquit themselves well, with relatively little support or difficulty. College staff, and others who took a longer-term view of the needs of education, such as the English inspectors, saw the role of colleges as preparing a generation of teachers able to transform and improve schools and enable them to adapt to changing conditions. (Board of Education, 1936; Principal, Sydney Teachers' College, 1928b as cited in Vick, 2006, p. 191)

The different views of the purpose of the practicum, as evident in the apprentice versus the laboratory approach, are further played out by the various stakeholders involved in the practicum. These include university-based teacher educators, school-based staff and co-operating teachers, pre-service teachers, employers and policy makers, each with their own agendas and associated beliefs about appropriate reform initiatives. In the following section, we explore in detail, and from multiple perspectives, some of the long held tensions and issues raised by and in the practicum.

Practicum Tensions and Issues

Zeichner (1990, p. 107) cited six main obstacles to pre-service teachers' practicum learning that still hold today and are explored further in this chapter. These obstacles are summarised as follows:

1. The dominant view of the practicum as an unmediated and unstructured apprenticeship and the attendant assumption that as long as pre-service teachers are placed with 'good' cooperating teachers, 'good things' will happen.
2. The general lack of an explicit curriculum for the practicum and the absence of explicit connections made between university-based coursework and school-based experience.
3. The uneven quality of practicum supervision and the lack of formal professional learning available to both co-operating teachers and university advisors about their roles.
4. The generally low status of clinical studies such as the teaching practicum within tertiary institutions, often accompanied by poor resourcing and workload discrepancies between teacher education staff involved in the practicum and those who are not.
5. The low prioritization of the practicum by school-based staff, even at 'good' schools where teaching practices may be consistent with the expectations and ideology of the teacher education institution.
6. The discrepant framing of the role of the teacher as a reflective practitioner who exercises professional judgement on the one hand, and as a technician who carries out the dictates of government and school policies on the other.

Practicum problems appear (across the international literature) to be long standing and almost universal. These obstacles continue to trouble stakeholders although different terms and descriptions are sometimes attributed to them. We explore further the main issues and the terms associated below.

The Theory-Practice Divide

The idea of an 'absence of explicit connections made between university-based coursework and school-based experience' (Zeichner, 1990, p. 107) is frequently identified as a major challenge in initial teacher education. Allen and Wright (2014), Campbell and Hu (2010), Darling-Hammond and Bransford (2005), Korthagen et al. (2001), all identified this perceived theory-practice gap as one that plays out particularly problematically during the practicum. It is, arguably, the inevitable consequence of the aforementioned 'apprentice' or 'traditional model' of initial teacher education adopted by a majority of universities in countries such as Australia, New Zealand, Canada, England and the US; a model that locates learning to teach in two

distinct sites: the university as the place of 'theory' and the school classroom as the place of 'practice'.

As Campbell and Hu (2010) noted, many of the practicum debates, problems and subsequent reforms identified in the research literature stem from this perceived 'theory-practice' divide and the sense that there is 'no clear understanding of the relationship between educational theory and practice among either the students [pre-service teachers] or the supervising teachers' (p. 241). Consequently, reforms in teacher education 'commonly centre on efforts to deepen the interplay between university course work and school experience' and to overcome what Grossman, Hammerness and Mc Donald (2009) so eloquently described as 'the balkanisation of the curriculum of teacher education' (p. 286). Beck and Kosnik (2002a) emphasised the point that the problem goes to the very heart of the philosophical underpinnings of initial teacher education programmes, stating that '[i]n many programs, there is not a coherent philosophy of teaching and learning that guides both the campus program and the practicum' (p. 7). Perhaps it is this incoherence that has left teacher education so vulnerable to charges of ineffectiveness and, in turn, to its colonisation as a 'policy problem' (Cochran-Smith, 2004).

> Constructing teacher education as a policy problem means identifying both institution level policies (such as entrance and course requirements or 4- and 5-year program structures) and state or larger scale policies and practices (such as state teacher tests, allowable entry routes, licensure regulations) that are presumably warranted by empirical evidence demonstrating positive effects on desired outcomes. At the local level, for example, practitioners are striving to develop evidence about the effect of teacher candidates' performance on pupils' learning. At state and larger levels, policy makers are seeking empirical studies, preferably experimental studies or correlational studies with sophisticated statistical analyses that indicate which aspects of teacher preparation do and do not have a systematic and positive effect on pupils' learning, particularly scores on standardized tests. (Cochran-Smith, 2004, p. 297)

This, coupled with 'The Global Education Reform Movement' (GERM) as described by Sahlberg (2011, p. 175) and experienced across England, the US, Australia and other OECD countries, has led to a teaching standards reform movement that has turned critical attention to the effectiveness of teacher education programmes and the place of practice within them. The 'demands for innovation' and 'realistic teacher education' based on the principle of 'practice first' (Korthagen et al., 2001, p. 16) have cohered in a demand for increased practicum time in schools as part of initial teacher education to meet 'outcomes based reforms' (Conroy, Hulme, & Menter, 2013, p. 558). The rapidly spreading GERM places key importance on school and teacher performance, which in turn shifts the emphasis of the practicum back to 'practice teaching.' Indeed, it shifts the focus for initial teacher education away from universities to schools as the primary sites for the professional preparation of graduate teachers. In the context of this education reform movement, the call for 'more time in schools' is taken up and the virtues of an 'extended clinical practice' are often uncritically extolled (OECD, 2011). This shift in emphasis away from university-led course work towards school-led field experience has been

described by some as a turn towards practice (Zeichner & Bier, 2013) or a 'practicum turn in teacher education' (Mattsson, Eilertsen, & Rorrison, 2012).

The full implications of this return to the apprentice model and re-establishing of the theory-practice divide remain to be seen. But the UK experience suggests that this practicum turn will inevitably lead full circle. Maynard (2010) asserted:

> Not only has the amount of time students spend in school been increased but responsibility for training intending teachers has gradually been transferred from higher education institutions to schools. Some commentators (e.g. Wragg, 1991) have argued that these reforms indicate at least a partial endorsement of, and return to, the nineteenth-century apprenticeship model of teacher training. (p. 17)

Further complicating the 'theory-practice' divide as it plays out in the practicum context are perceived conflicts and confusion between the expectations of university and school-based staff. This tension results in a lack of understanding and awareness by each of the work of the other and, often, confusion on the part of pre-service teachers who find themselves situated awkwardly between the two. Day (1998) framed that as a critical tension for pre-service teachers who:

> Have had to renegotiate contracts in a world of purchasers (schools) and providers of services (universities); and have had to learn to cope with different imperatives alongside continuing scepticism by school-teachers of the theory-bound esoteric world of the academic which contrasts with the perceived practice-bound action worlds in which they work. (p. 808)

Such philosophical differences are felt most concretely by pre-service teachers during the practicum, as evident in Vick's (2006) historical account of practicum tensions named earlier. The observations of an Australian vice-principal in the 1940s captures this disjuncture between university and school expectations and the sense of the pre-service teacher caught right in the middle: 'I frequently hear from method lecturers for example that students are told to use a method which is contrary to the one given them in their method lectures' (Vice-Principal, Sydney Teachers' College, 1944 as cited in Vick, 2006, p. 191).

Pre-service teachers continue to face identical dilemmas in contemporary times too. Citing the research of Goodlad (1990), Sobel, French and Filbin (1998) observed that:

> when student teachers in his sample were confronted by significant differences between methods learned in their campus-based classes and methods commonly used by the teacher to whom they had been assigned, they opted for the latter. He warned that we cannot afford to be complacent about the current disjunctures between what is taught on university campuses, on the one hand, and what happens in collaborating schools, on the other. (p. 794)

Perhaps pre-service teachers' preference for the advice of their cooperating teachers is connected to Feimen-Nemser's (2001) observation that at the start of their teacher education, pre-service teachers are overloaded with too much information that they might need in the future but which they cannot make sense of at the beginning stages of their professional development. This leads to confusion about what pieces of information are important, and the sense that much of the information they are given is not directly useful when they undertake their practi-

cum in schools (Ure, 2010). Turney (1988) understood this same tendency for pre-service teachers to reject theory during the practicum in a different light. He argued that the practicum served to undermine pre-service teachers' confidence in applying educational theory, hence their rejection of it.

Securing the balance between theory and practice so that pre-service teachers gain maximum benefit from the practicum component of their studies, is clearly beset by difficulties. It is a challenge that is complicated, as Darling-Hammond and Bransford (2005) explained, by the fact that teaching is complex and never routine and requires the integration of multiple kinds of knowledge in order to maximize the benefits for diverse groups of students. Learning to teach, therefore, is not about learning techniques for teaching; rather, it is about learning how to make decisions about which technique or approach best applies in a given moment in order to maximize student learning (Loughran, 2006).

Issues Related to the Different 'Sites of Learning'

While the 'theory- practice' divide is an issue for both schools and universities, other practicum issues appear to belong more to the realm of either one or the other, once again leaving the pre-service teacher affected by each and problematically positioned between the two. Campbell and Hu (2010) identified a range of practicum challenges including: finding practicum places for increasing numbers of pre-service teachers; inconsistent quality of supervision in schools; and, minimal contact between teacher education institutions and the schools that provide practicum placements. Zeichner and Bier (2013) further identified issues such as disparity in the quality of school placements, the frequency and quality of mentoring, supervision and coaching, and the overall degree of monitoring of the quality of the learning experiences that can vary greatly within and across schools (Grossman, 2010; Zeichner, 2010).

One of the main practicum issues at the university site, as described by Beck and Kosnik (2002b), is that in most universities today, pre-service work is not as highly regarded or rewarded as graduate work, research, or publishing. The authors explained that:

> As a result, faculty (staff) often give lower priority to pre-service course instruction; and practicum supervision, the rationale and expectations for which are often vague, tends to receive the least attention of all. (p. 6)

As a consequence, Beck and Kosnik (2002b) observed that in Canada and the US, university advisors tend not to be appointed from amongst tenured academic staff. Rather, teaching associates, doctoral students, and/or retired teachers are often hired exclusively to undertake this work. Likewise, in Australia, Le Cornu (2010) viewed as problematic the tendency for university advisors to be drawn from adjunct staff 'who are not deeply engaged in the rest of the teacher education program' (p. 204). In another Australian study, Allen, Ambrosetti, and Turner (2013) noted

that while 'university coordinators are considered critical to bridging the gap between knowledge taught at university and what is learned in schools', (p. 122) problems with university based co-ordinators were often attributed to their lack of time, lack of resources, and an overall lack of communication between the university and the school.

Pre-service teachers' practicum difficulties are not solely related to applying university-learned theory or the relationships with their university based staff. They can also struggle to develop productive learning relationships with their cooperating teachers in schools. Pre-service teachers usually have high expectations of their cooperating teachers; expectations related not only to supervision style, but also to a range of interpersonal needs and preferences. In her 2009 case study of the factors that underpin the development of positive professional relationships between pre-service and cooperating teachers, Ferrier-Kerr found that, along with styles of supervision, personal connectedness, role interpretation, collaboration and reflection were key factors in the development of positive pre-service/cooperating teacher relationships. Personal connectedness was especially valued by Ferrier-Kerr's pre-service teacher participants but their cooperating teachers also agreed that strong personal relationships enabled the development of productive professional relationships. This notion is supported by Graham's (2006) finding that 'the affective component, including building a strong relationship and a sense of empathy between cooperating teacher and intern … [was]… a significant precursor to the possibility of professional learning during the practicum' (p. 1124).

But shifting and often contradictory needs and expectations can be the source of significant emotional labour for cooperating teachers (Bullough & Draper, 2004; Hastings, 2004; Maynard, 2000) and the expectation that they will move fluidly between various complex role expectations poses a particular challenge. In their 2013 review of empirical practicum research, Cohen (Sayag), Hoz and Kaplan found that 'mentor-teachers' activities primarily consisted of helping pre-service teachers through assimilation into school culture; nurturing, supporting, observing, and evaluating them' (p. 369). The exemplary mentors in Orland-Barak and Hasin's (2010) collective case study identified a range of emotional and interpersonal expectations of them, including engendering respect, trust, and reciprocity by creating a sense of openness, collaboration, interest, care, and equality. Hastings described the emotional effects of mentoring on the cooperating teacher at the centre of her 2008 case study who 'struggled to make sense of the intersecting discourses in which she found herself positioned—as teacher, colleague, mother, gatekeeper, assessor—and the conflicting emotions which resulted from her attempts to operate within the competing discourses' (p. 509).

The challenges faced by cooperating teachers are exacerbated in some cases when matched with difficult pre-service teachers. Some pre-service teachers enter their teaching programme with fixed views of what they think they should be learning about and do not actively engage with new knowledge at either the university or at the school site. Hastings (2004) documented a number of problematic behaviours on the part of the pre-service teacher, including: unwillingness to listen; refusal to accept advice; disdain for support; lack of acknowledgement of the skills of the

cooperating teacher; ignoring simple directions; arrogance; stubbornness; and, immaturity.

Hastings (2004, 2008) insists that the role of the cooperating teacher needs to be better researched and understood, especially in relation to the emotional demands of the role and how those emotions inform cooperating teachers' values and actions. One particularly emotionally taxing dimension of the role is connected to the perceived need to mask negative emotions in order to protect the pre-service teacher from them (Bullough & Draper, 2004; Maynard, 2000). But Bullough and Draper (2004) recommended that cooperating teachers should reveal the emotional labour associated with their roles since doing so models a realistic—and challenging—dimension of teachers' work.

The suggestion that cooperating teachers need to model how to cope with the emotions of teaching and mentoring might be particularly helpful to pre-service teachers since they also experience intense emotions during the practicum. These are connected to the stresses of the high stakes and public nature of the learning process (Bloomfield, 2010; Maynard, 2000) in which a pre-service teacher's progress and performance are on constant public display. And just as research focused on cooperating teachers reveals the emotional labour associated with managing pre-service teacher demands and expectations, so too do pre-service teachers identify 'managing' their cooperating teachers as a source of emotional labour during the Practicum. For the pre-service teachers in Maynard's (2000) study:

> in part the need to manage mentors related to an awareness of the mentors' own lack of confidence and feelings of vulnerability. Several students commented that mentors seemed to feel that they were being 'judged' by students and were apologetic about their practice as a teacher as well as a mentor … Others stated that mentors appeared concerned about their lack of theoretical knowledge … Management of mentors also incorporated the use of particular strategies in order to elicit information. Students referred to the importance of 'asking the right questions to get the feedback you need' … [A] number of students maintained that it was 'up to them to take the initiative'. (pp. 26–27)

Bloomfield (2010) suggested that pre-service teacher perceptions of the need to manage their cooperating teachers was a consequence of their sense of the practicum as a hierarchical struggle for power in which they 'must find a balance between conveying strength and competence and yet not posing challenge, threat or even too much expertise to the 'expert' mentor' (p. 227). Pre-service teachers understand the need to strike this balance as critical since, in many practicum contexts, they are reliant on the positive assessments of their cooperating teachers in determining (at least in part) their final course outcome.

If assessment is a source of anxiety for pre-service teachers, it is no less so for their cooperating teachers. Indeed, Bullough and Draper (2004) proposed that the assessment component of their role was the greatest source of emotional labour for cooperating teachers. Cooperating teachers can experience the failures of their pre-service teachers as their own which makes working with 'problem' pre-service teachers particularly emotionally demanding (Hastings, 2004).

Assessment

Assessment is a major challenge identified by all practicum stakeholders. In particular, the capacity of cooperating teachers to make reliable, evidence-based judgements when assessing pre-service teachers is a significant practicum concern. A recent Australian study known as *Project Assessment* (see Bloomfield, White, & Goulding, 2013) investigated practicum assessment issues as identified by teachers and teacher educators, and revealed 12 main assessment challenges, summarised below from the Project Assessment website (see www.teacherassessment.net.au).

1. Ensuring equity and validity of assessment judgements. The subjective nature of assessment can undermine equity and validity.
2. Incorporating formative and summative steps, including explicit feedback into the assessment process. The assessment process needs to be focused not only on evaluating the pre-service teacher's performance and capacity, but also on guiding the pre-service teacher's ongoing professional learning.
3. Incorporating teaching standards into assessment practices. Professional experience reports should be explicit, and standards linked. This requires high-level written articulations of practice.
4. Achieving continuity between placements. Assessment information should flow from one practicum experience to the next in order to demonstrate the pre-service teacher's developmental learning needs and achievements over the course of practicum experiences across different sites and time periods.
5. Guiding and assessing 'at risk' pre-service teachers. This is frequently the most stressful and potentially challenging aspect of cooperating teachers' practicum work. Issues of equity, the possibility of discriminatory practices, and the provision of appropriate support need to be taken into account.
6. Quality of practicum relationships. The complex dynamics of practicum relationships (between pre-service teachers, cooperating teachers, and university advisors) can cause a range of tensions spanning personal and professional dimensions.
7. Time pressure to provide feedback. For all cooperating teachers, the task of guiding and assessing pre-service teachers during the practicum comes on top of their existing school/teaching commitments. Time pressure frequently affects the quality of mentoring provided to pre-service teachers.
8. Integrating the work and expectations of universities and schools. Summative judgement of teaching performance and capacity are commonly completed at the school site by the cooperating teacher, while overall academic responsibility for grading pre-service teachers' achievements rests with the university.
9. Meeting the diverse needs of pre-service teachers. It is important that pre-service teachers' individual learning and development needs are accommo-

dated during the practicum but knowing how much to differentiate expectations can be challenging, particularly when there are expectations around demonstrating required professional capacities.

10. Practicum site limitations. Each practicum site is restricted in terms of the experiences and opportunities it can offer to pre-service teachers. It is rare for any single site to offer the pre-service teacher the opportunity to develop and demonstrate all aspects of professional capacity required within a given professional standards framework.
11. Pressure to access sufficient numbers of suitable placements. It is often difficult to find enough suitable practicum placements in a timely manner. Practicum sites may be distant from the university, or may not be linked in an ongoing partnership structure to the university.
12. Engaging in school and community relationships beyond the classroom. It is challenging for pre-service teachers to professionally engage with the school, with the wider community, and with parents and caregivers during the practicum and thus, it is difficult for them to develop and demonstrate capacities in this particular area of a teacher's practice which may be included as part of a professional standards framework.

From the University perspective, while the assessment of pre-service teachers may be supplemented by site visits, discussions, interviews and other feedback, the capabilities of existing graduate teachers are judged predominantly from details of programme content and associated assessment tasks. 'Overall, judgements about the design of academic subjects, success in the teaching practicum and completion of the approved teacher-education program combine to provide a proxy assessment of the acquisition of the knowledge, attitudes and practices valued by the profession' (Ure & Learning, 2009, p. 58).

More Time in Schools? The Structure, Location and Length of the Practicum

There is much debate about what might be the ideal practicum structure and the benefits and challenges regarding the place and duration of the practicum. Ryan, Toohey & Hughes (1996, p. 365) noted three dominant practicum formats most commonly described in the literature:

- the extended single placement sometimes described as an internship;
- multiple, shorter block placements, usually distributed throughout the programme; and,
- part-time placements or a distributed practicum of 1–3 days per week extending over a semester or a year, sometimes also called the concurrent model.

While ‘more time in schools’ is often heralded as desirable by pre-service teachers and employers, Gore (2001) noted, that ‘more field experience in and of itself is not necessarily better for pre-service teachers’ (p. 126). She further stated ‘that more teacher education is not necessarily better unless we refine what we provide in the name of teacher education’ (p. 126). Likewise, Zeichner (1990) argued that it is not the quantity but the quality of experience that matters and that ‘one should not assume, as has often been the case in the past, that experience equals educative experience and that the more experience, the better’ (p. 108).

The benefits and limitations of Ryan, Toohey and Hughes’ three models above are understood differently from different stakeholders’ perspectives. Bourdieu and Passeron (1990 as cited in Mills, 2013) favour longer practicum experiences, cautioning that ‘practicum placements that are limited in terms of length and limiting in terms of scope do not lend themselves to endowing our pre-service teachers either with legitimate cultural capital or the disposition to make use of it’ (p. 52).

The distributed practicum is often favoured by school-based staff who believe that more regular opportunities to participate in the ‘everyday-ness’ of schools will benefit pre-service teacher learning. But this approach is extremely time-intensive for pre-service teachers who may also have to manage the pressures to work and support family.

Ensuring pre-service teachers have a range of practicum experiences is a persistent issue, in particular, experiences that will support them to be able to serve those in disadvantaged settings. Ronfeldt (2012) noted that ‘easier-to-staff’ practicum experiences, for example, at middle class, suburban schools, may not offer adequate opportunities to learn to be effective teachers of underserved student populations. In their US study, Sobel et al. (1998) argued that the pre-service teachers who completed an internship practicum in an urban school were perceived to be ‘highly marketable in the workplace’ (p. 796) because they graduated with experience teaching in the district’s most challenging urban school environments. Conversely, a range of studies indicate that ‘harder to staff’ practicum experiences (for example in low socio-economic, highly culturally and linguistically diverse and, depending on the northern or southern hemisphere context, ‘urban’ or ‘rural’ respective locations) can be particularly challenging settings for learning to teach (White & Reid, 2008), and sometimes may even perpetuate negative stereotypes and attitudes (Hill, Phelps, & Friedland, 2007).

In considering appropriate placement locations, Sobel , French and Filbin (1998) proposed the need to rethink practicum structures so that pre-service teachers could be positioned more authentically within school communities. In particular, Sobel, et al. described an immersive, inclusive urban school practicum experience which was designed to redress the failure of traditional practicum programmes to prepare pre-service teachers for the particular challenges of working in inclusive urban schools. They explained that:

> The priorities and expectations of predominantly middle-class, Anglo teaching staffs often directly conflict with the priorities, experiences, education and expectations of lower socio-

> economic, urban families and community members. Wald (1996) suggested that in order for teachers to become effective in urban schools, they must change their definition of the way that teachers should interact with the children and communities they serve. Further, with the inclusion of cultural, linguistic pluralism, and learning abilities, urban special educators and universities need to develop a collaborative strategizing model where teachers work side by side with parents, pre-service teachers, university faculty and administrators (p. 795).

Their immersive practicum structure offered an example of just such a 'collaborative strategizing model' founded on principles of reciprocity and shared responsibility. According to the model, school district personnel share responsibility for teacher preparation, while university faculty contribute to capacity building in urban schools by addressing 'typical urban problems as well as diversity associated with the inclusion of students with disabilities' (p. 794). In their programme evaluation, the researchers identified four key factors which contributed to its success: role clarity for pre-service teachers, their mentors, and university faculty; professional development of mentors through seminars, meetings, and university led professional development sessions; understanding what constituted a meaningful and educative experience for pre-service teachers; and, ensuring that the programme met the needs of school students, pre-service teachers and school districts.

Hallman (2012) went even further in her reconsideration of appropriate practicum settings, proposing a community-based practicum as an alternative to the exclusive placement of pre-service teachers in classrooms. Hallman's research found that a community-based practicum contributed to a process of 'encouraging beginning teachers to complicate the ways in which they view students' learning and literacy, as well as the ways that they articulate the relational spaces of teacher-student, official-unofficial language, singular authority-pluralistic power, and server-served' (p. 244). Hallman's model positioned the practicum as an opportunity not to replicate, but to reflect on and critique the power base of education. It broadened the task of the practicum and positioned the pre-service teacher as part of a community beyond the school. In that sense, Hallman's conception of the community-based practicum exemplifies a critical reflection model (Le Cornu, 2010).

A further complication to the question of appropriate practicum settings is the rise of the international practicum as an artefact of globalization. The purpose, merit and relevance of international practicum experiences are matters of contention in the research literature. At one end of the spectrum, the international practicum is reviled as a form of educational tourism that threatens to reinforce cultural imperialism. At the other, it is touted as critical to the development of culturally sensitive, globally responsible twenty-first century educators.

According to Trede, Bowles and Bridges (2013), the key factor in determining the quality of an international practicum experience is the pedagogical framing that undergirds its design. They noted the problematic tendency of universities to focus

on the quantity of students undertaking an international experience as the measure of the success of broad internationalization agendas, warning that:

> [p]roviding such experiences without a pedagogical framework that helps students to reflect on self and others, and make meaning of their experiences can run the risk of reinforcing unreflected beliefs and values about other countries, customs and norms. Well-developed pedagogical frameworks can enable students to develop their intercultural competence and global citizenship. However, this requires academic educators who are skilled in developing intercultural competence and global citizenship. (p. 442)

Their 2013 study investigated how Australian academics explicitly prepared their students for a range of international experiences (including teaching practicum) and whether they explicitly integrated understandings of intercultural competence into their international study programmes. Findings indicated that although international experiences were meticulously planned from a procedural perspective, there was little explicit planning in relation to intercultural learning purposes, or in developing intercultural competence and global citizenship identities amongst students. According to Trede et al. (2013), greater attention to pedagogical purpose, critical self-awareness, and cultural preparation are all essential to an educative international experience.

Mwebi and Brigham (2009) likewise argued the crucial need for the articulation of a carefully considered rationale for any cross-cultural practicum, including consideration of its broad social, political, and cultural implications for all stakeholders. Planning should take account not only of the potential value to pre-service teachers of engaging in immersive, cross-cultural practicum experiences, but also the mutual value to the practicum host community. To that end, Mwebi and Brigham further recommended that the practicum organizer/supervisor should be an 'insider' with 'insights, knowledge, experience, and relationships in the host community' (p. 425) and that the host community itself be involved in the planning and design of the practicum programme.

In the case of their own empirical study of a Canadian practicum that saw pre-service teachers undertake a 6 week placement in Africa, Mwebi and Brigham (2009) found that participating in that kind of international practicum experience contributed to participants' developing self-efficacy and self-understanding, and to their appreciation of cultural diversity and globalization. The immersive experience of the cross-cultural practicum engaged participants not only in deep thinking, but in fundamental shifts of consciousness in relation to issues of cultural diversity, white privilege, and globalization. Framing their research through transformational learning theories, Mwebi and Brigham (2009) purport that:

> if teachers are to work successfully with an increasingly racially, linguistically, culturally, and ethnically diverse student population and teach for global justice in the 21st century, teacher education programs must make a serious commitment to educating pre-service teachers about the world and its people, differing perspectives, global interdependence, globalization processes, and to developing ways to infuse global perspectives into the curriculum (hidden and formal) so as to promote social justice, respect, and equity for all no matter where we are located on the planet. (pp. 415–16)

Mwebi and Brigham argued that initial teacher education must do more than prepare graduates for localized classroom-readiness, emphasizing the importance of simultaneously developing pre-service teachers' social justice perspectives about education in a global context. But writing in an Australian context, Cruickshank and Westbrook (2013) observed the tension felt in many teacher education programmes between offering local and global perspectives. They argued that such tension translated in recent times into a decline in international practicum offerings in many programmes as a consequence of a renewed emphasis on preparing graduates to teach in local contexts via a standards-based approach to initial teacher education. Cruickshank and Westbrook's research repositioned the international practicum in relation to this perceived tension, investigating whether and how global practicum experiences might also contribute to the professional development of pre-service teachers in relation to meeting local professional standards. They explained the competing pressures, noting that:

> on the one hand, there is the need for universities to prepare graduates for the 'globalisation' of education, with increasing diversity in schools, in the teaching profession and in the trajectories of teachers' careers. On the other hand, the establishment of national and state institutes of teachers, the competition for local teaching positions and the development of closer school–university links have meant that pre-service education programs are increasingly focused on preparing teachers for local contexts. (Cruickshank & Westbrook, 2013, p. 55)

Findings of their study suggested that participation in an international practicum offered powerful opportunities for professional learning against local standards in relation to professional knowledge, professional skills and professional commitment. Like the participants in Mwebi and Brigham's (2009) study, Cruickshank and Westbrook's participants developed deep understandings of power and hegemony in educational contexts through the embodied experience of being culturally 'other.' Positioned as outsiders, the participants in this study were 'forced to question assumptions about curriculum, learning and learners themselves' (p. 65) in ways that a local practicum might never provoke.

Other practicum challenges around intercultural competence and globalization stem from the increasing trend for international students to complete teacher education programmes outside of their home countries. The practicum experiences of international students are often fraught with complications. Sometimes, these stem from unwillingness on the part of locally based teachers to mentor those who they believe will eventually teach in other contexts or who harbour narrow and racist views of whether international pre-service teachers can contribute to the learning needs of their students (Santoro, 2007).

While teaching is becoming increasingly globalised and teachers themselves have increased mobility within teaching and across other fields, there is still little evidence of the development of international, intercultural understanding (Cushner & Mahon, 2002) and a lack of effective mentoring for international pre-service teachers. We now turn to explore further the work, role and identities of mentor teachers or, as they are more commonly referred to in the literature, cooperating teachers.

Role, Identity and Responsibility

The ways in which key players understand and enact their practicum roles evinces their sometimes very different understandings and assumptions about the purpose of the practicum and how to engage pre-service teachers in learning to teach. In their extensive literature review, Clarke, Triggs, and Nielsen (2014) analysed and categorised the research contributions of almost 200 studies about the cooperating teacher—or school-based teacher educator - across a range of international contexts from the 1960s to 2010s. In all, Clarke, Triggs, and Nielsen identified 11 different forms of participation by the co-operating teacher in the research literature. Different combinations and configurations of participation confer upon the co-operating teacher different degrees of power, presence and autonomy within the practicum. According to the researchers, co-operating teachers are positioned variously as: providers of feedback; gatekeepers of the profession; modellers of practice; supporters of reflection; gleaners of knowledge; purveyors of context; conveners of relation; agents of socialization; advocates of the practical; abiders of change and teachers of children.

According to Clarke, Triggs and Neilson, the term cooperating teacher is the most frequently used in the research literature to describe the teachers who share their classrooms with pre-service teachers during the practicum, thus it is the one so far used throughout this chapter. At the same time, as authors, we note that 'school advisor, school associate, supervising teacher, school-based teacher educator, and mentor' (p. 17) are also used. Each title implies its own set of taken-for-granted assumptions about their participation in the practicum along a continuum of expectation from apprentice to laboratory models of practicum teaching and learning. As chapter authors we prefer the use of the term school-based teacher educator and use it for the remainder of this work. This choice of terminology acknowledges pre-service teachers' self-identified sense of the influence of the practicum on their overall teacher education experience. It emphasises the integration of learning about teaching across university and school sites (Meere, 1993) and frames the role of teachers who work with pre-service teachers during the practicum to be more than advising, supervising and cooperating with the pre-service teacher. The term implies instead the sense in which school-based teacher educators contribute to pre-service teacher learning in ways just as significant and complex as do their university-based counterparts.

Just as there are very few formal qualifications or professional learning opportunities to enable university-based teacher educators to develop their pedagogy of teacher education (Loughran, 2006), a significant finding of the Clarke et al. (2014) review is the 'strong sense that school-based teacher educators lack specific preparation to enable high quality and developmentally appropriate support for student teachers—they tend to be under-prepared for their work as mentors' (pp. 45–46). Certainly, this was the case for the 95 school-based teacher educators in Graham's (2006) US study in which '[o]nly three respondents indicated they had attended a workshop or taken a course to prepare them for their role as a cooperating teacher'

(p. 1121). But there are exceptions too. In describing the context of his UK study, Maynard (2000) noted that the participating university ran regular training sessions and accredited courses for its cooperating educators who were also 'represented on the PGCE Course Board and play a key role in the development of the course' (p. 20). Likewise, writing in a Dutch context, Crasborn, Hennissen, Brouwer, Korthagen, and Bergen (2008) observed that 'many teacher education institutions and schools have introduced training programs' for cooperating teachers as mentors (p. 500).

If Clarke, Triggs and Neilson are right, then Maynard (2000) and Crasborn et al. (2008) represent a kind of exception to the rule and there is a general absence of formal accreditation or even informal professional development available for school-based teacher educators in many teacher education contexts. In such cases, it is often left to individual school-based teacher educators to determine for themselves how they will enact their roles. This makes especially problematic the reported dearth of studies exploring how school-based teacher educators and pre-service teachers envision and construct their practicum roles (Ferrier-Kerr, 2009; Graham, 2006; Koerner, Rust, & Baumgartner, 2002).

Graham (2006) found that school-based teacher educators themselves conceived of their roles in one of two ways, and captured the essential difference as that of maestro vs mentor. Maestros, according to Graham:

> encouraged their interns to copy effective classroom procedures … they did not help their interns to interpret, analyse, or situate their classroom observations. Consequently, their interns were left to connect (or not) their observations to educational theory and content of courses from their pre-service program. Maestros viewed the internship as a time to replicate existing procedures and ways of thinking. (p. 1126)

Mentors, on the other hand:

> viewed teaching and the process of learning to teach as multidimensional and recursive phenomena rather than linear transactions between teachers and students … [They were] predisposed to discuss and analyse classroom events and observations with their interns … [and] embodied the notion that teaching is an intellectual endeavour requiring dialogue about practice. (p. 1126)

Graham's maestros are akin to Koerner, Rust and Baumgartner's (2002) role models, and Leshem's (2012) masters of knowledge, all conceptions of the school-based teacher educator's work that reflect Dewey's apprentice model. This expert-novice dynamic is understood by some school-based teacher educators to be unavoidable since it is systemically embedded in the practicum structure (see Ferrier-Kerr, 2009). It is also the approach preferred by some pre-service teachers, who expect and privilege pragmatic teaching tips and advice from school-based teacher educators (Koerner et al., 2002; Leshem, 2012; Sumsion, 1998), thus willingly adopting the novice role in the master-apprentice dynamic.

Other pre-service teachers prefer to be positioned as emerging professionals, engaging collegially as problems arise and being allowed to decide for themselves on an appropriate course of action (see Maynard, 2000). In this regard, they seem to prefer the support of the mentor over the instruction of the maestro. Such mentoring

involves a reflective, professional learning approach in the tradition of Dewey's laboratory model. Leshem (2012) described it as a coaching relationship in which the school-based teacher educator acts as a critical friend to the pre-service teacher. Research from The Netherlands suggests that training school-based teacher educators in the facilitation of supervision dialogue is effective in shifting their focus away from the maestro-driven provision of advice and evaluation, choosing instead a laboratory approach in which their role is to mentor—or coach—the pre-service teacher into reflection and self-discovery (Crasborn, et al., 2008; Hennissen, Crasborn, Brouwer, Korthagen, & Bergen, 2008; Veenman, Denessen, Gerrits, & Kenter, 2001).

Complex and multifaceted, the role of the school-based teacher educator can be understood by pre-service teachers in different and sometimes contradictory ways (Bullough & Draper, 2004; Ferrier-Kerr, 2009; Maynard, 2000; Hastings, 2008). As Bullough and Draper explained:

> [T]he interns wanted to be supported emotionally and uncritically but, paradoxically, they also wanted critical feedback, just not too much of it. They wanted the mentors to keep in touch and be aware of classroom events, but not overstay their welcome. Some wanted them to be involved in their classrooms but only by invitation. They wanted access to the mentor's resources but wanted to use them as they wished and when they wished. They wanted mentor advice, but some felt no obligation to accept it. Some interns wanted to be treated as equals, but they were not equals. The interns wanted friendship from their mentors which brought with it deep obligations but the obligations were decidedly one-sided. (pp. 277–78)

These conflicting expectations of their school-based teacher educators arguably reflect pre-service teachers' confusion about their own roles during the practicum in which they are structurally positioned confusingly as both student and teacher (Koerner et al., 2002), and in which residual assumptions from an apprentice model can persist, even in the context of that which is purported to be a laboratory approach to the practicum. All of this is further complicated by that fact that not only can one pre-service teacher differ from another in terms of role understanding, but the same pre-service teacher might also experience a changed understanding of role over the course of their practicum (see Bloomfield, 2010; Bullough & Draper, 2004; Ferrier-Kerr, 2009).

Just as their expectations for themselves shift, so too do pre-service teachers' expectations and demands of their school-based teacher educators alter. Significantly, Ferrier-Kerr (2009) found that allowing for the 'constant negotiation and renegotiation of roles during the practicum by associate teachers and student teachers resulted in establishing and enhancing professional relationships' (p. 793). Field's (2002) case study found that school-based teacher educators adjusted their supervisory approaches from 'modelling and direct instruction' for pre-service teachers at the start of their teacher education programme to 'facilitation and advocacy' for those in the latter stages. Ferrier-Kerr (2009) advocated these kinds of shifts—from apprentice to laboratory approaches—even within a single practicum, in accordance with the individual pre-service teacher's developmental needs.

While clearly there are many issues involved in the question of the place of experience, there are also many innovations that have been developed to improve and reform the practicum and effectively bridge the 'theory- practice' divide. In the next section of the chapter we examine innovation and reform in the practicum and some of the resulting changes and improvements which have followed.

Reforms and Innovations

Zeichner (1990) described succinctly three levels of change, reform and innovation related to the practicum: (1) organisational (e.g. its length, location); (2) curricular (changes related to the substance of the experience—such as the knowledge, skills, and dispositions students are supposed to be learning during the practicum and the experiences that are supposed to be helping them do that); and, (3) structural (the resources supplied to support the practicum and the contextual conditions in which it exists). He also explained a range of approaches to innovation in initial teacher education that ultimately addressed practicum issues. Those innovations included:

1. the development of thematic teacher education programmes built around coherent conceptions of the teacher's role;
2. the development of an explicit practicum curriculum and of a closer coupling of the practicum with specific college courses;
3. the notion of school and community field experiences, broadening the practicum to include the domain of community;
4. two varieties of the research based practicum, including the reflective practicum a la Donald Schon;
5. efforts to improve the quality of practicum supervision, including peer supervision. (Zeichner, 1990, pp. 106–107)

Twenty years later, Bloomfield (2009) likewise noted the need for reform at these three levels but also made clear a series of systemic and relational recommendations for all practicum stakeholders. Writing in an Australian context, she suggested the following requirements when engaging in practicum reform:

- Gain additional support from systems and schools, as well as teachers at all career levels, to deliver larger numbers of Professional Experience placements for pre-service teachers.
- Change relationships between TEIs [teacher education institutions] and teachers from those characterised by teachers delivering supervision as a poorly rewarded service, to more collaborative relationships that also aim to be professionally beneficial to the teacher's own work and development. The specific aim would be to increase the value to the profession of involvement in pre-service teacher education and in particular Professional Experience programmes.

- Increase (in many cases) the involvement of university-based personnel directly within the work of those schools that are engaged within Professional Experience programmes.
- Maintain and (in many cases) improve the quality of in-school experiences delivered to pre-service teachers.
- Increase the diversity of experiences for pre-service teachers within a range of educational contexts that offer broad developmental opportunities relevant to teaching.
- Within the present standards-based accreditation agenda, develop new forms of partnership between universities and schools that serve to link them by a common imperative to intelligently and strategically work within (and at times against) this agenda. The overall aim would be to concurrently improve the professional learning of both pre-service teachers and in-service teachers. (Bloomfield, 2009, p. 35)

In her leading study of what we know about exemplary teacher education programmes, Darling Hammond (2006) highlighted the key features of a well-conceived practicum—or what she described as 'clinical experiences'—within a broader teacher education programme. These features are important to consider as they emphasise the 'bridging of theory and practice,' connecting 'coherently' the curriculum at both sites of learning and the importance of an integrated, seamless and developmental approach over time. Significantly, she stated:

> the importance of extensive and intensely supervised clinical work—tightly integrated with course work that allows candidates to learn from expert practice in schools that serve diverse students. Securing these features will take radical overhaul of the status quo. Furthermore, to be most powerful, this work needs to incorporate newly emerging pedagogies—such as close analyses of learning and teaching, case methods, performance assessments, and action research—that link theory and practice in ways that theorize practice and make formal learning practical. (p. 307)

Overall, as Darling-Hammond (2006, pp. 305–306) noted, these features are:

- a common, clear vision of good teaching that permeates all course work and clinical experiences, creating a coherent set of learning experiences;
- well-defined standards of professional practice and performance that are used to guide and evaluate course work and clinical work;
- a strong core curriculum taught in the context of practice and grounded in knowledge of child and adolescent development and learning, an understanding of social and cultural contexts, curriculum, assessment, and subject matter pedagogy;
- extended clinical experiences—at least 30 weeks of supervised practicum and student teaching opportunities in each programme—that are carefully chosen faculty jointly engaged in transforming teaching, schooling, and teacher education to support the ideas presented in simultaneous, closely interwoven course work;
- extensive use of case methods, teacher research, performance assessments, and portfolio evaluation that apply learning to real problems of practice;

- explicit strategies to help students to confront their own deep-seated beliefs and assumptions about learning and students and to learn about the experiences of people different from themselves;
- strong relationships, common knowledge, and shared beliefs among school- and university-based faculty jointly engaged in transforming teaching, schooling, and teacher education

In the next section of this chapter we explore some of these reform suggestions more closely in particular focusing on ways in which schools and universities can work more effectively together.

Building Practicum Learning Communities: Schools and Universities

Conroy, Hulme & Menter (2013) described the rise of 'professional learning schools' as part of the recent practicum reform agenda. They noted that the professional learning school model goes by many names:

> 'normaalikoulu' in Finland (Kontoniemi & Salo, 2011); 'academische opleidingsscholen' in the Netherlands (Snoek & Moens 2010); Professional Development Schools (Holmes Partnership 2007), professional practice schools (Levine, 1992) or clinical schools (NCATE 2010) in the USA; University Training Schools proposed in England (Department for Education 2011); or the idea of 'hub schools' advanced in Scotland (Donaldson, 2011, p. 8) (Conroy, et al., 2013, p. 559).

According to the authors key features of the professional learning school model may include:

(a) joint teaching of cohort intern groups immersed in partner school communities (within consortia or single schools) (Ure, 2010; Arnold et al., 2012);
(b) opportunities for mobilities between university and school staff i.e. the involvement of serving teachers as adjunct lecturers (Allen, 2011) and/or university teachers working 'in-residence' in schools beyond the limits of periodic 'studio days' or 'summer schools' (Grossman, et al., 2009, p. 287);
(c) co-construction of programme design (Byrd & McIntyre 1999);
(d) building capacity to support the use of evidence in teaching and learning (Niemi & Jakku-Sihoven, 2006); and
(e) professional development of new and experienced teachers and teacher educators (Darling-Hammond 2005). (p. 559)

Many of these features emphasise the importance of developing a shared vision for the practicum and a whole school approach to mentoring. Likewise Le Cornu (2010) championed a 'Learning Communities' model that effectively extended the

boundaries of the practicum's laboratory walls beyond the 'individualist bias' of the traditional/apprenticeship model. According to Le Cornu pre-service teachers are:

> positioned differently in a learning communities model. They are positioned as being responsible for their own professional learning and making a contribution to a professional learning community. This is a very different position from the passive role adopted in the traditional practicum and different, too, from the more active, but individualistic role, often adopted in the reflective practicum. (p. 199)

Graham (2006) also advocated a learning community approach to practicum support in which pre-service teachers, school-based teacher educators, and university advisors engage collaboratively in reciprocal acts of teaching and learning about teaching. For example, Graham's university advisors worked explicitly with school-based teacher educators on interpreting standards and dealing with classroom dilemmas while also running pre-service teacher seminars to assist them to make theoretical connections to coursework and to refine their ideas about their emerging professional identities. Hastings (2008) suggested that university advisors could adopt a similar learning community approach to support school-based teacher educators and pre-service teachers to understand and respond to each other's emotional experiences during the practicum. Supporting the work of school-based teacher educators is a particularly beneficial outcome of deeper involvement by university advisors in the practicum. It has been shown to contribute nuance and complexity to school-based teacher educators' understandings of their roles (Graham, 2002; Koerner, Rust, & Baumgartner, 2002), especially when university advisors lead on-site professional learning communities (Graham, 2002; Le Cornu, 2010).

Within a reflective practicum orientation, pre-service teachers are required to see beyond the technical skills of teaching and to consider the moral and ethical issues involved in teaching and learning in particular social contexts. The practicum is reimagined as an opportunity to learn about teaching by reflecting on theory *in* practice (Le Cornu & Ewing, 2008). The process of learning to teach is thus reconceptualised to include an acknowledgement of 'personally owned professional knowledge', which is gradually built up through the integration of learning in a range of university and school sites (Meere, 1993). Le Cornu (2010) built on these ideas, reimagining not only how practicum learning might happen, but also the role and responsibilities of the pre-service teacher within a reflective, learning communities approach.

Kenny (2009) reported on an Australian practicum partnership that captured the principles of mutual benefit and lifelong learning underpinning a learning communities approach. It was established in response to reports from pre-service primary teachers that because of their school-based teacher educators' general lack of confidence with science pedagogies, they rarely had opportunities to teach science during the practicum. The partnership involved the establishment of triads of pre-service teachers, their school-based teacher educators, and a university-based science teacher educator. Together, each triad designed and taught a sequence of at

least six science lessons over 6 weeks. Kenny's description of some of the programme's benefits evinces the reciprocal nature of learning it engendered:

> The in-service teachers responded well to the emphasis on a partnership approach where the relationship with the pre-service teacher was more collaborative than the supervisory role they would have in a normal practicum situation … As an extended professional development program occurring in their own classrooms it had the potential to be a powerful learning experience for them… The structure of the triadic partnerships therefore addressed some of the key problems associated with supporting pre-service primary teachers to gain experience and confidence with teaching science and the data also indications (sic) that the inservice teachers who participated also gained professionally from their involvement. (p. 78)

Belliveau's (2007) Canadian study presented another powerful learning communities model in that it aimed to:

> broaden what it means to be a teacher, offering an arts-based approach to learning that included cognitive as well as affective ways of knowing, working in collaboration with others, and looking at social justice as an integral part of a learning environment. (p. 50)

Twelve primary education pre-service teachers undertook this 'alternative practicum' in which triads of pre-service teachers led school students through a variety of drama-based activities before guiding them through a collective play development process that highlighted their learning about drama and about bullying. Just as Kenny's (2009) practicum programme offered professional learning about science to school-based teacher educators, Belliveau's learning communities' model, offered an opportunity for school-based teacher educators to experience and better understand drama-based pedagogies.

Significantly, the school-based teacher educators saw and acknowledged positive changes in their students as a consequence of participation in drama based learning, suggesting little resistance to the introduction of alternative pedagogies by their pre-service teachers. Perhaps framing it as an 'alternative practicum' meant that the school-based teacher educators in Belliveau's study were more open to their pre-service teachers introducing alternative pedagogies than otherwise might be the case. In that sense framing a practicum model as 'alternative' offers an unusual response to the tension in perceived purposes for the practicum as a time for pre-service teachers to learn to reproduce existing pedagogies on one hand, and to experiment with transformational pedagogies on the other.

A learning communities approach might also encompass peer learning between pre-service teachers. A range of research into paired practicum placements has emerged in recent times (e.g., Le Cornu, 2005; Nguyen, 2013; Nokes, Bullough, Egan, Birrell, & Merrell Hansen, 2008), and is framed variously as paired placement, peer mentoring, and critical partnership (Nokes et al., 2008). Growing interest in paired placements can be attributed partly to shortages of placements for pre-service teachers and partly to calls to reimagine normative assumptions about teachers' work as a solo enterprise (Nokes et al., 2008). For Nguyen (2013), peer mentoring during paired placement offered a promising avenue for improving psy-

chosocial support of pre-service teachers during the practicum period. According to Nguyen, peer mentors are usually:

> equals in terms of age, expertise, power, and hierarchical status, and the interactions are based on reciprocal and mutual (sic) beneficial relationships and learning partnerships rather than on the traditional transmission of expertise and experience from experts to novices. (p. 33)

Conducted with participants from a Vietnamese university, Nguyen's study investigated the influence of peer mentoring on pre-service teachers' feelings of psychosocial support during a 6 week practicum. For the study, pairs of pre-service teachers worked with the same mentor teacher from whom they received support and feedback over the course of the practicum. Half of the pairs also participated in formal peer mentoring meetings during which they reflected on, and critiqued, their own and each other's lessons. The study found that the pairs who participated in formal peer mentoring felt significantly more psychosocial support than those who did not. In particular, the formally peer mentored pairs reported feeling more supported in terms of 'listening and counselling, trusting, and considering one another friends' (p. 36). Nguyen recommends a paired model for the practicum, including a formal peer- mentoring dimension, since this approach offers a model for offering pre-service teachers emotional and psychosocial support during the practicum.

Whereas Nguyen's (2013) practicum pairs undertook formal peer mentor training and engaged in formal peer mentor meetings, the practicum pairs in the study undertaken by Nokes et al. (2008) received no explicit instruction about how to work collaboratively when planning, teaching or reflecting. These practicum pairs undertook 15 weeks of practicum, with each pair sharing a classroom with a single mentor teacher. The research sought to understand whether and how paired practicum placements improved pre-service teacher learning about teaching as well as the kinds of collaborative partnership models that would organically develop between different practicum pairs, especially when planning and teaching. Two unique pairs stood out from the sample: one pair that did not collaborate at all and a second that collaborated significantly during planning but did not co-teach at all. For the rest, collaboration involved moderate levels of cooperative interaction during planning and teaching. The strengths of this model were reported to be increased confidence and reduced workload for the pre-service teachers, an enriched classroom environment, and reduced incidence of student discipline problems. While the experience was largely positively received, some practicum pairs felt they had not had the 'real' experience of solo teaching while some students found it difficult to adjust to a co-teaching model since they were used to a single teacher classroom.

New media technologies offer another kind of learning communities approach to supporting pre-service teacher practicum learning both during and after the practicum itself. Lee and Wu (2006) describe their use of video within a Taiwanese teacher education programme to enable a learning communities approach to self and peer assessment of practicum teaching. All 37 of Lee's and Wu's pre-service teacher participants had access to short (10–15 min) videos of one another's practicum teaching. Using online viewing and discussion spaces, the pre-service teachers

critiqued their own—and each other's—teaching. Three experienced teachers also contributed their critical insights to the collaborative reflections on practicum teaching. Lee and Wu report five key findings in relation to the efficacy of the online video approach. First, the online platform enabled ease of access to video material. This in turn led to the second benefit of improved self-evaluation, since the online platform enabled participants to view and review their teaching episodes multiple times. Third, the approach resulted in increased collaborative reflection and peer learning about good practice as participants critiqued each other's teaching. Fourth, both peer and self-evaluations were more concrete compared with live feedback sessions since observations could be tied to discreet moments of the video footage. And finally, experienced teachers were able to input more powerful commentary since they were able to tie their observations about good practice to video examples from pre-service teachers' practices rather than describing anecdotes from their own experience.

But where Lee and Wu reported the successful uptake of online discussion forums for *post*-practicum collaborative reflection on teaching, English and Duncan-Howell (2008) noted the problem of sustained participation in such forums *during* the practicum itself. They observed:

> Often there is an initial flurry of activity as students ask for advice, help, contact details, resources and general assistance. However, this initial activity often diminishes over time, which has left lecturers pondering why these discussion forums cannot be sustained during teaching practicums. (p. 596)

English and Duncan-Howell found that the regularity and consistency of pre-service teachers' participation in practicum discussion forums increased by situating them in the social networking context of Facebook. Their Australian study into Facebook discussions during practicum found that pre-service teachers engaged in five broad categories of posts: expressions of excitement, jokes, problem posing, problem solving, and a miscellaneous category that largely comprised 'affective communication' between group members. The researchers propose that pre-service teachers' familiarity, prior experience, and authentic engagement with Facebook 'helped to naturalise its use while on practicum' (p. 597), compared with the artificial digital communities manufactured through the creation of discussion forums on dedicated learning management systems.

Wright's (2010) New Zealand study of the use of Twitter to promote reflection during the practicum found similarly that pre-service teachers used to participating in online social networking forums appreciated the sense of community enabled by Twitter engagement. In this small scale case study, eight pre-service teachers tweeted three times a day during their practicum. The tweets were coded into five broad categories: pedagogy, emotions, relationships, complexity/curriculum/planning, reflections and other. As in English and Duncan-Howell's (2008) study, affective communication featured strongly. According to Wright, 'supportive posts were highly valued reducing participants' feelings of isolation and emotional overload' (p. 262). But far from simple expressions of emotion, these tweets encouraged participants to move into deep reflection about 'negotiating

learning with teenagers, understanding themselves as teachers, and examining the complex nature of teaching' (p. 262). A form of microblogging, the particular influence of Twitter as a reflective pedagogy was connected to the immediacy and conciseness of response it encouraged.

The implications and potential of the learning community triad (pre-service teacher, school-based teacher educator and university advisor) are, arguably, at their most significant when the university advisor is not just positioned as advisor to the school-based teacher educator and pre-service teacher, but also as a third learner in the relationship. Although not framed as a learning community model, Beck and Kosnik's (2002b) study confirms the value of this positioning of the university advisor as learner. One of the study's key findings is that through their intensive involvement in the practicum, university advisors grew in their knowledge and understanding of schooling. They explained that:

> Participation in the practicum made us more aware of the difficulties and successes of "ordinary" schooling: the skills of teachers in complex and demanding situations and the patience, fairness, and compassion teachers' display in their daily interactions with students. (p. 13)

In that sense, in Beck and Kosnik's study, the reframing of the role of university advisor required them to enact—and thereby enabled them to model—the approach to education theoretically advocated in their teacher education programme. It required that they model 'respect for practice; a close theory-practice connection; teachers as researchers; an integrated curriculum; and a caring, supportive, teacher-student relationship' (p. 17).

Certainly a reimagining of the role of the university advisor is essential in the consideration of what productive university-school partnerships might look like. Often seen as a bridge or liaison between the university and the school, the university advisor (also referred to as supervisor, teacher educator, or university liaison) also has a key part to play in the practicum, thus bringing into being a complex triad of professional roles and relationships.

As in the case of the school-based teacher educator, the role of the university advisor is complex and multifaceted. For Williams (2013), enacting the role of university advisor raised confusing questions around her shifting identity as she made the transition from classroom teacher to university-based teacher educator and scholar. In her 2013 self-study of this identity shift, William's offers a vivid description of the role confusion, uncertainty and discomfort she experienced as a university advisor within a traditional conception of practicum roles and relationships:

> In my first few years as a teacher educator, when I was asked to supervise students on practicum, I approached this with enthusiasm and confidence, believing that I had appropriate experience in mentoring pre-service teachers in my own primary school classroom and would therefore find the task relatively straightforward. However, each time I visited a student teacher on practicum, I left with an uneasy sense of confused realities and questions—was I still a teacher, or am I now someone different as a teacher educator? Although I believed that my supervisory visits generally had a positive outcome, I left each time with a sense of frustration and a degree of confusion—if I only related to student teachers as I would have as a classroom teacher, that is, giving advice on how to teach, what was the point of being a teacher educator in this context? I certainly felt at home in the school envi-

> ronment, and could offer many suggestions about teaching from my own experience, but was there more to being a teacher educator than this? My visits to student teachers in schools highlighted some uncertainty about my sense of self as a teacher educator in the early years of my being in that role. (p. 119)

According to Bloomfield (2010), the role of university advisor or teacher educator is 'to establish a collaborative educational relationship with both the pre-service teacher and the school-based teacher educator' within which they can 'find themselves assuming diverse roles, including critical friends, confidantes, nurturers as well, at times, as the ultimate assessors of the practicum (p. 227). Grossman et al. (2009) likewise positioned university-based teacher educators as pivotal in addressing practicum problems and extend their reach and use of the practicum turn by calling to teacher educators:

> to attend to the clinical aspects of practice and experiment with how best to help novices develop skilled practice. Taking clinical practice seriously will require us to add pedagogies of enactment to our existing repertoire of pedagogies of reflection and investigation. In order to make this shift, we also argue that teacher educators will need to undo a number of historical divisions that underlie the education of teachers. These include the curricular divide between foundations and methods courses, as well as the separation between the university and schools. Finally, we propose that teacher education be organized around a core set of practices for teaching that novices are helped to develop during professional education. (p. 273)

Conclusion

In this chapter we have highlighted multiple perspectives on the ongoing debate about the place of practice in initial teacher education. We have emphasised the high level of scrutiny of the practicum itself as initial teacher education institutions, schools, and policy makers tussle over the most appropriate ways to link theory and practice. It is interesting to trace the documentation of practicum issues and innovations over the past century, beginning with Dewey's identification of differences in perceptions of the purpose of practice in 'The relation of theory to practice in education' (1904). In particular, he contrasted the 'laboratory' model, preferred by those who take a longer term vision of learning to teach and of teaching, with the 'apprentice' model, which takes a supply and demand approach to teacher education, and has a short term focus on meeting immediate classroom needs.

In the early twenty-first century these debates remain largely unchanged. As Zeichner (2014) recently noted, in the current reforms:

> two different visions of the role of teachers and teacher preparation are being advocated. On the one hand, some propose building or maintaining a professional teaching force and a system of teacher education that prepares teachers for professional roles and teaching careers (Darling-Hammond & Bransford, 2005). Others believe that it is too costly to build and maintain a professional teaching force to teach everyone's children and have advocated preparing teachers of 'other people's children' as technicians to implement the teaching scripts with which they are provided, in the belief that the preparation these teachers receive and the subsequent scripting of instruction will lead to improvements in pupils' stan-

> dardised test scores. Initial teacher education in this view (usually referred to as 'teacher training') should be very brief and take place mainly on the job. There is little expectation that these teachers will have teaching careers, and the system is designed to make it possible for these temporary teachers to be replaced in a few years by other narrowly trained teachers who also will leave the classroom in a few years (Rosen, 2003). (p. 552)

Despite extensive international reviews of teacher education, we find ourselves in familiar territory as we continue to grapple with concerns raised about the apprentice—or training—model and all its attendant consequences and tensions. At the heart of this recurring tension, perhaps, is that we have not been mindful of Dewey's note that apprentice and laboratory models need not be mutually exclusive; that practice should not be situated within the domain of school alone, nor should the university be understood as the sole realm of theory. To best prepare teachers for a complex profession, many initial teacher education providers have moved to embrace just this kind of change in thinking, from a traditional to a reflective model of teacher education, within which the purpose of time spent in schools was also reimagined. As Zeichner (1992) advocated, a practicum approach in the tradition of Dewey's laboratory model is one that is 'inquiry orientated' and 'reflective,' is situated across multiple contexts and rejects the 'persistent mind-set that remains that places theory exclusively in universities and practice solely in elementary and secondary schools' (p. 297).

Perhaps the Donaldson review (2011) provides the most useful policy reform agenda for a productive way forward, arguing that the university location of Schools of Education might be more fully exploited in order to reduce 'unhelpful philosophical and structural divides, [that] have led to sharp separations of function amongst teachers, teacher educators and researchers' (p. 5). The review notes that school-based experiences such as the practicum 'should do much more than provide practice in classroom skills, vital though these are' (p. 90). Beyond this simple conception of the practicum's purpose, 'experience in a school, provides the opportunity to use practice, to explore theory and examine relevant research evidence' (p. 90).

As explained by Conroy et al. (2013, p. 569) the review encourages a view of schools as sites for 'well researched innovation' by 'research aware teachers' (p. 102). This repositioning of practice and research as the responsibility of both school-based and university-based teacher educators working together for both the classrooms of today *and* of tomorrow might indeed lead to the convergence of theory and practice and collectively produce teachers better prepared for our complex teaching profession.

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Chapter 7
Reform Efforts in Teacher Education

Clare Kosnik, Clive Beck, and A. Lin Goodwin

Introduction

As committed teacher education practitioners and researchers, we are glad to have this opportunity to review contemporary reform efforts in teacher education. A remarkable number of initiatives are under way globally, and studying them is helpful for understanding current issues and endeavors in teacher education. We wish to note at the outset, however, that *our account will not be purely descriptive*. We believe that critical assessment of the various initiatives is in order; indeed, in some countries so-called "reforms" are doing a great deal of harm to teacher education and need to be opposed.

We do not deny that pre-service teacher education (like preparation in other professions) stands in need of improvement. However, in our view teacher educators already do much good work, and we must acknowledge and build on this foundation (Kennedy, 2010; Sykes, Bird, & Kennedy, 2010). Moreover, we need to identify the shortcomings of supposed reform initiatives. Some are politically driven and involve going back to centuries-old "transmission" pedagogy that is popular with voters but rightly questioned by thoughtful teachers and researchers. Others show promise but are designed and implemented in a top-down manner, without the dialogue, research, and practitioner input essential for real improvement.

We wish to state explicitly, then, that for us the term "reform" has a double meaning, referring sometimes to initiatives that are promoted as improvements but in fact are not, and sometimes to efforts that are actually beneficial. As far as possible we will indicate in the text when we are using the term in one way or the other.

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In parallel with this distinction, we wish to note that the purpose of our chapter is twofold: (i) to *inform* readers about trends, developments, and major turning points in teacher education that are presented as reforms; and, (ii) to *critique* so-called reforms and suggest *future directions* for teacher education that we believe would indeed be real improvements.

Our chapter has three parts. In Part 1, we look at eight main types of purported reform initiatives around the world. In Part 2, we present case studies of four countries – England, the U.S., Singapore, and Canada – that have distinctive approaches to teacher education reform. (The difference between England and the U.S. is largely one of degree, but that difference is significant in our view). And in Part 3, we discuss explicitly the strengths and weaknesses of particular initiatives and propose directions for the future. In doing so, we do not just express our own views but continue to draw on the research literature from various countries and regions. Generally speaking, then, Part 1 is largely descriptive of "reform" efforts; Part 2 includes a mixture of description and assessment; and Part 3 is primarily concerned with (a) assessing the initiatives and approaches described in Parts 1 and 2, and (b) making recommendations for the future.

How did we choose particular country examples throughout the chapter? We have been guided by the availability of literature on reform in given countries; our own background knowledge; the need to provide examples of various types of initiatives; and the desire to balance as far as possible reference to wealthy and less wealthy countries (although this has been difficult). Because the four distinct national approaches to teacher education reform we wished to explore in Part 2 were exemplified in relatively wealthy countries, we worked to correct this imbalance to a degree by providing references to less wealthy countries in Parts 1 and 3.

Part 1: Eight Kinds of Teacher Education Reform Initiatives Around the World

In a great many countries and regions today, efforts are under way to reform teacher education. Why is this considered necessary? Some of the reasons given focus on claimed *shortcomings in teacher education programmes*: excessively theoretical and abstract courses; insufficient attention to subject knowledge; lack of connection between the campus programme and practice teaching schools; and minimal preparation of pre-service faculty for their role. Other reasons have to do with *student learning needs* that enhanced teacher education could help meet: students are performing poorly on international tests (e.g., PISA, TIMMS); a large proportion of students have low levels of literacy and numeracy; school graduates lack the knowledge and skills required to get "good jobs" and contribute significantly to the national economy; young people need to be better prepared to work and live in a digital age; and other understandings and skills are especially needed today, e.g., creativity, interpersonal skills, sound values, inclusive outlooks, and a strong personal identity (OECD, 2012).

Miller (2015) writing about teacher education reform in Chile comments that "international tests such as PISA and national tests such as SIMCE reveal a disappointing portrait of students' performance" (p. 1). Wiseman (2012) speaking from a U.S. perspective says: "The impetus for changing teacher education arises from many concerns [including] teaching diverse learners in a highly technical and media-rich society … [T]here are wide achievement gaps among diverse student groups … International comparisons continue to show that U.S. students are not competing at expected levels, especially in mathematics and science … Many students exiting from classrooms are not prepared for success in postsecondary education and do not have the appropriate skills and abilities needed for today's jobs" (p. 87).

In Part 1, we look in turn at eight types of teacher education reform initiatives that have been proposed to address these concerns. As noted earlier, the discussion here will be largely descriptive and informative: assessment of such initiatives will take place in Parts 2 and 3.

Explicit Standards for Teacher Education

A common trend in teacher education reform is toward explicitly stating the standards that programmes must attain. Darling-Hammond and Lieberman (2012) observe that many countries are producing standards statements, emphasizing (for example) teachers as decision-makers, helping special needs students (Finland), acquiring knowledge of both content and pedagogy, and achieving proficiency in IT (Singapore). According to the 2013 European Commission report on teacher education, more attention needs to be given to developing "quality frameworks" for teacher education; such frameworks fulfill "an 'ethical' obligation to be precise about teacher educators' work" and also serve to "share a knowledge base" (p. 16).

In Scotland a set of Standards for Initial Teacher Education was drawn up recently, "based on the triumvirate of Values, Skills and Knowledge, and [oriented] towards social justice and research underpinnings" (Menter & Hulme, 2011, p. 388). Australia in 2007 began a process of establishing "clear goals for the design of teacher education programmes, including the content covered in the courses" (O'Meara, 2011, p. 426). And India in 2009 released the National Curriculum Framework for Teacher Education, with a central emphasis on "being humane to learners" and addressing issues of "inclusive education, perspectives for equitable and sustainable development, gender perspectives, role of community knowledge in education, and ICT in schooling" (NCTE, 2009, p. iii).

Minimum Requirements for Teacher Education Programmes

Closely related to enunciating standards, but more specific in terms of programme structure, is the move to set minimum requirements for teacher education; this trend is not new, but it has gained momentum in recent decades. Examples of increased

minimum requirements include: raising admission standards for teacher candidates; increasing the formal qualifications of teacher educators; prescribing a minimum length for programmes; mandating that all teacher education be conducted at the university level; and requiring that all programmes lead to a master's degree.

The 2010 OECD report on teacher education notes: "Since the 1980s, teacher education [in OECD countries] is increasingly being incorporated into university" (p. 6). This report further elaborates: "some countries have moved from [having a large number of training colleges] to a relatively smaller number of university-based teacher-education colleges with relatively high entrance standards and relatively high status in the university" (p. 70). The 2013 European Commission report on teacher education gives examples: "In Sweden, all teacher educators working at universities are required to have a PhD, with the development of intensive support programmes for those teacher educators that need to achieve a PhD qualification … In Finland, the requirements for teacher educators working in teacher education institutions include MA qualifications and advanced Education studies … Ireland [has recently developed] requirements for staff responsible for student teachers' learning [including] a qualification at a higher level than the one being taught [and] teaching experience in the relevant sector" (pp. 19–20).

In South Africa, all teacher education has recently been moved to universities, ending a long tradition of college-based teacher preparation, especially in rural areas (Samuel, 2012). In France since 2010 all teacher training must occur in a university and lead to a master's degree, a move that has led to logistical problems that are still being worked out (Lapostolle & Chevaillier, 2011). In Scotland, by the end of the twentieth century, "ITE was being led from, and largely provided by, seven universities" (Menter & Hulme, 2011, p. 388). Norway by 2010 had drawn up plans to have just two 4-year teacher education programmes, for grades 1–7 and 5–10 respectively (previously there were many routes), each involving a profession-oriented BA thesis" (Munthe, Malmo & Rogne, 2011, pp. 443–444).

Research-Based Teacher Education

Related to standards and minimum requirements, but bearing on other issues as well, is the move toward more "research-based" teacher education (although there is wide disagreement on what this means and how it should be implemented, as we will discuss in Part 3). The term research-based teacher education here is understood in two rather different ways. On the one hand the concern is that teacher educators and student teachers should draw on and conduct research *to improve their practice*. For example, Finnish teacher education has an emphasis of this kind (Sahlberg, 2011); and Munthe et al. (2011) express the common Norwegian view that:

> … teacher education programmes must be research based … Teacher educators must be researchers or must be in close contact with researchers who conduct relevant research for teacher education; research must be a natural part of students' learning: they should learn by reading and discussing research, relating their teaching to research, and taking part in research. (p. 445)

On the other hand, in many contexts the focus is on conducting research *on* teacher education *for accountability purposes*. This may be approached in a relatively positive way, as in Scotland where the Donaldson report (2011) recommended that teacher education be informed by evidence, and the Government responded by mandating that "teacher education departments should routinely conduct research into the impact of their ITE courses" (Menter & Hulme, 2011, p. 391). Alternatively, the assessment may be external and top-down, utilize a narrow set of indicators, and have a strong political and "accountability" agenda, as discussed in the next section.

Assessment and Accountability in Teacher Education

There is an increase in external assessment of teacher education programmes around the world. In Europe, according to the 2006 European Commission report on teacher education, "[w]ith the exception of Luxembourg, all countries considered in this survey have an officially implemented system for evaluating initial teacher education" (p. 67); however, the frequency of the evaluation varies from once a year to every 12 years. The authors advocate developing more explicit "quality control measures" and specifying "the way in which these measures are applied," noting that the effectiveness and impact of the evaluations "remains unclear" (p. 70).

Aubusson and Schuck (2013) studied eight widely differing countries and found contrasts between them in the extent to which assessment of teacher education programmes was top-down or collaborative. In the U.S., the assessments by NCATE and TEAC (now unified as CAEP) are "supported by the higher education system itself" (Wiseman, 2012, p. 88), but are nevertheless often experienced by programmes as onerous and intrusive. Even more threatening are federal and state assessments that are based on the test scores of pupils of teacher education graduates and have financial implications. "RTTT [Race to the Top] and other statewide movements are continually moving teacher education programs toward participation in statewide data systems and insisting that the profession find ways to measure the impact of teacher education programs on PreK-12 student learning [often leading to] teacher education 'report cards'" (Wiseman, 2012, p. 88). There is a proposal under consideration in the U.S. at present to increase the frequency and strengthen the consequences of such assessments. We will discuss this kind of assessment and accountability more fully in Parts 2 and 3.

Alternative Routes into Teaching

In some countries, as noted earlier, reform has involved establishing minimum requirements that *reduce* the routes into teaching (e.g., South Africa, France, Scotland, Norway). However, in other countries there has been a trend toward

allowing several alternative ways to access the profession. In the England and the U.S., for example, two routes recently added are: (a) primarily school-based programmes, with formal training but little university involvement; and, (b) direct-to-teaching schemes that give a professional qualification with a minimum of formal teacher education (whether university- or school-based) before or after beginning to teach. In addition, some states in the U.S. have been given (c) extensive powers to hire teachers with no professional qualification whatever, either past or projected.

Sometimes alternatives (b) and (c) are seen as stop-gap measures made necessary by temporary teacher shortages in a given area. In other cases, the diversity of paths is viewed as a good way to create "healthy competition" or enable experimentation with varied selection and training approaches. The 2010 OECD report states: "Teacher education has to be flexible … Teachers for example should be given the opportunity to enter the profession after having completed studies in another discipline, or after having accumulated valuable experience working in another field. This can include structures such as such as 'on-the-job' training and distance training" (p. 46).

Yet again, the direct-to-school approach is often favored by those who feel more emphasis should be placed on the subject knowledge – as distinct from pedagogical knowledge – of teachers. It permits the hiring of university graduates who have a strong academic record but do not wish to spend the time or money involved in formal teacher education. Along these lines, Wiseman says that the original Teach for America programme was seen as a way to "make sure that the 'best and brightest' were heading up our classrooms" (Wiseman, p. 88).

Emphasis on Subject Knowledge

In less affluent countries, a large proportion of teacher candidates lack background in the subjects they will teach. Guzman, Castillo, Lavarreda, & Radhames (2013) state that a critical issue in teacher education in Latin America and the Caribbean is the "[l]ow previous academic achievement of those who enter pre-service training programs" (p. 2). As a result, there is a heavy stress on subject content instruction in teacher education reforms, both during the preparation programme and subsequently. Avalos (2000) observed that in Latin America "[t]here is a much stronger emphasis than in the past on content knowledge" (p. 470). In Chile, according to Miller (2015), one of the main concerns in teacher education is "teachers' and teacher candidates' content and pedagogical knowledge" (p. 2).

In wealthier countries, although teacher candidates usually have a relatively high level of subject knowledge, many critics feel too much stress has been placed on pedagogy in teacher education programmes. This position often arises from a conception of teaching as primarily transmission of subject content. There are wide differences between countries on this issue (Aubusson & Schuck, 2013), but in general a move has occurred toward greater attention to subject knowledge. For example, Norway's 2005 teacher education reforms resulted in placing a heavier stress on

subject teaching in both campus courses and the practicum (Munthe et al., 2011). In the U.S., a similar shift has occurred in both admissions and programming, partly as a result of pressure from the Race to the Top initiative which is heavily preoccupied with subject learning (Wiseman, 2012, p. 88). In Scotland, too, the 2011 Donaldson Report, endorsed by Parliament, recommends "ensuring that the levels of literacy and numeracy are high for all entrants to the profession" (Menter & Hulme, 2011, p. 391), and also enlisting the help of university arts and science departments to teach subject knowledge to teacher candidates during the programme.

Relating Theory to Practice: Connecting the Campus to the School

Another set of reforms has to do with making teacher education more practical. Two main ways of achieving this are proposed: (a) enhancing the theory-practice connection in campus courses; and (b) linking the campus programme more closely with the schools. With respect to the former, there is considerable comment around the world about the excessively theoretical and abstract nature of traditional teacher education courses. For example, discussing teacher education in Chile, Hammerness (2014) noted "concerns about the 'gap' between theory and practice and the relevance of coursework to classroom practice and to the everyday work of teaching" (p. 1). She reported that, in attempting to address this problem, a major Chilean university "has identified a set of 'core practices' upon which their program will focus [and is] working on professional development for … teacher education faculty to help incorporate these core practices into the redesign of the whole program" (pp. 2–3).

With respect to linking the campus programme more closely to schools, the 2012 OECD report noted that, in OECD countries, "[i]nitial teacher education is increasingly being transferred to schools"; it argues for greater "complementarity between field experience and academic studies" (p. 46). In India, the 2009 National Curriculum Framework for Teacher Education "reiterates in unequivocal terms" the need "to break the isolation of teacher education institutions from … the schools" (NCTE, 2009, p. iv). In the U.S. context, Zeichner (2010) speaks of the problem of "the disconnect between the campus and school-based components of programs" and describes current work in the U.S. aimed at addressing this concern (p. 89). In Scotland, a group of teacher educators at the University of Glasgow experimented with an intensive partnership between the university and the schools that involved faculty working in schools with both mentor teachers and student teachers (Conroy, Hulme, & Menter, 2013).

A closer campus-school connection is often pursued by establishing special practicum schools, called variously "training schools" (the Netherlands), "professional development schools" (U.S.), or "hub schools" (Scotland). The hub schools in Scotland (which are actually quite controversial, given the resistance in that

country to giving special status to certain schools), have been described as schools "where groups of students are on placement together [enabling] the development of genuine partnerships between the university and a smaller number of schools, where teachers are trained and supported in managing, mentoring and coaching students on placement" (Menter & Hulme, 2011, p. 392).

Emphasis on Continuing Professional Development

There is growing emphasis on *in-service* professional development as a key component of teacher education. As mentioned earlier, this is especially so in less affluent countries where ongoing learning of subject content is essential. However, the idea of teacher education as a "continuum" (Feiman-Nemser, 2001) is increasingly being adopted in many countries. The 2013 European Commission report suggests the need for "a 'teacher education system', understood as a single, coherent continuum of policy and provision that leads teachers seamlessly from initial teacher education, through the induction phase and into career-long continuing professional development" (p. 7). The Indian 2009 NCTE document notes: "Pre-service and in-service components of teacher education being inseparable, considerable focus has been given in this Framework on continuing professional development strategies" (p. iv). And writing in the German context, Richter, Kunter, Klusmann, Ludtke, and Baumert (2011) states: "Modern views of professional development characterise professional learning not as a short-term intervention, but as a long-term process extending from teacher education at university to in-service training at the workplace" (p. 116).

An aspect of this continuum that is increasingly stressed is new teacher induction. According to Darling-Hammond and Lieberman (2012), improvement in teachers' practice is being facilitated by:

> … induction models that support beginning teachers through skillful mentoring, collaborative planning, and reduced teaching loads that allow time for in-service seminars and careful building of a repertoire of practice, as organized in Singapore, Australia, Canada, Hong Kong, and some parts of the United States. (pp. 167–168)

Scotland is well known for its substantial provision for new teacher induction (White, Bloomfield, & Le Cornu, 2010). And the 2012 OECD report state that some countries reduced the workload for teachers during the first 1 or 2 years to help with induction.

But induction is not enough: teachers need to keep on adapting "as teaching contexts, pupil behavior, and expectations of teachers change" (Eraut, 1999, p. ix). The 2012 OECD report stated that: "In many countries, the role and functioning of schools are changing – as is what is expected of teachers" (p. 73). Across the 18 OECD countries participating in the TALIS survey (2009), areas of essential ongoing teacher learning identified were "teaching special learning needs students," "ICT teaching skills," and, "student discipline and behaviour problems" (p. 76).

Speaking especially with reference to Australia, but also other countries as well, White et al. (2010) maintain that practice teaching during teacher preparation should be seen as "just the first stage of school-based professional development programs" (p. 187).

Part 2: Examples of Reform Initiatives in Four Countries

In Part 1, we outlined eight kinds of teacher education reform initiatives around the world, illustrated by snapshots of developments in many countries. In Part 2, we look in greater depth at four countries – England, the U.S., Singapore, and Canada – selected because they exemplify four rather distinctive approaches to teacher education reform. As noted earlier, the difference between England and the U.S. is largely one of degree: both are characterized by neoliberalism (or neoconservatism), marketization, and the de-professionalization of teachers and teacher educators. However, we believe the difference of degree is important, and the experience of England can serve as a cautionary tale for the U.S. and other countries leaning in this direction.

England: Dismantling Programmes

Our first example is England, where teacher education has been subjected to a great many purported reforms over the last three decades. Although part of the United Kingdom, England is considered separately because "it has pursued a much more market-driven path" than Scotland, Ireland, and Wales (MacBeath, 2012, p. 68). The English government has assumed an instrumental role in "reforming" teacher education. The government's policy initiatives regarding teacher education have been so numerous that it is impossible to address all of them; a few have been chosen which provide a sense of the overall reforms This example shows how ostensible reforms led by the government, driven by an open market approach, with little consultation with teacher educators and indeed a distrust of teacher educators, are dismantling university-based teacher education.

Routes Into Teaching

Under the direction of the government there has been a proliferation of routes into teaching, with a diversity of "providers". The term providers is "used by governments in the UK to denote those places validated to prepare teachers" (MacBeath, 2012, p. 68). This term signals the government's belief that many agencies – not just universities – should be allowed to offer teacher education programmes. As a result there are a vast number of providers. "Prospective candidates can choose among an

almost bewildering array of agencies and routes into teaching. The Training and Development Agency website (http://www.tda.gov.uk/) informs them, 'No two courses of initial teacher training are the same' – largely because no two ITT providers are the same. Universities, colleges and schools all display varying characteristics, strengths and entry requirements, not to mention course content and structure" (MacBeath, 2012, p. 68).

One of the first steps in the massive and unrelenting reform of teacher education occurred in 1992, requiring that "all university-led courses had to be run in formal partnerships with schools and a number of new routes to Qualified Teacher Status were introduced, including some led by schools rather than universities" (Whitty, 2014, p. 470). This step heralded the move away from traditional teacher education programmes organized and offered by universities with a degree of autonomy. "Recent Governments – of all political persuasions – have worked to change the control and locus of teacher education from the academy into the classroom, around a predominantly practical, relevant and schooled curriculum and assessment framework" (Beauchamp et al., 2014, p. 7 & 8). According to Whitty (2014), the following main routes into teaching have evolved, most taking 1 year to complete.

> Partnerships led by higher education institutions (HEIs). These provided both undergraduate and postgraduate qualifications … most trainees, around 27,000 a year … followed one-year postgraduate courses, called the Postgraduate Certificate in Education (PGCE).
>
> School-centred initial teacher training schemes (SCITTs). These were consortia of schools that offered training towards the PGCE. They accounted for around 5 % of trainees per year. With SCITTs, the consortium itself arranged the training and channeled the funding for placements, as compared with HEI-led partnerships, where the university arranged placements and channeled the funding to schools. Nevertheless, universities validated the SCITTs' PGCEs.
>
> Employment-based routes (EBITTs). These involved 'on-the-job' training and fell into three groups: the Graduate Teacher Programme (GTP), Overseas Trained Teacher Programme (OTTP) and Teach First. They all led to Qualified Teacher Status (QTS) and some, including Teach First, also led to a PGCE, an identical qualification to the other routes (Whitty, 2014, p. 468)

Student teachers are increasingly pursuing non-traditional routes into teaching; in 1997 only 2 % of teachers were trained through alternative routes but by 2009 the number had climbed to 20 % (Whitty, 2014, p. 470). By 2011–2012, the number of providers had increased dramatically to "348 providers, with 76.4 % on university-led courses, 18.9 % on EBITT programmes and 4.8 % on School-Centred ITT schemes" (Murray & Passy, 2014, p. 497).

The School Direct programme is "sidestepping the traditional requirements of a university pre-service course and opening up providing agencies to a wider entrepreneurial market. It is highly decentralized with little consistency in programme and the opportunity for a single elementary or secondary school to be a provider" (MacBeath, 2012, p. 68). McNamara and Murray (2013) describe the School Direct programme as:

> … a large-scale experiment … It is a demand-led model in which schools recruit pre-service teachers, with a view to subsequent employment, and the commissioning of universities (or other training providers) to manage and accredit their training. Despite sustained

> protests from universities and other stakeholders, all indications are that the Government's aspiration is for School Direct to become the main – if not only – route into teaching over the next two years. (p. 14)

School Direct is seen by many teacher educators as seriously flawed. McNamara and Murray (2013) summarized their concerns as: (1) lack of safeguards around the suitability of schools that have student teachers; (2) no academic qualifications/subject knowledge entry requirements for the intending trainee are specified; and, (3) no incentive for schools to work with good or outstanding providers or any that have experience in specific subject areas (p. 16). Undeterred by the criticism, former Secretary of Education Michael Gove ramped up efforts to move teacher education out of universities, declaring in 2012 that "within the lifetime of this government, well over half of all teacher training places in England will be delivered in and through school" (Furlong, 2013a, 2013b, p. 5). Of the "6 ways to gain qualified teacher status in England now, 5 types are school-led training which is learn on the job" (Gilroy, 2014, p. 623).

Government Micromanagement

The so-called reforms in teacher education are extremely pervasive for several reasons: (a) routes into teaching have expanded; (b) content of courses is determined by the government (e.g., in primary education programmes it is mandatory that student teachers learn how to teach synthetic phonics); (c) practice teaching overshadows the academic programme because student teachers in university-based programmes must spend approximately two thirds of their programme in schools (Murray & Passy, 2014); and, (d) the funding model has jeopardized the future of university programmes. "In order to create capacity for the growth of School Direct, the normal or core allocation of training places in universities has been cut back" (McNamara & Murray, 2013, p. 14).

To ensure compliance with their initiatives, successive governments created quangos (quasi-autonomous government organisations) such as the Teacher Training Agency and the Office for Standards in Education (OFSTED). A poor OFSTED report has dire consequences. One Director of a university-based programme anguished that OFSTED "could say our [program] didn't fit the bill and that would be curtains [for the program]" (Kosnik & Beck, 2014, p. 16).

This assault on traditional teacher education at first glance seems almost inexplicable; however, there are several underlying reasons for it. First, teachers and teacher educators were seen to be too independent. Furlong (2013a) noted that:

> Even before he came into government, Tony Blair was explicitly invoking an earlier Labour Prime Minister, Jim Callaghan to argue the need for teachers to be far more accountable to their schools, their parents, and communities, and, above all, the government. And if that meant challenging traditional notions of individual professional autonomy, then so be it. (p. 33)

Second, education was seen by the government to have a much bigger role in the financial fortunes of England, being conceptualized as a way to improve the economy. According to Furlong (2013b), Tony Blair as Prime Minister declared: "Education is the best economic policy we have." In other words, "education under new Labour moved from being simply a social policy to being social and economic at the same time" (p. 32).

Third, education was seen as a mechanism to maintain the "traditional" British culture. For example, Michael Gove as Secretary of Education was personally involved in redesigning the English curriculum to focus on major British authors, in the belief that education is "about the preservation of the nation's cultural heritage" (Furlong, 2013b, p. 40). He failed to notice (or did not wish to acknowledge) the increasing diversity of English society! Fourth, as Moss (2009) argued in a searing analysis of the Blair government's National Literacy Strategy, the radical reform of education was politically motivated: education was the centre-piece of their political strategy. "New Labour's promise to the electorate in 1997 was that state-funded education could be fixed and turned into a high quality delivery system from which all would benefit. It could be fixed by direct intervention from politicians committed to overhauling the public sector and applying new principles which would see standards rise" (Moss, 2009, p. 155).

And finally, according, to McNamara and Murray (2013), successive governments re-conceptualized teaching in the following ways:

> a) essentially a craft rather than an intellectual activity; b) an apprenticeship model of teacher training that can be located entirely in the workplace; and c) the related assumption that more time spent in schools inevitably – and unproblematically – leads to better and 'more relevant' learning. The model potentially privileges performativity and 'practical' knowledge over theoretical, pedagogical and subject knowledge. (As quoted in Beauchamp et al., 2014, pp. 7 & 8)

Impact on Higher Education

The impact of these wide-ranging and unproven reforms on higher education cannot be under-estimated. With less time spent at the university, courses have had to be compressed or eliminated. The School Direct model has reduced funding for universities, which has destabilized higher education departments and will lead to the closing of some schools of education. The identity of teacher educators is shifting from being intellectuals to facilitators of the government mandates. "[T]heir expertise is unacknowledged and devalued – uncapitalised within the political economy of Education as a discipline – and underexploited in the education of teachers" (Ellis, McNicholl, Blake, & McNally, 2014, p. 41). According to Murray and Passy (2014), the government views teacher educators' mandate as to "produce 'classroom-ready' teachers, arguably with a good range of practical knowledge and skills, well-equipped to work as teachers in the schools of today and to teach according to current curricular and pedagogical practice" (p. 499). By contrast, teacher educators in England have banded together to argue the case for university-based teacher

education, in particular the value of research-informed policy decisions and the introduction of student teachers to a research-based approach to teaching (Beauchamp, Clarke, Hulme, & Murray, 2014, p. 11). To date, their efforts have had limited impact.

Overview

The future of teacher education in England is grim. This example shows how debatable reforms which are ideologically-driven rather than rooted in research and theory on how teachers learn are bound to fail and are irresponsible. Conceptualizing teaching as a craft is moving teacher education back to the approach used prior to 1960s (Beauchamp et al., 2014). Sykes et al. (2010) pose a question that should be considered in relation to the English government's actions: "Where does *their* knowledge come from, and why is that source different from or superior to the knowledge sources in the university?" (p. 472). There is no evidence that the government's approach will in fact achieve more learning, even of a traditional type; indeed, it completely disregards the reality of teaching in the twenty-first century.

There is true irony in these unfounded directives that aim to use education to improve the economy and maintain British culture, but in fact draw on outdated processes and disregard research, theory, and common sense. The short and long-term consequences change for teacher education will be immeasurable. Successive governments that claim to value scientific proof have willfully ignored the substantial research on teaching and teacher education (Cochran-Smith & Lytle, 2009; Darling-Hammond, 2006; Day & Gu, 2014; Furlong & Whitty, 2000; Kosnik & Beck, 2009; Loughran, 2006; OECD, 2012; Sahlberg, 2011) and charged ahead with unresearched reform initiatives. Unfortunately, given the momentum of the reforms and the agencies tasked with compliance, it is unlikely that even a change of government will allow teacher education informed by research to reclaim its place at the university "table", and teacher educators' voices will continue to be silenced.

The United States: Undermining and Regulating University-Based Teacher Preparation

Teacher Education in the U.S.

By constitution, education in the U.S. is a state concern, with the vast majority of funding coming from other than federal sources. As such, teacher education is also a local enterprise, with over 1400 universities across the 50 states offering teacher preparation programmes (U.S. Department of Education (USDOE), 2011a), although the number of new teachers graduating from university-based programmes is on the decline. Still, the federal government has, over time, used the funding it

does provide (about 10 %) to influence state elementary and secondary education policies and practices, and "works hard to get a big bang for its taxpayer-provided bucks by targeting its funds where they can do the most good … as a kind of emergency response system, a means of filling gaps in State and local support for education when critical national needs arise" (USDOE, February 13, 2012).

A key example has been the Elementary and Secondary Education (ESEA) Act introduced by Lyndon Johnson in 1965. "ESEA has consistently remained the single largest fiscal source of federal support for educationally vulnerable schoolchildren" (Thomas & Brady, 2005, p. 51), and has "redefined and vastly expanded the federal government's education role," (Learning Matters (Gutherie), November 8, 2011). This has raised "concerns regarding national control over education" (Thomas & Brady, 2005, p. 52) that persist to the present day, since with each reauthorization or amendment since its inception, ESEA has not only extended federal control over local education matters, but has fundamentally moved away from its original intent:

> Presidents Ronald Reagan, H. W. Bush, Bill Clinton, George W. Bush, and Barack Obama have converted the [ESEA] Act of the Great Society from a poverty-based federal "entitlement" program … into a standards-based accountability program that expanded testing and established rules for acceptable academic performance touching every one of the 14,000 school districts that receive federal dollars … ESEA is now a testing and regulatory machine that identifies and punishes failing schools (Learning Matters (Cuban), November 8, 2011)

Undermining University-Based Teacher Preparation: A Recent Step

In 2015, ESEA is once again in the process of reauthorization, and promises to maintain a regulatory and accountability climate even while there will be changes. This regulatory environment has certainly affected the university-based teacher education community, which has been under increasing levels of mandate since 2002, with recent indicators suggesting that this trend is not about to reverse. A clear example came on December 3rd, 2014, when the U.S. federal government released its latest proposal for rulemaking for teacher preparation programmes (Federal Register, Dec 3, 2014a). The new regulations promise to link programme quality to the standardized test scores of programme graduates' K-12 students, tie federal financial aid eligibility for prospective teachers to said programme quality, and impose additional (and costly) demands for the collection of "meaningful data on the performance of each teacher preparation program in the State" (Federal Register, Spring 2014b). These latest proposals represent a continuation of punitive accountability measures inflicted on university-based teacher preparation programmes by government authorities, and provide yet another example of the ongoing denigration of schools of education that began in earnest when George W. Bush took office in 2001. An early signal came from Rod Paige, Bush's Secretary of Education:

> Many states are wasting no time in developing alternate route programs, and surely the No Child Left Behind Act will only further encourage the development of such innovative and

> successful programs … It is clear that most certification systems limit the supply of teachers while maintaining low standards. (USDOE, 2002, p. 41)

Secretary Duncan's proposed regulations for teacher preparation, and Secretary Paige's embrace of alternate certification programmes, bookend a period of U.S. teacher education reform that has "championed the greater regulation of 'traditional' teacher education …while promoting efforts to bypass teacher education" (Imig & Imig, 2008, pp. 899–900). Indeed, 2000–2015 has emerged as an era of increased surveillance of university teacher preparation, legislated by "Title II of the Higher Education Act, which created a national reporting system on the quality of teacher preparation" (USDOE, 2002, p. iii). The period also witnessed private interests exerting their power in education, and alternative and for-profit providers of teacher certification proliferating, aided by increased funding and deregulation, even while university-based programmes were increasingly regulated.

Undermining University-Based Teacher Preparation: An Early Step

Secretary Paige's pronouncements heralded a significant shift in federal impact on schooling and teacher quality, galvanized by the reauthorization of the Elementary and Secondary Education Act, also known as No Child Left Behind or NCLB. Through NCLB, George Bush was "responsible for the largest expansion of federal control in the history of American education" that engineered "school reform … characterized as accountability, high-stakes testing, data-driven decision making, choice, charter schools, privatization, deregulation, merit pay, and competition among schools" (Ravitch, 2010a, p. 21).

In a decentralized system, U.S. states hold legislated authority over school districts and teacher preparation programmes. Yet, by creating a reward system promising "tens and hundreds of millions in increased federal aid" (U.S. House Committee on Education and the Workforce (USHCEW), April 1, 2004, p. 7), NCLB further inserted the federal government into local decision-making, and ushered in a "speak softly and carry a big stick" approach to driving educational change. Thus, NCLB coupled the big stick of sanctions such as loss of funding, with soft promises to battle the "soft bigotry of low expectations" and ensure that "no child should be left behind in America" (Bush, July 10, 2000). This dual-pronged strategy proved irresistible: "On June 10, 2003, President Bush announced that all 50 U.S. states (as well as Puerto Rico and the District of Columbia) had successfully submitted "accountability plans" to the U.S. Department of Education, detailing their plans for complying with NCLB" (USHCEW, April 1, 2004, p. 7).

Compliance with NCLB had a ripple effect that touched teacher education programmes. Undoubtedly, the decade prior to NCLB had already witnessed much teacher education reform activity. From 1990 to 2000, many states "changed the process through which teachers are trained and certified [given] [c]oncerns over the academic rigor of teacher training programmes, the strength of the certification process" (Hurst, Tan, Meeks, & Sellers, 2003, p. 65). Many states also instituted

licensure tests for new teacher candidates. Moreover, the 1990s saw states implement alternative routes into teaching in order to fast-track candidates into the profession or address teacher shortages in particular areas or subjects. "By 2001, 44 states and the District of Columbia offered alternative routes to teacher certification" (Hurst et al., 2003, p. 67).

Clearly, NCLB did not introduce either teacher education reform or alternative routes into teaching. But, by mandating that "all students must be measured. We must test to know. And low-performing schools, those schools that won't teach and won't change, will have three years to produce results" (Bush, July 10, 2000), NCLB imprinted the direction of the reform movement. There was now a policy press for resource re-distribution such that public dollars were accessible to open market entrepreneurs, a high stakes testing environment that measured quality according to test scores, and standardized accountability measures – that included punitive consequences when "standards" were not met. This opened the door for market approaches to teacher preparation, changes in K-12 curricula – which resulted in parallel changes in teacher preparation curricula – and more rigid accountability requirements, all of which undermined the teacher preparation work of universities.

This period saw university-based teacher preparation revising their programmes and coursework specifications, adding credits to meet additional content requirements, changing student teaching, and supplementing staffing in order to maintain state approval for their programmes. Many states now also required colleges of education to be accredited by NCATE[1] (National Council for the Accreditation of Teacher Education), a lengthy and time-consuming endeavor that costs many thousands in dollars and labor. These regulations were not applied to alternative programmes, which already existed, but proliferated with NCLB encouragement – and federal funding.

> What began in the early 1980s as a way to ward off projected shortages of teachers and replace emergency certification has rapidly evolved into an accepted model for recruiting, training, and certifying those who already have at least a bachelor's degree and want to become teachers. (National Education Association, n.d.)

The law mandated a "highly qualified" – i.e., state certified – teacher in every classroom, but simultaneously enabled certification "make-overs," such that would-be-teachers could achieve certification in myriad ways besides university teacher preparation programmes. For example, New York State created the *Transitional B* certification, allowing candidates with no teacher preparation and a bachelor's degree to be certified/highly qualified upon completion of a summer stint of 'training.' "In 2001, just 20,000 alternative teaching certificates were issued. By 2006, nearly 60,000 alternatively certified teachers were entering the teaching force each year, roughly one-fifth of new entrants" (Nadler & Peterson, 2009). Alternative route and university-prepared graduates emerged from their programmes deemed equally "highly-qualified," but those from universities had to pay more, do more,

[1] On July 1, 2013, NCATE and TEAC (Teacher Education Accreditation Council) were combined into a new accreditation body, the Council for the Accreditation of Educator Preparation (CAEP).

and spend more time achieving the same state certification. In addition, alternative certifications could be completed on-the-job, affording participants a living during 'preparation'. "Highly qualified" status could even be achieved with no course or fieldwork at all. For example, funded by 40 million dollars from the Bush administration, ABCTE (American Board for Certification of Teacher Excellence) offers paper-pencil multiple-choice tests that lead to certification in 11 states in several subjects/areas including biology and special education.

New Administration, Same Practices

Enthusiasm for NCLB had waned by 2008 when President Barack Obama was elected to the office. President Bush's goal that 100 % of all children would achieve proficiency (i.e., grade level performance) in reading and mathematics by 2014 was looking unrealistic,[2] resistance and anger against high stakes testing was on the rise, the economic downturn had slashed state education budgets – educators were ready for a change. But when Obama's plan to revise NCLB was unveiled , it was criticised as "setting the stage for privatization" and increasing the federal role in education to be "even more muscular than NCLB" (Ravitch, March 23, 2010b). University teacher educators similarly were alerted that the new administration promised to significantly affect their practice, given Secretary Duncan's repeated pronouncement that:

> … by almost any standard, many if not most, of the nation's schools, colleges, and departments of education are doing a mediocre job of preparing teachers for the realities of the 21st century classroom. America's university-based teacher preparation programs need revolutionary change, not evolutionary tinkering. (October, 2009)

In the same breath, Duncan praised alternative programmes such as Teach for America (TFA) as "high-quality alternative certificate routes."

The policy trajectory since then has been one whereby the Obama administration has seemingly outdone Bush in deregulating teacher education for non-university providers, heightening control over university-based programmes, tightening the accountability screws in terms of teacher/education evaluation, and diminishing the value of teacher preparation. First came the 2010 Innovation in Education grants:

> The only teacher education projects that were funded in this competition were two of the major non-university providers of teachers, "Teach for America" ($50 million), and the "New Teacher Project" ($20 million) … None of the projects that were submitted by college and university teacher education institutions were funded. (Zeichner, 2014, pp. 555)

Race to the Top followed, a grant competition that required states, as a condition of funding *eligibility*, to include "provisions that allow alternative routes to

[2] In fact, a NAEP 2014 report indicates that the majority of students failed to achieve proficiency, and even among the highest achieving students, only 62–64 % achieved proficiency or grade level performance. The Nation's Report Card. (2013). *2013 Mathematics and Reading.* Retrieved from http://www.nationsreportcard.gov/reading_math_2013/#/student-groups.

certification … particularly routes that allow for providers in addition to institutions of higher education" (http://www2.ed.gov/programs/racetothetop/executive-summary.pdf). This cleared the way for providers other than institutions of higher education (IHEs) to *independently* offer teacher and principal certification programmes *and* confer Master's degrees.

Unsurprisingly, Duncan's 2011 plan for teacher education reform, *Our Future, Our Teachers* (USDOE, September, 2011b), would hold teacher preparation programmes to "a clear standard of quality … that will support and further the transformation already underway in how we recruit and prepare teachers in this country" (p. 2). This standard included ranking programmes in universities according to the test scores their graduates achieve with their K-12 students, closing poor performing programmes and turning teacher education "upside down" (NCATE, November, 2010, p. 2). Conversely, Duncan's call for change in relation to charter school organizations and alternative certification routes emphasized scaling up, not downsizing, punctuated by the 50 million dollar award just the day before to 12 charter school management organizations "to replicate and expand high-quality charter schools that have demonstrated success" (USDOE, September 29, 2011b). Relay, the first independent graduate school of education to be chartered by New York State in almost a century, founded by the leaders of two charter school organizations and a charter school management company, opened its doors in 2011.

Overview

The federal government's rulemaking for teacher preparation programmes, articulated in 2011, lay dormant for 2 years, due to opposition to assessing programme quality by standardized test scores of graduates' students, using value-added measures. In December 2014, they were released for public comment with the controversial "programme quality" measure intact. The proposal does not hold programmes offered by non-university providers to the same quality standard. Meanwhile,

> The number of alternative programs nationwide has skyrocketed, rising from 70 programs in the 2000–2001 school year to 658 in 2011, according to the U.S. Department of Education, and these programs now make up 31 percent of all teacher preparation programs in the nation. (Mader, May 16, 2013)

Singapore: Teacher Education Reform Through Productive Collaboration

The Singapore Context

Labeled 'the little red dot' by citizens because of its small size and consequent depiction on world maps, Singapore is a 718+ sq. km island-city-state (Department of Statistics Singapore, 2015) in South East Asia, bookended by the southern tip of

the Malayan peninsula 50 km to the north and the nearest Indonesian island about 20 km to the south. Its multi-racial, multi-ethnic and multireligious population of about 5.4 million (Department of Statistics Singapore, 2015) comprises a Chinese majority (74 %), followed by Malays (13 %) and Indians (9 %), most of whom speak at least two of the four official languages: Malay, Tamil, Chinese (Mandarin), and English because "mastering a second language linked to...".

Schooling is compulsory by law up to primary/grade 6 or 15 years of age, but "there are opportunities for every child in Singapore to undergo at least 10 years of general education" (Ministry of Education (MOE), August 2013, p. vii). Literacy rates surpass 96 % (Statistics Singapore, May 15, 2015) and about 26 % of young people complete post-secondary education in a college or a polytechnic, while nearly all of the remainder go on to pursue vocational education to earn at minimum a certificate or a diploma in fields that allow them to find employment. Close to half a million students attend 365 primary or secondary schools and junior colleges,[3] and are taught by about 33,000 teachers. The majority of teachers are female (72 %), as are the majority of principals and vice-principals (MOE, August 2014).

Education for Nation Building

In 2015, Singapore turned 50 years old – a very young republic that in a few short years has moved from "Who?" to "Who's Who," definitely a statement, no longer a question mark. This has partly been a consequence of international assessments, which have focused world attention on high performers such as Singapore. Yet, a mere generation ago Singapore schools were not considered good, teachers were not considered of quality, and student performance was not remarkable by any measure. What made a difference?

The difference was a national effort to re-imagine schooling and teaching in Singapore fueled by a deep belief in education as the "prime engine of economy, nation and identity" (Luke, Freebody, Shun, & Gopinathan, 2005, p. 8). In 1965, as a newly independent nation, Singapore was a "struggling post-colonial society plagued with problems of survival" (Yip, Eng, & Yap, 1997, p. 4), "a small economy with little primary industry and natural resources" (Luke et al., 2005, p. 8). With few high school entrants or completers, a handful of students graduating from college, and few skilled workers, the developing nation focused its attention on her "most precious resource" – people – so that "every individual can realise his [sic] full potential, use his talents and abilities to benefit his community and nation, and lead a full and satisfying life" (MOE, 2015, http://www.moe.gov.sg/about/)

[3] Junior Colleges are one of the post-secondary institutions (i.e., after secondary 4 or 5, or years 10 and 11) to which students may proceed for further education/training.

From Quantity to Quality of Teachers: A Dramatic Shift in National Policy

In 1997, then Prime Minister (PM) GOH Chok Tong announced *Thinking Schools, Learning Nation* (TSLN), a new national vision for developing "the creative thinking skills and learning skills required for the … intensely global future" (Goh, June 2, 1997). This was:

> a major milestone in recent education reforms in Singapore … Thinking Schools is a vision of a school system that can develop creative thinking skills, lifelong learning passion and nationalistic commitment in the young. Learning Nation is a vision of learning as a national culture, where creativity and innovation flourishes at every level of the society. (Ng, 2008, pp. 5–6)

This pronouncement turned national policy focus from "survival-driven education" (Goh & Gopinathan, 2008), aimed at achieving "universal primary education … and mass recruitment of teachers … to staff the rising number of schools" (Goh & Lee, 2008, p. 97), to "ability-driven education [which] aims to identify and develop the talents and abilities of every child to the maximum" (Tan, 2005, p. 5). Conceptions of teaching and learning became more flexible and inclusive such that diversity in knowing and thinking would be embraced, multiple pathways and options for learning would be developed, and innovative pedagogies and technologies could be nurtured (Hogan & Gopinathan, 2008; Luke et al., 2005). Indeed, PM GOH added pointedly that:

> [TSLN] will redefine the role of teachers … Every school must be a model learning organisation. Teachers and principals will constantly look out for new ideas and practices, and continuously refresh their own knowledge. Teaching will itself be a learning profession, like any other knowledge-based profession of the future. (Goh, June 2, 1997)

Quantity – enough schools with enough teachers – was now inadequate; attention was now on raising quality, upgrading both schools and teachers.

Teacher Education Reform as a Partnership

From 1997 until the present, teacher education in Singapore has been continuously evolving, operating from a steadfast vision of teacher as learning professional. Actualizing this vision has involved a "unique tripartite partnership" (Lee & Low, 2014) between the Ministry of Education (MOE), the National Institute of Education (NIE – the sole provider of pre-service teacher preparation), and the schools. In this "Policies-Practices-Preparation model for the management of an education system" (Lee & Low, Spring 2014, n.p.), each member of the tripartite has a specific but complementary part to play in education reform. The Ministry is responsible for reading the national and international landscape, ensuring that policies are responsive and relevant to the economy and the country's future; the schools and teachers put policies into practice thereby influencing students' present as well as shaping their future; NIE prepares quality professionals with the knowledge and skills to enact the government policies.

It is a tightly coupled systemic approach to reform that is synergistic. For example, NIE's Initial Teacher Preparation (ITP) was designed around the 1997 "Desired Goals of Education" articulated by the Ministry for students and schools. MOE recruited teachers, aided by school and university partners in selecting the very best candidates. The partnership assured NIE about 2000 teacher candidates a year,[4] and assured schools staff prepared to support MOE's vision. The Ministry clearly drives reform, yet decisions are typically made through a process of consultation – oftentimes on a national level[5] – and by committees that represent the tripartite. This process of consultation and cooperation is also supported by a system of secondment whereby school-based educators can either request or be assigned to short term stints (2–4 years) in the Ministry and to NIE where they assume positions as curriculum developers, university-based teacher educators, etc., and participate in decision-making at many levels.

From Quantity to Quality of Teachers: Enacting a Vision

After the initiation of TSLN, the process of enacting the newly envisaged teacher began. A primary goal was upgrading teachers and enhancing teaching in terms of quality and status. In terms of status, while it is commonly understood that respect for teachers is a cultural norm among Asian societies, respect for the person and respect for the profession are not necessarily synonymous. To change this, "[t]he Singapore government implemented wide-sweeping changes in the salaries and promotion aspects in the education service" (Goh & Lee, 2008, p. 100). New teacher salaries rose steeply, commensurate with salaries for fresh graduates entering fields such as engineering, law, and business that require equivalent preparation and study. ITP was funded fully by the government plus student teachers, as MOE "Education Officers," receive benefits, materials funds, etc. Better compensation and the lure of higher education were coupled with deliberate public and political messaging about teachers' importance to the future of the country. Says the Dean of Teacher Education at NIE, "In Singapore, we trust teachers, we respect and value our teachers and we see them as nation builders" (Smith, October 24, 2014).

The early 2000s also focused on enhancing teacher quality in the form of new degree programmes, advanced certificate and diploma courses, and graduate level

[4] Recruitment has recently decreased significantly as the country reached its "steady state" of about 33,000 teachers. This has increased focus on inservice teachers.

[5] "Our Singapore Conversation" (OSC) is a national conversation initiative started by the current Singapore Prime Minister Lee Hsien Loong in 2012 as a way to engage Singaporeans from across the island in speaking to the government about their hopes and concerns for the future and new directions for the country. 46,000 Singaporeans participated in the most recent OSC (Ng, J. Y. (July, 15, 2013). "Our Singapore conversation, themes identified, dialogue to continue." *Today.* Retrieved from http://www.todayonline.com/singapore/themes-identified-spore-conversation-could-continue). OSC is the latest iteration of a practice of national dialogues going back to 1991 (Tan, K. P. (2014). Our Singapore conversation: Telling national stories. *Global is Asian, 19*, 1,3. Retrieved from http://lkyspp.nus.edu.sg/wp-content/uploads/2013/03/GIA-19-final.pdf).

programs at NIE. MOE policy entitled every teacher to 100 h of paid professional development – typically offered by NIE, often tailored to school needs. MOE also funded many scholarships for graduate study at NIE or overseas. In 2003, the Enhanced Performance Management System was rolled out, "a competency-based performance management system that spells out the knowledge and skills requirements as well as the professional characteristics" of strong teachers (Chong & Cheah, 2009, p. 2). This detailed assessment system became the basis for annual performance bonuses as well as a career ladder for teachers outlining three development options: teaching, administration, or content specialization (Goodwin, Low, & Ng, 2015).

Teacher Education Reform in the Recent Decade

In 2004, PM LEE Hsien Loong's inaugural national day speech called upon teachers "to teach less to our students, so they can learn more" (Lee, August 22, 2004) This signaled "another major policy initiative in the Singapore education system" (Ng, 2008, p. 5), that has had a profound impact on teacher education up to the present. Teaching as a learning profession was reaffirmed through systemic changes to further support teachers' professional growth and enhance the attractiveness of the profession. NIE initiated a review of their pre-service programmes "to re-focus teacher preparation as teacher 'education' rather than teacher 'training' [and] on building capacities necessary for effective participation in professional learning communities", resulting in the VSK framework "articulating the desired attributes of a beginning teacher" (Chong & Cheah, 2009, p. 2), with skills and knowledge anchored by values at the core. The Ministry of Education similarly focused on advanced preparation by creating numerous incentives designed to attract young people to teaching, and motivate in-service teachers to remain in teaching. First GROW was launched in 2006, "for the professional and personal **G**rowth of Education Officers, through better **R**ecognition, **O**pportunities, and seeing to their **W**ell-being … based on a comprehensive review and consultation with 2,300 teachers and stakeholders" (MOE, 2006, http://www.moe.gov.sg/media/press/2006/pr20060904.htm). This scheme included sabbatical opportunities, a wide variety of monetary incentives for service, materials, etc., and then a comma; support for further study, flexible work arrangements, additional career advancement opportunities, as well as a staff developer for every school and "a new centre for teacher development." This was followed in 2008 with a substantial enhancement called GROW 2.0 that further underscored the teaching profession as "a learning profession, where its members continue to learn and grow" by offering even more "financial support and leave schemes to enable more teachers to upgrade themselves" (MOE, 2007, http://www.moe.gov.sg/media/press/2007/pr20071228.htm). Career ladders were also revised such that "new apex position(s)" were added.

More recently, a review of future education goals, conducted by the Primary Education Review and Implementation Committee, resulted in recommendations in 2009 to "realise a more holistic primary education" that would "strike a better

balance between the teaching of knowledge and the development of skills and values." The new direction would require a "review [of] both pre-service and in-service teacher training to ensure that we continue to build the professional capacity of the Education Service to deliver a forward-looking and holistic education" (MOE, 2009, http://www.moe.gov.sg/media/press/2009/04/government-accepts-recommendat.php). This sparked a similar review of ITP, culminating in NIE's latest ITP framework – V^3SK – reaffirming the centrality of values (now three versus one) as foundational to quality teacher preparation (NIE, 2009).

In 2010, the Academy of Singapore Teachers was established as a "dedicated organization focusing on teacher professionalism and the professional development of teachers [and] building a teacher-led culture of professional excellence centred on the holistic development of the child." These latest actions, being implemented "progressively … as many of the recommendations require systematic implementation over the longer term" (MOE, 2009, http://www.moe.gov.sg/media/press/2009/04/government-accepts-recommendat.php). are another illustration of the productive collaboration that brings the Ministry, NIE, and schools/teachers together to support teacher education reform and innovation in Singapore.

Overview

Clearly, Singapore "has skillfully used education policy to both transform society and in that process to make education a valued social institution" (Gopinathan, 2007, p. 68). Her status as a highly performing education system has resulted in international peers clamouring to know the "Singapore secret," as if her strong showing on international assessments could be boiled down to a single policy or intervention. In reality, Singapore has only recently become synonymous with educational excellence – the result of a generation of concerted, nationwide efforts to improve education. Far from being a miracle tale, this is the story of how a tiny country has achieved enviable heights of both educational and economic success in the absence of natural resources of any kind. Rather than a narrative about reform in response to perceptions of dysfunction, Singapore's story is really about re-form in terms of re-newing and re-inventing through continuous, systemic, long-term, ongoing, consistent, and deliberative attention (and generous funding) to schools and schooling, in the midst of nation building and post-colonial independence, with a laser focus on quality teachers as *the key* to educational excellence.

Canada: Substantial Local Autonomy

Canada is a very diverse country with a population of approximately 35 million. Home to many immigrants, 20 % of Canada's population speak a language other than English or French at home (Statistics Canada, 2011). Although very diverse,

Canada has consistently done well on international tests (e.g., PISA, TIMMS) *and* has resisted many of the trends in English-speaking countries to "reform" teacher education (e.g., heavy-handed government control as seen in England). A number of factors have contributed to the strong educational system: teaching is still a respected profession; schools are well (and equally) funded; teacher salaries are fairly high; induction support is offered for new teachers; teacher unions are strong; and use of standardized tests is limited (Gambhir, Broad, Evans, & Gaskell, 2008, p. 13).

Organization of Education and Teacher Education

Responsibility for education rests with the 10 provinces and three territories, not at the federal level. Given that education is organized provincially it is difficult to provide a "picture" of Canadian teacher education reform efforts. More than 62 universities offer teacher education programmes (Van Nuland, 2011), graduating approximately 18,000 new teachers yearly. Teacher preparation moved gradually to the universities from teachers colleges and normal schools from the 1970s onwards (Sorensen, Young, & Mandzuk, 2005). Given the absence of national directives or centralized control, teacher education programmes evolved differently, resulting in a variety of structures and formats (e.g., concurrent undergraduate; post-baccalaureate consecutive). Crocker and Dibbon (2008) in their review of teacher education programmes noted: "[a] striking feature of the mission statements is that their greatest commonality is their diversity" (p. 27).

> Up until the 2000s, each province acted almost entirely independently of the others in terms of educational reform … [A] pan-Canadian initiative was developed in the form of the Deans' Accord on Initial Teacher Education and … help[ed] resolve labour mobility challenges … (Walker & von Bergmann, 2013, p. 77).

The Accord on Initial Teacher Education (2006) states: "There is both an intellectual and a practical component to teacher education. It must be situated within a university or university-college in order to allow the meaningful interaction of student-teachers with research-oriented faculty and to promote awareness of the interconnected nature of theory, research, and practice in the profession" (2006, p. 2). As a result of this unequivocal position that teacher education should be university-based, alternative certification providers (e.g., Teach for Canada) have had real difficulty gaining a foot-hold. Some of the principles of the Accord include:

> An effective initial teacher education program envisions the teacher as a professional who observes, discerns, critiques, assesses, and acts accordingly … encourages teachers to assume a social and political leadership role … cultivates a sense of the teacher as responsive and responsible to learners, schools, colleagues, and communities. (2006, p. 4)

These principles are very broad, are open to interpretation, and provide little concrete direction, yet the Accord is a first step to creating dialogue among the provinces and territories.

For the most part, provincial Ministries of Education have not dictated or interfered with the content or structure of teacher education programmes. Sorenson et al. (2005) described "teacher education [as] being something of a policy backwater" (p. 377). A recent exception was in Ontario, where the government decided to "modernize" teacher education programmes by "expanding the program to two years" and reducing admissions "by 50 per cent starting in 2015" (Ontario Ministry of Education, 2013). The rationale for this reform was not pedagogical; rather, the government bluntly stated, "This will help address an oversupply of graduates, enabling Ontario's qualified teachers to find jobs in their chosen field" (Ontario Ministry of Education, 2013). Unfortunately this reform was rushed into law and universities had to scramble to overhaul their programmes to change from 1 to 2 years.

Although provincial jurisdiction creates barriers to collaboration, there have been a number of notable initiatives among teacher educators to engage in dialogue and joint projects. The Canadian Association for Teacher Education (CATE) is becoming more active and visible. CATE aims to "[promote] dialogue on teacher education, research and collaboration in this field" (CATE). In addition, "CATE coordinates a working conference in teacher education every two years … [where] teacher education scholars from across Canada … gather together in order to develop a polygraph on a current issue in Canadian teacher education" (CATE Working Conference).

Particular Universities and Individuals Leading Reforms

Given Canada's decentralized education system and lack of government leadership in teacher education, reform efforts have tended to be locally-based, initiated by individual faculty or departments. There have clearly been pockets of research and innovation leading to some outstanding teacher education programmes. For example, Dr. Eric Jackman Institute of Child Study programme at the University of Toronto is an excellent teacher education programme with a well-articulated mission, a coherent set of courses, and a close interweaving of the academic courses and practice teaching (Dr. Eric Jackman Institute of Child Study. Simon Fraser University has pioneered a teacher education programme for returning paraprofessionals (e.g., special education assistants, child and youth care workers, settlement workers) that can be completed part-time (Simon Fraser University, 2014). They also skillfully involve classroom teachers in their Bachelor of Education which benefit the teachers and student teachers alike. A few other reform efforts are described in more detail below.

Aboriginal Teacher Education Programmes

Like other Western-colonized countries, Canada has an abysmal record in dealing with its Aboriginal people (Bartlette, 2015). In 2011 "Aboriginal peoples in Canada totaled … 4.3 % of the national population, spread over 600 recognized First Nations

governments or bands with distinctive cultures, languages, art, and music" (Wikipedia, 2015). Slowly, universities and governments are recognizing the unique needs of Aboriginal communities (Kitchen, Cherubini, Trudeau, & Hodson, 2010), leading to a number of universities spearheading programmes to prepare teachers (both Aboriginal and non-Aboriginal) to work in schools serving Aboriginal communities. For example:

- The Yukon College teacher education programme [helps] students gain the skills needed to teach with a Northern focus, with a curriculum built on a foundation of respect for the values and lessons of First Nations' historical and cultural experiences." (Yukon College, 2014)
- Brock University developed a specific Bachelor of Education programme where "students gain the skills needed to teach with a Northern focus, with a curriculum built on a foundation of respect for the values and lessons of First Nations' historical and cultural experiences … The programme "incorporate[s] Aboriginal learning preferences and [relies] on a wide reflection of Aboriginal cultures and traditions" (Brock University, 2014).

Studying Teacher Educators and Teachers

A number of Canadians have conducted research to deepen their understanding of the complexity of teacher education and this in turn has led to reforming their work. For example, Kosnik and Beck have been systematically studying teacher education for the past two decades. They used their research to reform programmes which they taught in and/or directed. For example, in *Innovations in Teacher Education* (Beck & Kosnik, 2006) they described how – based on their research – they restructured the Mid-Town Cohort programme following social constructivist principles. Their groundbreaking text *Priorities in Teacher Education* (Kosnik & Beck, 2009) proposed seven priorities for teacher education. These priorities were identified through their longitudinal research on new teachers and then used both in shaping their courses and creating a framework for a teacher education programme Kosnik was directing.

Kosnik and Beck believe that teacher educators are key to reforming teacher education. In their more recent international study of literacy teacher educators, they identified four spheres of knowledge required for effective literacy teacher education (Kosnik et al., 2015). They noted that Canadian teacher educators are far less influenced by government policies than their counterparts in the U.S. England, and Australia; they do not teach directly to the provincial curriculum or see their role as simply preparing teachers to implement the government curriculum (Kosnik et al., 2015).

Self-Study of Teacher Education

Many Canadian teacher educators engage in self-study research to improve their practice and contribute to scholarship on teacher education. The CATE polygraph, *Canadian Perspectives on the Self-Study of Teacher Education Practices* (Kitchen

& Russell, 2011), is a collection of articles by Canadian teacher educators who employed this approach. Examples of the self-studies include the following:

- A pivotal experience for Tom Russell was his returning to the classroom to teach grade 12 physics for two semesters during his sabbatical from 1991 to 1993. Russell's in-depth reflection on this experience resulted in him changing his pedagogy of teacher education (Russell, 1995).
- Shawn Bullock has used self-study to disrupt his assumptions about teaching and learning. He set himself the seemingly simple task of "developing principles of practice that [he] can enact as a new teacher educator" (Bullock, 2012, p. 77). Similarly, Tim Fletcher (2012) identified how he came to view his previous physical education teaching practices in secondary schools as an insufficient basis to design his teacher education courses for student teachers.
- In the work of Tim Hopper and Kathy Sanford (2004), a recurring theme has been the importance of situating teacher education programmes in elementary schools. They examined the impact of school-based programmes on both student teachers and teacher educators through a 3 year action research project.

Although useful for the individuals involved, the findings of such studies are being shared increasingly within a broader framework of research on teacher education. This may lead to a more formal network of teacher educators similar to that found in The Netherlands (Koster et al., 2008).

Overview

There are many examples of quality research and innovation in teacher education across Canada. The next step is to link these individual efforts so that findings and practices are disseminated and built upon. This will require a type of leadership that Canada has not had in the past. Organizations such as CATE and the Canadian Association of Deans of Education could play a key role in developing a pan-Canadian framework for teacher education based on the high quality of research and innovation outlined in this section.

As noted earlier, the Canadian education system has largely resisted many of the international trends (e.g., increased use of standardized tests). The Canadian example clearly illustrates that draconian "reforms" initiated by government are not necessary. Respect for teachers and teacher educators, a level of autonomy, and tailoring programmes to specific communities can be the basis for quality teaching and teacher education. England, Australia, and the U.S. can learn from Canada, with its decentralized approach. Although decentralization has limitations, it has allowed a very diverse population to build and benefit from a strong public education system.

Part 3: Where Should We be Going in Teacher Education Reform?

As discussed in the Introduction and elaborated further in Part 2, while we see value in many of the so-called "reforms" in teacher education, we also have serious concerns about many of them. In this final part, we revisit the earlier themes, giving our overall assessment of recent reform initiatives and offering suggestions for the future. In doing so, we not only express our own views but continue to draw on the literature from around the world.

Before embarking on a discussion of future directions, we wish to note that teacher education reform faces many challenges, notably those of status and funding. This is perhaps especially so in less wealthy countries. In the Latin American context, for example, Torres (2000) reported: "Teachers at this turn of the millennium are impoverished and have lower prestige, respect and status than they did fifty years ago" (p. 256). In China, it has proven difficult to find teachers willing to teach in poor rural areas, even when offered free teacher education at prestigious universities (Wang & Gao, 2013). And in India there has been a "dilution of emphasis on public investment in initial teacher education since the 1990s" (NCTE, 2009, p. 5). However, even in wealthy countries there are similar difficulties. Education in general is challenged by lack of funding as it competes with health, welfare, infrastructure, and other burgeoning public cost areas.

Teacher education in particular fares badly in a university culture where it has low status and is often viewed as a "cash cow" rather than an important area for support. In the Australian context, Louden (2008) talked of the irony of the enormous amount of criticism of teacher education in 101 government reports over the past three decades – what he called "The 101 Damnations" – when juxtaposed with continued decline in funding for the field.

Given the challenges – especially the lack of funding – it might be thought that the situation is largely hopeless and hence discussion of future directions is pointless. However, that is definitely not our position. We believe that: (a) substantial improvement in teacher education could be achieved with present resources; and, (b) well-argued and documented improvements in teacher education could eventually lead to increased funding. The lack of provision for teacher education at government and university levels is due partly – though by no means entirely – to the fact that the value of teacher education has not been adequately theorized and researched.

As we will elaborate later, the main basis for our assessments and proposals in this chapter is a vision of teaching and teacher education as a constructivist enterprise, dialogical in nature, concerned ultimately with promoting human well-being. In our view, movement in this direction is what counts as genuine reform, and so-called reforms that stifle dialogue and impose a crassly political or narrowly economic agenda are to be rejected. However, we recognize that such a vision is far from what most politicians or the majority of the public presently hold, which is the source of some of our other challenges. Accordingly, we are faced with the complex

and formidable task of: (a) figuring out what this vision means in practice; (b) actually implementing it in our teaching and teacher education; and, (c) gradually helping the public, policymakers, and administrators see why this is the way to go. This is daunting indeed, but we believe many teachers and teacher educators have already made progress in this direction, and over time we can progress further. We now look at specific areas of reform through this lens.

Standards, Minimum Requirements, and Accountability

There is value in standards statements and minimum programme requirements in teacher education, and reforms of this kind should continue to be pursued. For one thing, they can help increase the status of teaching and teacher education. According to the 2009 NCTE report, the decline in standards and programme structures in Indian teacher education "has led to further degradation of the status of school teachers and diluted the identity of teacher as a professional" (p. 5). In the French context, in the view of Lapostolle and Chevaillier (2011), "[s]etting a Master's degree as a requirement for the teaching profession appears beneficial in terms of social recognition" (p. 458). However, the so-called "raising of standards" can also have very unfortunate results: much depends on the context in which it occurs and how the changes are implemented.

In South Africa, according to Samuel (2012), moving teacher education to the university has led to: low status in the university and hence inadequate financial support; admission criteria that exclude many aspiring teachers; fees that are too high for young rural women; instruction that is too abstract and not carried out by experienced professionals; training locations that are inaccessible for many; and a reduced social class range among faculty. In China, as reported by Zhou (2014), despite a substantial increase in minimum requirements in recent decades, "the teacher education process did not change significantly" (p. 521). Indeed, in some ways the quality deteriorated, with students enrolling in programmes mainly to get a degree from a prestigious university. Some universities have even reduced the professional content in teacher education programmes to attract more students, who will use their arts and science learning for other purposes (Zhou, 2014).

For the future, it is essential that standards and requirements be set largely by teacher educators and other professionals in the field, rather than by politicians, civil servants, and university administrators with other agendas. The 2013 European Commission report stated that the development of quality frameworks in teacher education should be a collaborative process, with the teacher educator "a cooperating member in a team" (p. 16). Top-down, external control and "accountability" in teaching and teacher education stifles initiative and professionalism, and creates a false sense that reform has taken place. Torres (2000) maintains that school reform efforts in Latin America have been largely unsuccessful because they have not involved teachers. Based on a study of teacher educators in 8 diverse countries, Aubusson and Schuck (2013) concluded that "imposition of regulations and control

by the state is generally considered less productive than highly collaborative engagement among governments, teacher education providers and schools" (p. 332).

Of particular concern is the use of school pupil test scores to assess and guide teacher education. According to Sahlberg (2011), evaluating teachers on the basis of the test scores of their students does more harm than good: "teaching, caring, and educating children is too complex a process to be measured by quantitative metrics alone" (p. 92); and, obviously the same criticism applies to assessing teacher educators based on the test scores of their graduates' pupils. Kumashiro (2015) in the U.S. speaks of the dangers of a current proposal for "test-based accountability" in teacher education. He maintains that "the proposed regulations are rooted in 'an unwarranted, narrow, and harmful view of the very purposes of education'" (p. 2).

A Solid Theory Base

In order to develop sound reforms in teacher education we need an adequate theory base. At present reforms are often politically driven, inconsistent, and constantly changing. We need a better sense of what we are trying to achieve. In South Africa, according to Samuel (2012), despite upgrading teacher education and bringing in new curriculum expectations, the recent reforms "failed to engender adequate conceptions of appropriate alternative pedagogy, learning and assessment strategies" (p. 26). Moreover, the theory base should be much the same for both teaching and teacher education. According to Sykes et al., (2010), "[t]he principal problems of teacher education reside at the level of the field [of teaching] as a whole, and so must be addressed at that level of analysis" (p. 465–6). Alok (2012), talking primarily about teacher education, observes: "Longer-term education reforms demand a national discourse on the nature and purpose of education" (p. 290).

As noted earlier, the theory base we propose for reform in teaching and teacher education is constructivism, a position going back to Dewey, Piaget, and Vygotsky and widely advocated by educational theorists and practitioners today. Simply put, constructivism envisages students building their own beliefs and practices in a context of teacher-student dialogue. The 2012 OECD report stated that "teachers' beliefs about teaching practice are remarkably consistent across countries. TALIS 2008 revealed that, on average, teachers in all but one of the 23 participating countries endorsed a constructivist view of teaching, which focuses on students as active participants in the process of acquiring knowledge" (p. 39). As an example, the report notes that Singapore introduced in 2004 the idea of "Teach Less, Learn More" as the next step in trying to combat the problem that students are still "too passive, overloaded with content, driven to perform, but not necessarily inspired" (p. 40). In India, the new National Curriculum Framework requires a teacher to be "a facilitator of children's learning in a manner that helps children to construct knowledge and meaning" (NCTE, 2009, p. 3).

In order for constructivism to be implemented (rather than just talked about, as is too often the case), it must pervade the whole education system – teacher education,

school teaching, and policy development and administration. According to Aubusson and Schuck (2013), in the eight counties they studied there is often "a gap between the rhetoric and reality" (p. 325); teacher educators advocate development of "personal, social and learning skills" but in fact focus mainly on transmission of academic content (p. 324). Sykes et al. (2010) in the U.S. observed that: "Teacher education … fits into cultural scripts, with much of it occurring in classrooms where instructors dominate discussion, use PowerPoint, assign readings in texts, and give tests" (p. 467). If teacher educators expect teachers to implement constructivist pedagogy – and government and university officials to adopt a collaborative approach to policy development – we must set an example of constructivism in our own practice.

Alternative Routes Into Teaching

Allowing many paths to teaching has some plausibility, since trial and error may help identify better approaches. However, what has unfolded in many cases is not free experimentation by professionals but outside interference by politicians and administrators with other agendas. One agenda is privatization; another is de-professionalization of teachers; a third is a return to transmission schooling of the nineteenth and earlier centuries (and millennia); and a fourth is simply being re-elected or re-appointed because transmission education is popular with a majority of the public.

It is important to remember that Finnish education's modern success story began with discontinuing private schooling and proceeded with setting up a national teacher education system: "There are no alternative ways to earn a teacher's diploma in Finland" (Sahlberg, 2011, p. 79). This does not mean that having a national system is fool-proof (see the case of England), or that autonomy and experimentation should be disallowed: Finnish guidelines for teaching and teacher education are very general, with many of the details developed locally (Sahlberg, 2011). However, approaches that are clearly self-serving or otherwise inappropriate should be excluded. In particular, we should not allow extensive, top-down interference in teaching and teacher education on the ground that teaching and learning are so simple that professionalism is not needed.

A Subject Emphasis

A subject emphasis in teaching and teacher education is of course important, but it should not involve a return to the pedagogy of eras when subject teaching was largely devoid of understanding, relevance, and student engagement. As Popkewitz (2010) observe, while there are many calls today for teachers to have greater subject knowledge, we never just teach subjects – translation is involved, and we must

explore how this is done and what is implied about "who the child is and should be" (p. 413). With respect to teacher education, Sahlberg (2011) advocates "balanced development of a prospective teacher's personal and professional competences" (p. 79). And Munthe et al. (2011) state: "Teachers need to be able to *do*, [but there should also be] an emphasis on teachers needing to *be* and programmes that enable *becoming"* (p. 449).

It is true that we can become too process oriented, with insufficient attention to subject learning. Moreover, pedagogy must largely be learned in the context of subject teaching, since teachers spend almost the whole day teaching subjects. If we just teach "general methods" and broad educational ideologies, teacher candidates will neither understand what it means nor be able to apply it in practice. But we must do *both*: teach subject content and big ideas at the same time. And according to many researchers this is entirely possible, and indeed a more effective way to teach subject content (e.g., Grant & Gradwell, 2010; Van Sledright, 2011).

A Technology Emphasis

Aubusson and Schuck (2013) report: "There was universal agreement [across the 8 countries studied] that teacher education … would have to … at least match, if not lead, technological innovation in school settings" (p. 330). The 2012 OECD report states: "Digital media have the potential to transform learning environments and empower learners to become active in shaping their own education" (p. 43). The report goes on to give powerful examples from the Netherlands, New Zealand, Australia, the U.S., and Canada of programmes that help teachers learn to use ICT in teaching and their own lives. However, much depends on how the use of technology is approached in teacher education (Selwyn, 2013).

The Indian NCTE (2009) report observes that, "in spite of [ICT's] potential to make learning liberating, its implementation is often no more than cosmetic … Teacher education needs to orient and sensitize the teacher to distinguish between critically useful, developmentally appropriate and the detrimental use of ICT" (p. 14). While the use of distance learning in teacher education (pre-service and in-service) "has indeed a potential to make education reach the unreached … the primacy of direct human engagement and actual social interaction among student teachers as the core process of initial teacher preparation needs to be emphasized" (p. 17).

Research-Based Teacher Education

As noted earlier, teacher education needs a more adequate research base to defend it against its critics and attract resources to the field. As Wiseman (2012) notes, teacher educators cannot avoid the public debates, and scholarship in this area "must

be encouraged if we are to continue to be viable in today's policy environment" (p. 88). And even more importantly, research is needed to provide direction for teaching and teacher education. However, the research must not be of a narrow, purely quantitative kind focused on standardized test scores; nor should it just be conducted by academics who provide "expert" direction to the field.

What is needed is a comprehensive system of research and knowledge building to which both academics and practitioners contribute. As Feiman-Nemser (2012) says, "[l]earning to teach is a bigger job than universities, schools, experience, or personal disposition alone can accomplish" (p. 50). We support Bryk's (2008) call for a "new vision of research … organized around core problems of practice" and involving both teachers and university researchers who together develop "something that has the potential of working on a broad scale across large numbers of different contexts and in the hands of different sorts of people" (p. 3). Bryk states a need for an open, knowledge-sharing "system," somewhat akin to Wikipedia. Similarly, Cochran-Smith and Lytle (2009) advocated "[p]utting practice at the center and drawing on the collective intellectual capacity of practitioners collaborating with others, such as university-based researchers," resulting in a "grounded theory of educational transformation" (p. 161). Along the same lines, Lowrie (2014) proposes an "educational practices framework" (EPF) that allows traditional experts and emerging experts to engage in "sharing ideas, presenting options and stimulating rich practices and [that] may contain resources, learning tools and curricula" (p. 43).

Theory-Practice Connection

As discussed in Part 1, closer links between theory and practice are needed in teacher education, both within campus courses and between the campus and the practicum. To make campus courses more practical, we must apply some of the measures discussed earlier: strengthening our theory base; ensuring that teacher educators model in their own teaching the approach to practice they advocate; and creating a system for connecting theory, research, and practice. However, there are dangers in some of the ways the theory-practice connection is being pursued in the so-called "reforms." For example, reducing university involvement in teacher education can lead to loss of status for teaching and reduction in the important research component. Also, increasing the amount of time teacher candidates are in practice teaching is not a solution in itself; it can result simply in reinforcing traditional pedagogy.

Again, increasing the presence of university faculty in the practicum may not be feasible, given their extensive university obligations. Conroy, Hulme, and Menter (2013) have shown how demanding such involvement can be; and Goodlad (1994) has argued that a full professional development school (PDS) model is often not possible. Additional ways must be found to strengthen the university-school relationship. Experiments at Stanford and Teachers College Columbia have shown how

it is possible to combine a division of labor between university faculty and school-based mentors with close school-university links (Beck & Kosnik, 2006).

Recruitment and Admissions

Much more attention needs to be given to attracting and selecting good teacher candidates. Since candidates rarely fail and teachers are rarely fired, the recruitment and admissions process is crucial. Success in recruitment depends partly on teacher salaries, over which we have little control. However, the measures described earlier for improving the quality and reputation of teaching and teacher education could help with recruitment. Sahlberg (2011) emphasizes that factors such as these have a key role in making teaching such a desirable profession in Finland (where only 1 in 10 elementary applicants are admitted); he notes that salary is *not* the main motive.

After the recruitment phase, selection from among applicants needs to be conducted very carefully, with an eye to the type of enterprise we are selecting them for. Many factors need to be weighed. Prior successful experience in teaching-like activities should be considered, along with personal qualities appropriate for teaching (Beck & Kosnik, 2006). According to Sahlberg (2011), candidates in Finland must "possess high scores, positive personalities, excellent interpersonal skills, and commitment to work as a teacher in a school" (p. 73). Hammerness (2014) reported that in Chile, the new "Plan Maestro" calls for "[s]tronger criteria to determine the selection of candidates" (p. 1). In Scotland, the 2011 Donaldson report emphasized that pre-entry tests "should be diagnostic and not be used to exclude people from entry if there is evidence that they can become effective teachers" (Menter & Hulme, 2011, p. 392).

Teacher Educators: Selection, Training, and Support

As with teaching, so with teacher education, the qualities and abilities of the people who do it are crucial. Yet little attention has been given to the selection and training of teacher educators (Goodwin et al., 2014). It is often assumed that good school teachers will be good teacher educators; but the pedagogy of teacher education has some distinctive features (Loughran, 2006). And besides, the concept of a "good teacher" is still not very clear – as we have discussed. Often people judged "successful" as school teachers are not very constructivist in their approach; or are unable to explain the theory of their teaching as needed in pre-service. The 2013 European Commission report argues that "the coherent definition of the roles of teacher educators and the competences they require can support a more coherent approach to selecting and educating them" (p. 10).

Another difficulty is that, because the appointment is to a university, more emphasis is often placed on academic background, research skills, and publication record than on pedagogical knowledge and skill; and sometimes the areas of academic accomplishment of those appointed are very specialized. Moreover, given the common prejudice in universities against teacher education and pedagogical studies generally, these more applied areas of research tend to be neglected in hiring. Unfortunately, the university culture is not likely to change very much in the near future. However, in departments and schools of education, much more effort could be put into finding faculty who are competent in both research and practice and whose area of research is better matched to the applied nature of the field.

A further problem is the lack of induction, mentoring, and ongoing professional development of teacher educators. The 2013 European Commission report baldly states that: "Initial courses of preparation to be become a teacher educator are not available in any EU country" (p. 22). Once again, there is little support or provision for professional development in universities. But even with the resources available much more could be done. A small but powerful change would be to have teacher educators meet regularly to discuss their respective courses, so they can support and learn from each other (Beck & Kosnik, 2006). Again, the 2013 European Commission report addresses ways to enhance teacher educator professional learning, providing examples from many countries.

Incremental Reform in a Consistent Direction

As discussed earlier, many of the reform efforts in teacher education have been inconsistent, pushing in different directions. Tessema (2007) observes that in Ethiopia "the current teacher education terrain is … characterized by contradictory activities and effects" (pp. 44–45). Similarly, Darling-Hammond and Lieberman (2012) report that in Australia there is "a confusing blend of professionalizing and de-professionalizing initiatives"; and in the Netherlands, "calls for higher standards have been accompanied by a call for the establishment of alternative routes" (p. 154). Apart from incoherence there are constant shifts of direction, with new reform emphases every couple of years.

To move beyond this situation, we propose establishing a coherent, incremental approach as advocated by Sykes et al. (2010). They maintain the need for a combination of: "(a) more realistic aspirations, (b) a process of continuous improvement, and (c) a generous regard for the field of practice" (473). Elsewhere, Kennedy (2010) argues against "bold" approaches to reform, that are by definition "unrealistic, out of range, over the top [and] fail because they don't take real circumstances into account" (p. 17). These authors are not pessimistic or anti-idealist – Kennedy states, "we need to find ways to improve teaching and teacher education" (p. 19). But in her view, that involves "studying our practices closely and deliberately, deepening our understanding of the circumstances in which we work, and finding small and sustainable ways to improve" (p. 19).

Of course, reform of this kind requires an emerging vision of where we should be going (Darling-Hammond & Bransford, 2005; Kennedy, 2006). But we believe key elements of such a vision have already been glimpsed in the form of constructivist teaching and teacher education, in the tradition of Dewey, Piaget, Vygotsky, Freire, Schon, Richardson, and others. We need to develop it more fully within a knowledge-sharing framework (Bryk, 2008; Cochran-Smith & Lytle, 2009; Lowrie, 2014), rendering it more plausible through academic and practitioner research and examples of successful practice. This will place us in a stronger position to have an impact on teacher education in the future and gain support for it at policy, administrative, and public levels.

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Part II
Knowledge and Practice of Teacher Education

This second Part of the International Handbook of Teacher Education examines major aspects of that which is the knowledge and practice of teacher education. This section lays out a number of arguments related to the complex nature of teaching about teaching and the learning about teaching. It does so by considering the place of subject matter knowledge, policy, theory and practice, pedagogical reasoning and beginning teaching within the context of such things as a pedagogy of teacher education, professionalization and, importantly, the moral dimension of teacher education. This section illustrates understandings at the global level that are strong and clear in the literature about the knowledge and practice essential to the development of coherent, holistic and meaningful teacher education programmes.

Chapter 8
Pedagogy of Teacher Education

Fred A.J. Korthagen

Introduction

For a long time educational researchers have been searching for the Holy Grail: an effective method of educating teachers which positively influences daily teaching practices in schools (Loughran, 2006). A lot of knowledge is available about how teaching could become more effective at influencing student learning, and it would be ideal if this knowledge would be applied by teachers. However, an overwhelming number of studies have shown that the impact of teacher education on the actual teaching in schools has often been limited (e.g. Robinson, 1998; Wideen, Mayer-Smith, & Moon, 1998). This has elicited the question of how to find an effective pedagogy of teacher education, i.e. the pedagogy used in the teaching of teachers.

This chapter focuses on this topic, and describes a review of a large number of studies on the pedagogy of teacher education. This term did not surface in the literature until the turn of the century, when it was suddenly used in various book titles (Korthagen, Kessels, Koster, Lagerwerf, & Wubbels, 2001; Loughran, 2006; Russell & Loughran, 2007). Many researchers started to emphasize that teaching about teaching requires specific pedagogical approaches that are fundamentally different from those guiding teaching in schools.

Murray and Male (2005) refer to this difference with the terms *first and second order teaching*. First order teaching refers to the teacher who teaches students in schools, and second order teaching to the teacher educator who teaches (prospective) teachers. Other researchers agree that these two levels are fundamentally different in nature, for example Berry (2007, 2009), Harrison and McKeon (2008), and Swennen, Jones, and Volman (2010). This chapter will focus on the second level, i.e. second order teaching.

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Loughran (2006) describes this second level as *teaching about teaching*, and states that this should promote *learning about teaching*. This redirects our attention towards the topic of teacher learning. Ideally, any pedagogy of teacher education should build on a view of teacher learning, preferably a view grounded in research. It is interesting that in the literature on approaches and strategies in teacher education, this underlying view is seldom made explicit, let alone the underlying view of the learning of the *teacher educators* needed to enact a certain pedagogy in their teacher education practices. Actually, the whole topic of teacher learning has for a long time been almost discarded in educational research (Clarke & Hollingsworth, 2002). Without awareness of the difference between the learning of teachers and student learning in school, teaching teachers can become problematic. For example, an important aspect of the learning of adults is their need to see the practical utility of what they have to learn. This chapter briefly refers to aspects of teacher learning, but it is important to be aware that strong frameworks connecting a theory on teacher learning with pedagogies of teacher education are generally missing in the literature.

In trying to develop a picture of pedagogical approaches used in teacher education, two main problems are typically encountered. First, the research on teacher education is quite fragmented (Murray, Mitchell, & Nuttall, 2008), and the epistemological basis for teacher education research is weak (Özçinar, 2015). Second, the research literature is often quite vague about the specifics of strategies and techniques used by teacher educators. By the end of the previous century, Zeichner (1999) noted that until then little knowledge existed of what actually happened inside teacher education programmes. The reason apparently being that for a long time the work of teacher educators was considered to be simply 'teaching', which was often synonymous to lecturing. Hence, only relatively recently has the insight emerged that a pedagogy of teacher education should be different from the traditional mainstream lecturing approach in academia, and that teacher educators should show exemplary pedagogical behavior. Hence, most beginning teacher educators struggle with finding adequate pedagogical strategies, while being confronted with the need for an identity change from teacher to teacher educator (Boyd & Harris, 2010; Murray & Male, 2005; Swennen et al., 2010), as, for example, was demonstrated in Russell and Korthagen's (1995) collection of chapters by teacher educators who reflected on their own development.

It is thus an important step forward for education in general that the pedagogy of teacher education has begun to attract much more attention. An important factor in this development has been the *self-study movement*, i.e. the enormous growth of studies in which teacher educators research their own practices. The publication of the *International Handbook on Self-Study of Teaching and Teacher Education Practices* (Loughran, Hamilton, LaBoskey, & Russell, 2004) was a landmark in this development.

Taken together, the pedagogy of teacher education has generally become a field of its own. In fact, until now so many publications have been published in this area that it is impossible to cover every topic that has surfaced. When composing this chapter, choices had to be made, and so only general trends and overall lines of

research are able to be summarized and then illustrated by specific examples from the literature. The chapter therefore focuses on principles of practice that exceed subject specific pedagogies, i.e. going beyond the details of mathematics teacher education, language teacher education and so forth, or the development of pedagogical content knowledge. Essentially then, the chapter will focus on generic principles of teaching teachers that can be applied in a variety of international contexts, and across the education of both primary and secondary education teachers.

The topic of the pedagogy of teacher education will be elaborated in three main parts: research on *general views/models of teacher education*; research on *concrete strategies/techniques* that can guide teacher educator behavior; and, a section on *conclusions and discussion*.

The criterion for including a view or model of teacher education in the second section and not in the third section, was that is encompasses more than just one specific strategy or technique, but consists of a set of strategies and pedagogical methods, based on an explicit set of coupled "principles of practice" (Loughran, 2006). In section "Specific pedagogical strategies and techniques", more specific strategies and techniques will be discussed. They are categorized into a limited number of characteristic topics.

General Views/Models of Teacher Education

Early Approaches to the Pedagogy of Teacher Education

As Labaree (2008) pointed out, teacher education has a long tradition. Before the nineteenth century, the idea of educating teachers was unknown. Lucas (1999) noted that in those days "the thought or expectation that a classroom pedagogue might require formal preparation for the lowly task of instructing schoolchildren would have been quite unthinkable" (p. 3). During the nineteenth century in many countries the first formal teacher preparation programmes surfaced in the form of *normal schools*, first in France, and later in other countries. Some normal schools prepared for teaching in primary schools, while others, especially in Europe, focused on secondary education or on both.

Practice-based supervision on the basis of an *apprenticeship model* (Dennen, 2004) was a major ingredient of the normal schools programmes. Already in early debates about the programme content of these normal schools, a tension was visible between a focus on academic knowledge and practical utility (Labaree, 2008). Ever since, this tension between theory and practice has remained a central feature of both pre-service and in-service teacher education world-wide (Lanier & Little, 1986), both in university-based schools of education that evolved later, and in colleges of education that were founded in many places outside universities.

The tension between theory and practice became even more tangible when the knowledge on teaching increased through academic research. Davey (2013) describes how this led to the 'academization' of teacher education. It also elicited

the question of how to help teachers translate academic knowledge on teaching to their own practices. According to Grossman (2005), one of the earliest lines of research focusing on a specific strategy in teacher education to help teachers make this translation, was aimed at the development of the *microteaching* approach. Microteaching was grounded in so-called process-product studies and focused on the identification of teaching behaviors that showed high correlations with learning outcomes. This led to the formulation of concrete skills that should be acquired by teachers and to the training of these skills through simplifying the complexities of regular teaching-learning processes (Perlberg, 1987). Teachers practised specific skills in simplified situations especially created for this purpose and received feedback on their use of the skills. This is how the preparation of teachers for their profession became known as *teacher training*.

As Grossman (2005) explains, many studies on microteaching showed that generally this training approach failed in reaching its goals. In a review study, Copeland (1982) concluded that teachers did not always use the skills learned during microteaching, although the approach might help them feel more self-confident. Winitzky and Arends (1991) found no significant differences in outcomes when comparing microteaching and clinical discussion.

Grossman states that there were also major problems with the research on microteaching. This line of research was rather atheoretical, and many studies showed a lack of methodological rigor. Another problem was that often no data were collected on the actual use of skills in classroom teaching, whereas the transfer to practice was the most important aim of the microteaching approach. MacLeod (1987) concluded that for this reason, no final conclusions can be drawn about the effectiveness of microteaching.

Later the research focus in this area shifted towards *computer-based simulations* of classroom situations. The idea was "that computer simulations can simplify the unpredictability of actual classrooms … and can focus students' attention on discrete, specified skills" (Grossman, 2005, p. 433). Studies suggest that this is an effective approach, although, again, the actual use of skills in classroom settings is seldom studied (Grossman, 2005). More recently, video technology is evolving into a powerful means of promoting student teacher learning (an issue that will be revisited later in this chapter).

Competency-Based Teacher Education

Microteaching and computer simulations are examples of strategies that fall into the 'competency-based' model in teacher education (CBTE) which had as its basic rationale that concrete, observable behavioral criteria is fundamental for the training of novices. This model became popular in the 1960s and 1970s (Forzani, 2014). Although positive results were reported in laboratory settings, CBTE appeared to create serious problems. In order to be able to evaluate teachers on their behavior, long detailed lists of skills were formulated, which in practice proved highly unwieldy. Moreover, this approach took insufficient account of the fact that good

teaching cannot simply be described in terms of isolated competencies to be learned in training sessions. As Combs, Blume, Newman, and Wass (1974, p. 4) stated: "In the first place, it is a fallacy to assume that the methods of the experts either can or should be taught directly to beginners."

Others critized the competency-based model because they considered it rigid and pedagogically wrong (e.g. Hyland, 1994). Lucas (1999) added that competency testing had little predictive validity, and mainly served the goal of "providing public appearance of quality assurance" (p. 193). In that light, it is remarkable that to date, in many places in the world a revival of a competency-based model is apparent. This is often the result of political pressure and an emphasis on accountability (Hunt, Carper, Lasley, & Rasch, 2010).

Humanistic Based Teacher Education

Around 1970, a contrasting view of teacher education emerged under the umbrella term *humanistic based teacher education* (HBTE). This model focused more on *the teacher as a person*. HBTE originated in humanistic psychology, a movement whose well-known founders were Rogers and Maslow. The approach was promoted, amongst others, by Combs et al. (1974) at the University of Florida in Gainesville, where a programme existed that became well-known internationally.

Rodgers and Scott (2008) mention as the first tenet of HBTE: "teachers must know themselves and their own frames of reference, values and biases" (p. 749). In this view, a central role is reserved for personal growth. The approach stressed "the unicity and dignity of the individual" (Joyce, 1975, p. 130). As Joyce (1975, p. 132) maintained, the viewpoint of HBTE "cannot be reconciled with the laying down of standardized teaching competencies".

The HBTE view failed to obtain broad support. However, the fact that the HBTE approach focused the attention on the *person of the teacher* was important for the further development of teacher education and is still influential. The classical controversy between a competency-based view of teachers and an emphasis on a teacher's self can be found in present discussions on teacher education. Where policy-makers generally emphasize the importance of outcomes of teacher education in terms of competencies, many teacher educators and researchers emphasize the more personal characteristics of teachers (e.g. Tickle, 1999), such as enthusiasm, flexibility, or love of children.

Towards an Integration of a Focus on Competencies and the Person of the Teacher

The distinction between competency-based approaches and approaches emphasizing the person of the teacher has evolved into a variety of traditions, each emphasizing specific aspects, and gradually also including attempts to integrate both

perspectives. Struyven and De Meyst (2010), for example, explain that the revival of competency-based curricula in Belgium goes hand in hand with a more holistic approach and that the current competency-based approach shows an integral focus on skills, knowledge, attitudes, and experience. However, this creates another problem, namely how to develop reliable assessment procedures:

> In fact, the – reliable – measurement of competencies is an important problem due to its holistic approach, job-related nature and the integration of knowledge, skills and attitudes. (Struyven & De Meyst, 2010, p. 1507)

The Tension Between Theory and Practice

The tension between a competency-based and a holistic approach is just one central problem in the pedagogy of teacher education. As noted above, the tension between theory and practice has long been another fundamental feature. When we look at the history of teacher education, it is striking that, for decades, a traditional didactic model has been dominant (Sprinthall et al. 1996). In the second part of the previous century, teacher education curricula generally followed a so-called "theory-to-practice" approach (Carlson, 1999). Wideen et al. (1998) characterized this traditional model as follows:

> … the implicit theory underlying traditional teacher education was based on a training model in which the university provides the theory, methods and skills; the schools provide the setting in which that knowledge is practiced; and the beginning teacher provides the individual effort to apply such knowledge. In this model, propositional knowledge has formed the basis of university input. (p. 167)

A study by Goubeaud and Yan (2004) showed that out of 524 teacher educators in the US, more than half of them used lectures as their main instructional method. In line with this observation, Barone, Berliner, Blanchard, Casanova, and McGowan (1996) noted that traditional programme structures generally showed a collection of isolated courses, in which theory was presented without much connection to practice. This led to what Ben-Peretz (1995) called "a fragmented view of knowledge, both in coursework and in field experiences" (p. 546). She noted that in such teacher education programmes, knowledge was generally presented as 'given' and unproblematic. Schön (1983, p. 21) named this approach *the technical-rationality model*.

Starting around 1975, research on beginning teachers started to show the lack of impact of traditional teacher education. Lortie (1975) woke up the community of teacher educators by showing the dominant role of practice in shaping teacher development. An important study was carried out in Germany by Müller-Fohrbrodt, Cloetta, and Dann (1978). It showed that teachers pass through a distinct attitude shift during their first year of teaching, and that as soon as they enter the schools, they quickly abandon theories learned during their preparation.

Many later studies confirmed these observations, for example Cole and Knowles (1993), National Center for Research on Teacher Education (1991), Ruys, van Keer, and Aelterman (2014), Veenman (1984), and Zeichner and Tabachnick (1981). In a

review of the international research on the impact of teacher education on teachers, Wideen et al. (1998) concluded that this impact generally seemed meager. This conclusion concurs with a meta-study of North-American research on teacher education by the AERA Research Panel on Teacher Education (Cochran-Smith & Zeichner, 2005). The general trend surfacing from such meta-studies is that beginning teachers struggle for control, and experience feelings of frustration, anger, and bewilderment. They often feel insufficiently prepared and start to view their experienced colleagues in the schools as more realistic sources of information on how to teach than their teacher educators.

In sum, a major problem of teaching and teacher education is the problem of moving from intellectual understanding of the theory to enactment in practice (Darling-Hammond & Snyder, 2000).

Linking Practice and Theory

One consequence of the issues raised above was that teacher educators could no longer take their traditional approaches for granted and the existing culture in institutions for teacher education came under discussion. As Goodlad (1994) stated, a "*simultaneous* renewal" of both schools and practices in teacher education was needed (p. 123). This renewal was also promoted by the fact that in many countries teacher shortages were a serious problem (Buchberger, Campos, Kallos, & Stephenson, 2000), which created political pressure to develop alternative certification programmes offering quick routes into the profession. In many of these programmes, the students started to work as a teacher immediately or after only a few weeks of preparation. In order to help these teachers survive in the classroom, a strong emphasis on practical help emerged, pushing theory to the background.

Now another problem surfaced: the lack of sufficient background of the graduates of these alternative certification programmes. According to J. Furlong (2013) the trend towards alternative certification programmes undermined the important function of universities in providing evidence-based knowledge about education. In a study on 1690 first year teachers, of whom 1220 followed a traditional teacher education programme and 470 an alternative route, Kee (2012) found that teachers whose programmes allowed them to begin full-time teaching without having had previous coursework or field experiences felt least well prepared. Teachers who had had a preparation which included at least some summer training and coursework before entering the profession, felt somewhat better prepared. These findings concur with the worries of many teacher educators about the lack of solid preparation that novice teachers receive in alternative certification programmes, which caused many teacher educators to resist the need for a stronger role of schools and experienced teachers (Hagger & McIntyre, 2000).

On the other hand, Tom (1997) wrote that alternative certification programmes were "not so much a threat to the existence of university-based teacher education as a source of ideas for regenerating teacher education" (p. 172). In retrospect, this

statement may have been too optimistic, but it is true that gradually a paradigmatic change in perspective emerged in which the role of the schools became more important (Munby, Russell, & Martin, 2001). It went hand in hand with a process of reshaping the pedagogy used in teacher education, as teacher educators were forced to find ways to more intensively connect practice and theory. Gradually several models of teacher education were created, based on close collaboration between institutions for teacher education and schools.

Links Between Institutions for Teacher Education and Schools

At many places so-called *Professional Development Schools* (PDSs) became the linking pin in bridging practice and theory (Bullough & Kouchak, 1997; Darling-Hammond, 1994; Levine & Trachtman, 1997). The idea of a PDS is often compared to teaching hospitals, where medical students are prepared for their professions in a practical setting, but also follow an academic programme. In the context of PDSs, there is also much attention on the role of the school in the local community, as well as a focus on developing new teaching methods and on ongoing professional development for all involved in such projects (Abdal-Haqq, 1997). There is generally also an emphasis on inquiry-oriented and reflective ways of learning.

At other places, institutions for teacher education tried to establish fruitful connections between school-based mentor teachers who coach student teachers in the practical aspects of the profession, and university-based teacher educators who focus more on theoretical aspects. This led to so-called *school-university partnerships* (Martin, Snow, & Franklin Torrez, 2011).

Although these developments helped in making teacher education more practice-based, there were serious problems. For example, although PDS projects seemed a promising way to integrate theory and practice, case studies described by Darling-Hammond (1994) illustrated many problems associated with this development. The people in the schools often remained peripheral to the contexts of university teacher education; Zeichner (2010) noted that many were not knowledgeable about or interested in teacher education. Castle (1997, p. 221) concluded that "many of the problems stem from the reality that change of this nature involves individuals and relationships". For example, Bullough, Draper, Smith, and Birrell (2004) found that the relationships between university-based teacher educators and mentor teachers were often top-down. Moreover, many university-based teacher educators experienced an ambivalence: on the one hand they felt they needed the people in the schools with their extensive and more recent practical experience, but on the other hand they felt that critical aspects of the preparation got lost within the "close emotional bonds formed between students and clinical faculty" (Bullough, et al., 2004, p. 513). Bullough et al. concluded that building partnerships between such contrasting cultures "needs to be less understood as an administrative and motivational problem than a question of identity and of relationship building" (p. 505).

In sum, serious challenges of bridging boundaries to support beginning teachers remained (Zeichner, 2010). On the other hand, in a discussion of various forms of partnerships between teacher education institutes and schools that emerged in the UK, Furlong, Whitty, Whiting, Miles, Barton, et al. (1996, p. 44) concluded that for the first time the development towards these partnerships allowed for a real integration of theory and practice.

Two Examples of Programmes with Strong Links Between Theory and Practice

One successful and early example of this development was the *Oxford Internship Model* (McIntyre, 1995), used in a one-year postgraduate programme for secondary school teachers in the UK. Close cooperation with schools was a crucial feature of this programme. McIntyre and Hagger (1992) summarized the most important principles underlying this model as:

1. heavy involvement in the teacher education programme of each of a limited number of schools;
2. extended attachment of interns to one school;
3. a closely integrated, joint school-university programme;
4. a secure learning environment (including a gradual development of the tasks set for student teachers throughout the year);
5. recognition that interns as adult learners set their own agendas; and,
6. division of labor between university and school staff so that each provides the kinds of knowledge which they are best placed to provide.

The Oxford model did not start from either theory or practice, but linked these two components of teacher education (McIntyre & Hagger, 1992). The learning processes of student teachers were divided into two distinct phases (McIntyre & Hagger, 1992; McIntyre, 1995). The first aimed at interns' attainment of the basic classroom competence necessary for certification, the second at the development of competencies necessary to be self-evaluating and self-developing teachers. A fundamental characteristic of the Oxford programme was that:

> it is interns' own prior experiences and commitments, their own felt needs, their own aspirations and their own understandings which determine the things they attempt to learn and the problems which they seek to resolve. (McIntyre & Hagger, 1992, p. 267)

This principle was also central to the so-called *realistic approach to teacher education* (RTE) developed at Utrecht University in the Netherlands (Korthagen, et al., 2001; van Tartwijk, Veldman, & Verloop, 2011). In this approach the teacher education programme is built upon the problems the students experience and the concerns they develop through practical experiences. The RTE model shows an emphasis on structured reflection by and interaction between students, an integration of several disciplines, and close co-operation between university-based teacher

educators and mentor teachers in the schools (Korthagen et al., 2001). The traditional division of the curriculum into separate courses is left and the students follow an integrated programme in cohort groups. This concurs with one of the principles that Tom (1997) proposed for successful teacher education: "Rather than being treated as individuals to be managed bureaucratically, prospective teachers should be grouped into a cohort that moves through a professional program as a unit" (p. 149).

Important in the RTE model is the difference between Theory with capital T (*episteme*) and theory with a small t (*phronesis*). The latter is the practical theory that helps teachers perceive important 'clues' in classrooms and offer them a basis for their actions. More formal, epistemic theory comes in at the end of the programme, which is a fundamental turn-around in comparison with traditional approaches in teacher education.

The Utrecht programme is one of the most intensively studied curricula in teacher education. Korthagen (2010a) presents an overview of the research on this programme. Three evaluative studies, with qualitative and quantitative research methods, showed that contrary to the general trend, the Utrecht programme showed a strong connection between theory and practice and led to positive reports of the graduates on the impact of the programme. In addition, an extensive longitudinal study by Brouwer and Korthagen (2005) among 357 student teachers, 31 teacher educators and 128 cooperating teachers, demonstrated concrete effects on the graduates' practices during their first professional year. In this study, important elements of the RTE programme appeared to be a cyclical alternation between school-based and university-based periods, and a gradual increase in the complexity of activities and demands on the student teachers. Although the outcomes of these studies show that teacher education can have a positive impact on practice, attempts to implement RTE in Germany, Australia, Japan, and several Scandinavian countries have shown that this often implies a profound cultural shift in existing views of teacher education, which can be threatening to experienced educators (Korthagen, 2010a). As Loughran (2013, p. 19) notes, "a pedagogy of teacher education …. inevitably impacts on a teacher educator's identity".

Specific Pedagogical Strategies and Techniques

This section focuses on specific strategies and techniques that, according to the literature, are fruitful ingredients of teacher education curricula.

Workplace Learning

As noted above, teacher education started in the nineteenth century having strong links with practices in schools, became more academic in the twentieth century, and is now back to a focus on practice. As the practical component of teacher education

became more central, a focus on workplace learning has become important in teacher education.

Avalos (2011) stated that workplace learning is an umbrella term for various forms of professional development that can take place formally or informally in schools and that are not assisted by outside facilitators. Workplace learning can take place individually or collaboratively. It offers both novice and experienced teachers opportunities to discover what is important in practice and to try out new behavior. As there is immediate feedback from the practical context, and thus important information about what is effective and what is not, Munby and Russell (1994) introduced the phrase 'authority of experience' to indicate the strong contribution of learning in and from practice.

Although they often phrased it differently, various authors (e.g. Britzman, 1986; Wubbels, 1992) have emphasized that workplace learning of student teachers started long before they entered a teacher education programme, namely during the thousands of hours they were students in school and experienced the practices of their own teachers. Lortie (1975) called this *the apprenticeship of observation*. He wrote that one of the disadvantages of this form of apprenticeship is that students only see their teachers' 'frontstage behaviors' (such as monitoring, correcting, and lecturing), and not the 'backstage behaviors', such as choosing goals, preparation, or reflecting on experiences. Thus students tend to have a fragmented, one-sided view of the teaching profession: "they are not pressed to place the teacher's actions in a pedagogically oriented framework" (Lortie, 1975, p. 62). C. Furlong (2013) added that student teachers have grown up amidst lay theories and archetypes of teaching that are culturally embedded and that this affects their own conceptions and behavior as a teacher.

This points to a risk of workplace learning, namely that it can easily become a process of socialization into established patterns and may lead to a reproduction of traditional habits and norms. Without additional measures it may hardly serve as an opportunity for powerful professional learning (Wideen et al., 1998). Hence, increased time in practice does not necessarily imply deep learning and can even obstruct teachers' reflections and inquiry into what is really effective in teaching and learning (Gelfuso & Dennis, 2014). In other words, practical experience is not equal to professional development. Forzani (2014) gives an example: "Novices might spend months in student teaching or participating in a residency program and never learn how to lead a productive whole-group discussion" (p. 358).

A serious problem related to workplace learning is that there remains "much disagreement about the conditions for teacher learning that must exist for this learning in and from practice to be educative and enduring" (Zeichner, 2010, p. 91). Ben-Peretz (2011), too, states that much research is still needed before we know how to support effective learning from practice.

In any case, the role of workplace facilitators, in particular mentor teachers or school-based teacher educators, seems crucial in promoting effective teacher learning in the workplace, as many researchers have emphasized (e.g. Rozelle & Wilson, 2012; Zanting, Verloop, Vermunt, & van Driel, 1998). However, conceptualisations of the role of facilitators of workplace learning differ among countries and contexts

(Wang & Odell, 2007; Zanting, et al., 1998). In a review of 15 studies on induction and mentoring programmes for beginning teachers, Ingersoll and Strong (2011) concluded that such programmes have positive impacts, for example improved teacher satisfaction, retention, and student achievement.

Cothran, McCaughtry, Smigell, Garn, Kulinna, et al. (2008) found that the most important activities of the workplace facilitator are providing contextual subject matter knowledge and experience, as well as using skilful communication in their coaching. These findings concur with an international comparative study by Wang (2001). Rajuan, Beijaard, and Verloop (2010) studied the cooperation between 20 Israeli student teachers and 10 workplace facilitators. Both groups reported that a good balance between support and challenge was most effective in the facilitation process.

A central issue in the literature is the degree to which workplace facilitators give advice or focus on asking questions and promoting reflection (e.g. Barrera, Braley, & Slate, 2010; Crasborn, Hennissen, Brouwer, Korthagen, & Bergen, 2010). It seems important to have clarity about the goals, responsibilities, and expected practices of the facilitator role, as in many situations it remains unclear what is expected from them (Barrera, et al., 2010). Moreover, they often struggle with combining the teacher and mentor role (Jaspers, Meijer, Prins, & Wubbels, 2014). For a more detailed review of the literature on coaching in the workplace, see Lunenberg, Dengerink, and Korthagen (2014).

Case Methods

Forzani (2014) emphasizes that practice-based teacher education is not synonymous to the inclusion of workplace learning. Practice can also be brought into the teacher education curriculum in the form of *cases* (Shulman, 1992), which can be used in many ways to support teacher learning. As Merseth (1996) stated:

> Case methods are employed, for instance, to frame conversations between mentors and novices, as stimulants to reflection, as techniques to enrich field experiences, or to orient novices to particular ways of thinking. Case methods may include large – and small – group discussion of cases, role playing suggested by cases, or the writing of cases. (p. 726)

Whereas traditionally cases were written descriptions of real-life situations, cases can also come in the form of an oral account, video recording, or computer simulation. Grossman (2005) stated that cases can help teachers learn to think pedagogically, reflect on dilemmas, and explore possible actions. Darling-Hammond and Snyder (2000) assumed that when teachers reflected on well-chosen cases, their understanding of principles or dilemmas of teaching embedded in the case was enhanced. Cases can also be brought in from the student teachers' own practices. Darling-Hammond and Snyder maintain that this helps students to understand the relationship between concrete details in the "first order experience" (Shulman, 1992) and general principles of teaching, which can lead to a reconstruction of the case. This is further enhanced through discussion and feedback that helps the stu-

dent who brings in the case to explore deeper meanings and relations to theoretical knowledge.

However, Darling-Hammond and Snyder mention two dangers. First, limited knowledge of students may lead to misdiagnosis or a failure to identify productive approaches to the issues raised in the case. Second, there may be a lack of competence to connect the particulars of the case with theory. Based on a review of the literature, Grossman (2005) concluded that there was some evidence that cases did promote effective analysis of educational problems – although it is not so much the case(s) that can make a difference in teacher learning, but the instruction around it. Grossman stressed the need for more research to help teacher educators understand the features of cases that are helpful for different kinds of learning.

The Use of Video

A specific way in which cases can be brought into teacher education is through video recordings of practice (Grossman, 2005). Video has been used for this purpose since the 1960s, but the medium has become much more accessible through the rapid developments in technology. The digitization of video and the availability of simple but high-quality cameras has made video an easy-to-use tool in teacher education. Many teacher educators use authentic video recordings of expert teachers, but also recordings of their student teachers' own lessons as the basis for learning about teaching.

In a review study of 388 studies on the use of digital video, Brouwer (2014) concluded that *visual teacher learning*, i.e. the use of digital video for the acquisition and further development of professional teaching competence, can influence both the cognitions and the behavior of teachers, as well as the relation between cognition and behavior. Sherin and van Es (2005, p. 478) stated that through the use of video, teachers "learn to notice", i.e. understand the complex interplay of teaching and learning. This concurs with Cherrington and Loveridge (2014) who stated that using video slows down the pace of teaching, enabling student teachers "to see things you don't usually see" (p. 458).

Several studies indicate that the use of video is a fruitful strategy for developing skills required for facilitating higher-order learning in primary and secondary education. For example, in a study among 48 teachers (n = 32 experimental, n = 16 control), Roth et al. (2011) showed that the use of video promoted teachers' ability to analyze science teaching and their classroom use of teaching strategies. Kersting, Givvin, Thompson, Santagata, and Stigler (2012) did a study on the use of video with 36 teachers and found an impact on teacher knowledge and even on student learning.

Important conditions for positive outcomes are that the video materials are adjusted to student teachers' learning goals and that learning from video materials takes place in collaboration with facilitators and peers (Brouwer, 2014). Moore-Russo and Wilsey (2014) emphasize the need to provide student teachers with a

framework to support their analysis of video cases. This concurs with Brouwer and Robijns (2014), who showed that student teachers learn more when viewing guides are used, based on empirical evidence and/or plausible theories about what constitutes effective learning. Finally, Seidel et al. (2011) found that when teachers watch their own teaching on video, they experience stronger activation compared with viewing videos of other teachers. This study did not yield strong indications that when teachers watch their own teaching they notice more components of teaching and learning.

Approximations of Practice

Another way to bring practice into teacher education is an approach named *approximations of practice* (Grossman, Hammerness, & McDonald, 2009). This approach builds on characteristics of the professional preparation of clergymen and psychologists. Its essence is that teacher educators provide opportunities for novice teachers to engage in practices that are proximal to the practices of the profession. For example, novices are asked to act in situations that have characteristics similar to those in real teaching situations, but that are at the same time less complex or threatening. As the teachers do so in situations outside the regular school classroom, there are many opportunities to step out of the flow of actions, engage in reflective conversations with others (for example peers), receive suggestions, and try new actions. Grossman et al. (2009) advocated to organize such an approach around *core practices*. Some criteria for choosing core practices are:

- that they occur with high frequency in teaching;
- that novices can enact these practices in classrooms across different curricula or instructional approaches;
- that they allow novices to learn more about students and about teaching, preserving the integrity and complexity of teaching; and,
- that they are research-based and have the potential to improve student achievement.

Quite a lot of research and developmental work seems needed to define practices meeting these criteria, which means that this view of teacher education should be further developed alongside a research programme.

Although the approximations of practice approach looks a little similar to the traditional microteaching approach, there are significant differences, as noted by Forzani (2014). First, nowadays there is much more emphasis on student thinking, on the relative unpredictability of teaching and the need of proficiency at improvising instruction, and on experimentation with instructional activities. As such, this approach is characterized by "marrying attention to technical skill to professional judgment and improvisational capability" (Forzani, 2014, p. 365).

Grossman et al. (2009) warn that their approach requires a re-thinking of programme structures, as it requires teacher educators to work within an integrated

program, and thus work closely together. This would not only imply that the curriculum does not contain separate courses, but also requires collaboration of school-based and university-based facilitators. Hence, organizing teacher education around a set of core practices challenges existing structures in teacher education.

Promotion of Reflection

Independent of the question whether an orientation on practice means more time in the field or more attention to case methods or the use of video, *reflection* by the student teacher is important for promoting learning from practice. Reflection has been a keyword in the pedagogy of teacher education since the beginning of the 1980s (Gore, 1987; Rich & Hannafin, 2009), although there is little high quality research on the effectiveness of promoting reflection in teacher education (Korthagen, 2010b; Mortari, 2012). A major problem of the research in this area is the difficulty of how to conceptualize reflection. Views of reflection differ substantially (Day, 1999), for example in the degree to which they emphasize certain values or goals of education (Korthagen et al., 2001).

All scholars seem to agree that reflection is a special form of thought (Grimmett, 1988; Hatton & Smith, 1995), and that the origin of the concept lies in the work of Dewey (1933), who defined reflection as "active, persistent and careful consideration" (p. 6). Loughran (1996) considered reflection as the "purposeful, deliberate act of inquiry into one's thoughts and actions" (p. 21). Calderhead and Gates (1993) stated that the essence of reflection is that it enables professionals "to analyze, discuss, evaluate and change their own practice" (p. 2).

Many taxonomies of levels of reflection exist (e.g. Hatton & Smith, 1995; Zeichner & Liston, 1987). As Gelfuso and Dennis (2014) state, "they follow a common pattern of low levels of reflection being considered those in which the preservice teacher merely describes an experience to high levels of reflection as those in which the pre-service teacher considers the moral and ethical dimensions of her/his experiences" (p. 2). Davis (2006) differentiates between *productive* and *unproductive* reflection. Unproductive reflection is descriptive, lacks focus, relies on judgemental framing ("I liked …") and does not include analysis or evaluation. Productive reflection includes questioning assumptions, being open to different perspectives, being analytical, integrating knowledge, and being able to "see, attend to, and analyse the connections and relationships in a classroom" (Davis, 2006, p. 283).

Also important is the distinction between *action-oriented* and *meaning-oriented* reflection, the latter being "oriented toward understanding underlying processes" (Mansvelder-Longaroux, Beijaard, & Verloop, 2007, p. 57). The fact that teachers often have little time to reflect (Schön, 1987), often causes them to focus on what to do or do better (action-oriented reflection). Hoekstra (2007) found that in the long run, meaning-oriented reflection contributes to professional development, whereas action-oriented reflection hardly does.

It is remarkable that few publications discuss the question of how to promote fruitful reflection in student teachers, as teacher educators seem to struggle with 'the pedagogy of reflection'. An exception is the work of Zeichner and Liston (1987) who presented clear descriptions of their view of reflection as a means to counterbalance social inequity within a programme at the University of Wisconsin, as well as two studies into the outcomes of the programme. The authors concluded that, although the schools were very influential in shaping the student teachers' perspectives, "it could be argued that both Wisconsin studies indicate that the inquiry-oriented student teaching programme stems the onrushing move toward a more custodial view" (Zeichner & Liston, 1987, p. 36).

Korthagen et al. (2001) presented a description of a pedagogy aimed at promoting reflection in student teachers based on a spiral model of reflection, called the ALACT model, with five phases: Action; Looking back on the action; Awareness of essential aspects; Creating alternative methods of action; and, Trial. This model has also been used in other places in the world (see e.g. Brandenburg, 2008; Hoel & Gudmundsdottir, 1999; Jones, 2008).

Later the ALACT model evolved into a model of *core reflection*, focusing on deep, value-driven and transformative learning that builds on people's personal strengths (Korthagen & Vasalos, 2005; Korthagen, Kim, & Greene, 2013).

Learning Communities

Reflection is strongly promoted when (student) teachers engage in a process of co-learning from practice. Ideally, a *learning community* is created in which professional collaboration and reflection take place on common experiences in practice. Sometimes such communities are referred to by the term *communities of practice*, defined by Wenger (2006) as "groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly" (p. 1).

Vescio, Ross, and Adams (2008) did a review study on 11 studies centred on learning communities. Most studies showed important learning outcomes in student teachers, sometimes referred to as transformative learning. Vescio et al. conclude that professional learning communities represent a fundamental shift away from the traditional model of professional development: "Through collaborative inquiry, teachers explore new ideas, current practice, and evidence of student learning using processes that respect them as the experts on what is needed to improve their own practice and increase student learning" (p. 89).

A key factor is the community's commitment to meeting student learning needs (Avalos, 2011). Hou (2015) maintains that on-line learning groups are also effective and help to develop a view of professional learning as co-learning. Lee and Brett (2015) too, found positive outcomes of an on-line learning group. They emphasized that safety to reveal one's genuine identities is important in creating dialogue and changes in perspective.

Several teacher educators-researchers, for example Bullough et al. (2002), Goodnough, Osmond, Dibbon, Glassman, and Stevens (2009), and Rigelman and Ruben (2012), used a model in which two teacher candidates were matched with one mentor teacher. They showed that such a triad model promotes professional learning and leads to more awareness of the need to continuously examine one's practice.

Narratives

A specific form or reflection, often used in learning communities, is storytelling or the use of narratives (Doyle & Carter, 2003). It is a powerful method for capturing the complex processes of learning to teach (Schultz & Ravitch, 2013). Through narratives, teachers can discover insights into teaching and themselves that otherwise would have remained hidden (Savvidou, 2010).

As Craig (2011) states, the narrative approach in teacher education is grounded in the work of Clandinin and Connelly (1998) on teachers' personal practical knowledge, professional knowledge landscapes, and stories to live by. Howe and Arimoto (2014) note that "naturally, teachers use storytelling in their personal and professional lives" (p. 217). Storytelling has been linked to reflection, learning, and change (McGraw, 2014).

One approach to a pedagogy of narratives is *autobiographical writing*, which can have many different foci, such as good or unsatisfactory experiences, decisions made, personal strengths, one's identity or development as a teacher, and more (Estola, Heikkinen, & Syrjälä, 2014). Another approach is sharing narratives in peer groups, which creates reflective moments enabling teachers to understand experiences from a new perspective, and makes them more aware of thoughts and feelings around those experiences (Estola, et al., 2014). Also, connections with theory can be made.

Teacher Identity

Through narratives professional self-understanding is enhanced (Kelchtermans & Vandenberghe, 1994; Watson, 2006), which leads to the important issue of *teacher identity* (Beijaard, Meijer, & Verloop, 2004; Olsen, 2008). As Bullough (1997, p. 21) stated, "teacher education must begin … by exploring the teaching self". Teacher identity has received much attention in the recent literature, although interestingly, a focus on the teacher as a person was already central to the humanistic-based approach (HBTE). However, the theoretical fundamentals of teacher identity have recently become much more elaborate.

In a review of the literature on teacher identity, Beauchamp and Thomas (2009) explained it is a complex and multi-faceted concept. They stated that teacher iden-

tity is dynamic, changes over time under the influence of various factors, such as emotion, and involves both person and context. Gee (2001) considered identity as a 'kind of person' within a particular context. One might have a 'core identity', but multiple forms of identity evolve across different contexts. This can be a complicated issue as "what is found relevant to the profession may conflict with the personal desires from teachers and what they experience as good" (Beijaard, et al., 2004, p.109). This concurs with Lanas and Kelchtermans (2015, p. 24), who state that beginning teachers "find themselves caught between what they wish to be on the one hand and what various others tell them they should be on the other".

Teacher identity is embedded in a teacher's personal biography. In an in-depth study of three experienced teachers, Bukor (2015) showed that beliefs and interpretations rooted in their family environments made an impact on their school experiences, career choice, instructional practice, teaching philosophy, and teacher identity.

Professional identity is how teachers define their professional roles (Lasky, 2005). Abednia (2012) maintains that learning to teach is primarily a process of professional identity construction rather than knowledge acquisition. This concurs with Feiman-Nemser (2008, p. 698), who states that learning to teach is "learning to *think* like a teacher, learning to *know* like a teacher, learning to *feel* like a teacher and learning to *act* like a teacher". This process may involve periods of exploration, uncertainty, and conflict (Meijer, De Graaf, & Meirink, 2011).

As Thomas and Beauchamp (2011) state, "the development of a professional identity does not automatically come with experience" (p. 767), but Rodgers and Scott (2008) conclude that few studies have looked at the role of teacher education in shaping teacher identity. Meijer, Oolbekkink, Pillen, and Aardema (2014) add that not much research has been done on the effects of pedagogies that have the development of teacher identity in teacher education as their goal. They describe three such pedagogies, one that uses a story-line method, one that focuses on key incidents, and one that focuses on sharing tensions, ways of coping, and emotions. The authors emphasize that working with such pedagogies requires space in the teacher education programme and teacher educator knowledge of transformative learning processes.

Thomas and Beauchamp experimented with the use of metaphors in teacher education, which helped student teachers to consider their professional identities. Korthagen and Verkuyl (2007), too, worked with metaphors and also used other activities to help student teachers become more aware of the kind of identity that was triggered through relationships with students in schools, and what kind of teacher they wished to be. Pope and Denicolo (2001) described a technique called 'the river of experience', in which a meandering river was used as a metaphor for teachers' personal biographies. Through such techniques, teachers may chart what Pinar (1986) called their 'architecture of self'. Central to many of these approaches is *dialogue*, which according to Akkerman and Meijer (2011) is crucial in identity development.

Flores and Day (2006) stated that the (re)interpretation of one's own values plays an important role in the development of a professional identity. Korthagen

(2004) considered reflection on values and ideals as taking place at 'the level of mission', which is deeper than the level of professional identity (see the final section of this chapter). What he called 'core reflection' deals with both of these levels, and is also concerned with the relationship between them. Leijen, Kullasepp, and Anspal (2014) described how they used Korthagen and Vasalos' (2005) description of the core reflection approach for "approaching the core of being" in student teachers (p. 318).

Teacher Research

A step further than reflection and storytelling is the deliberate collection of data by student teachers on their own teaching. Then reflection becomes *inquiry* or *teacher research*, sometimes referred to *as practitioner research*. Many authors, for example Cochran-Smith and Lytle (2009), consider teacher research as a fundamental instrument in teacher development. They introduced the concept of 'inquiry as a stance', which promotes a dialectical relationship between knowledge and action. The practical knowledge generated when teachers "treat their own classrooms and schools as sites for intentional investigation" (Cochran-Smith & Lytle, 1999, p. 250), is called *knowledge-of-practice*, which is different from the formal *knowledge-for-practice* from external experts.

Gallimore, Ermeling, Saunders, and Goldenberg (2009) showed that systematic inquiry into teachers' own practices within a facilitated peer group can lead to better achievement and to a shift in teachers' attribution of student performance from external causes towards their own teaching. However, when student teachers engage in research during their preparation programme, the quality of their inquiries "generally depended on the questions posed, the ways that candidates conceptualized and assessed learning, and the candidates' understanding of the recursive nature of the inquiry process" (Cochran-Smith, Barnatt, Friedman, & Pine, 2009, p. 17).

Several genres of inquiry and practitioner research have been suggested as being helpful in teacher education (for an overview, see Borko, Liston, & Whitcomb, 2007). They differ in their goals and foci. For example, *action research* (Carr & Kemmis, 1986) focuses on the improvement of practice. This genre was strongly promoted by Stenhouse (1975) and elaborated by authors such as Kemmis and McTaggert (1981), who defined an *action research cycle* of acting, observing, reflecting, and planning. *Self-study research* focuses on the understanding of oneself and one's role in the practice of teaching (Loughran, Hamilton, LaBoskey, & Russell, 2004). It empowers professionals to examine and be accountable for their own practice as they articulate and generate knowledge, and can be used by student teachers during their preparation programme for developing deeper understanding of their practices (Anderson-Patton & Bass, 2002). A more recent genre is *design research*, in which theory and practice go together in the design and development of a practical approach or method (van den Akker, Gravemeijer, McKenney, & Nieveen, 2006).

Many books have been published with strategies and guidelines for doing these types of research and other variations. Several of these books target student teachers (a discussion of the pedagogies involved lies beyond the scope of this chapter.)

Portfolios

In the 1980s, written teaching *portfolios* were introduced into teacher education to stimulate student teachers' reflection on their teaching practices (Borko, Michalec, Timmons, & Siddle, 1997), but also for assessment purposes. Darling-Hammond and Snyder (2000) presented the following description of portfolios:

> Portfolios are means by which teachers select and reflect upon artefacts of their practice collected over time and from multiple sources and diverse contexts to provide evidence of their thinking, learning, and performance. Portfolios can include documents that derive directly from teaching – copies of lesson or unit plans, syllabi, handouts given to students, assignments, tests, and samples of student work (with or without teacher feedback) – as well as photographs, videotapes, or audiotapes or classroom activities ranging from bulletin boards and displays, to taped lessons, conferences with students, and the like. (pp. 536–537)

Portfolios can also include teacher logs or journals, detailed descriptions of lessons, reflections, and documents with evaluations from others (Athanases, 1994).

Smith and Tillema (2006) claim that portfolios can lead to better performance, but they also emphasize the importance of giving feedback on portfolios. Oner and Adadan (2011) used web-based portfolios in teacher education and demonstrated that this promoted the number of student teachers' high-level reflections. However, Breault (2004) presents a couple of warnings on the basis of a study of the use of portfolios among ten students. First, there may be a difference in what the teacher educator considers a meaningful portfolio and the student teachers' perceptions of the value of a portfolio, leading to a 'dissonance'. Such a dissonance may be grounded in the fact that there is no faculty consensus as to the purpose of a portfolio. Another dissonance may be that students can have doubts about whether the amount of time put in to making a portfolio is worthwhile. Breault noted that among the factors contributing to such dissonances are lack of clarity of stated purpose for the portfolio, the student teaching environment, and uncertainty between formative and summative nature of the assessment. Breault concluded that it was important that teacher educators communicate to their student teachers the purpose of a portfolio assignment, and that which constitutes a meaningful way to make a portfolio. Moreover, making a portfolio takes time and this time should be made available in the programme in order to allow for professional growth.

Another warning emerges from a study by Admiraal, Hoeksma, van de Kamp, and van Duin (2011) on student teachers' portfolios. They found that striking discrepancies can surface between the competence reflected in a written portfolio and the competence demonstrated during actual classroom practice. Other researchers, too, warn that there can be a weak relation between what student teachers present in

their portfolios and their actual teaching performance (e.g., Darling-Hammond & Snyder, 2000).

Modeling

An old adage says: "Teachers teach as they are taught and not as they are taught to teach" (Blume, 1971). Discussing his role as a teacher educator, Russell (1997) put it as follows: "How I teach IS the message". This points towards the important exemplary role of the teacher educator, something often expressed with phrases such as 'teach as you preach' and 'walk your talk'.

Deliberately showing specific teaching approaches is named *modeling* (Loughran, 2006). One of the first publications on modeling in teacher education is a study by Wood and Geddis (1999). They describe how they made their own pedagogical reasoning as teacher educators explicit to their student teachers. In line with this approach, Loughran and Berry (2005) describe two levels of modeling. The first is concerned with the exemplary behavior of teacher educators. At the second level, teacher educators make the pedagogical rationale behind their exemplary behavior explicit, and the feelings, thoughts and actions accompanying their pedagogical choices. The combination of the two levels is called *explicit modeling* (Lunenberg, Korthagen, & Swennen, 2007). Further steps in explicit modeling are making connections with theory and promoting the application of the modeled behavior in the student teachers' practices (Lunenberg et al., 2007). Loughran and Berry (2005) developed several strategies for explicit modeling, such as thinking aloud as a teacher educator, writing journals that are made public to the students, and discussions during and after class with student teachers. In their self-study, Hogg and Yates (2013) found that effective modeling also requires that the student teachers develop metacognitive awareness about the educator's modeling behavior.

Modeling is often experienced as difficult by teacher educators. In a study among ten teacher educators, Lunenberg et al. (2007) showed that only six of them sometimes made their exemplary behavior explicit. Only four of them also made a connection with their students' practices. None of the teacher educators legitimized their own teaching with the aid of theory. Obstacles that these teacher educators encountered were the vulnerability experienced when putting one's own pedagogical behavior 'up for discussion' and a lack of theoretical knowledge. A study by Willemse, Lunenberg, and Korthagen (2008) on the conscious enactment of values by teacher educators showed that teacher educators struggle with finding a language to formulate how they model certain values. Such findings concur with a study by Smith (2005). She found that beginning teachers in Israel expected from their teacher educators that they would make their approach to the pedagogy of teacher education explicit, but remarkably, none of the 18 teacher educators in Smith's study mentioned this aspect as being important in their pedagogy. There seems to be no research looking at effects of modeling on student teacher behavior.

Conclusions and Discussion

An Overview of the Research

In taking a big picture view of the body of research on the pedagogy of teacher education, some serious methodological weaknesses stand out. In general, the research in this field is quite scattered and dominated by small-scale studies often only presenting anecdotal data. Studies seldom compare the outcomes of different pedagogical approaches and if outcomes are studied at all, there is often a lack of information about the details of the implementation of the pedagogical approach under study (Cochran-Smith & Zeichner, 2005). In addition, often the same terms have different meanings in various studies, or a similar meaning is expressed in slightly different terms, which makes it difficult to aggregate research outcomes from different studies. Hence, it is clear that researchers in this area need to work with a common language.

There is also a need to conduct more research with quasi-experimental designs, which would make claims about programme outcomes stronger. Rare, but important, is longitudinal research on long-term effects of teacher education (Clift & Brady, 2005). There are of course, examples of such studies, for example by Brouwer and Korthagen (2005) and Kosnik and Beck (2009), in which student teachers were followed into their first years in the teaching profession. Such longitudinal research may help us better understand the long-term effects of teacher education programmes on their graduates' professional development and on their teaching behavior, and finally on the students of these graduates. The diagram in Fig. 8.1 clarifies the links that we need to know more about.

The box at the left-hand side of this diagram shows a factor that is often overlooked. Researchers tend to describe programme features or pedagogical strategies as if they are 'teacher educator proof', whereas one can suspect that effects of programmes or programme components will be strongly influenced by the degree to which the programme staff are able to enact underlying ideas of pedagogical approaches in a fruitful manner.

Studies on the outcomes of programme characteristics on students in school (the right-hand box) seem almost non-existent. Perhaps this level of evaluation is too complicated for the stage we are in as it would not only require a complicated research design, through which the effects of various programmes on students in schools are compared, but also a way to attribute differences in student outcomes to the behavior of the teachers graduated from these programmes; and thus a means to control for numerous other influences.

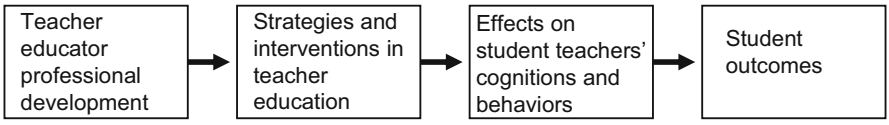

Fig. 8.1 Relations between teacher education and outcomes

Most of all, research on the pedagogy of teacher education should become more coherent, by following clear lines of research and through collaboration of researchers from various universities and countries. Until now, researchers rarely build on each other's work or replicate studies, yet it is obvious that this could help in building a coherent empirical foundation on which the pedagogy of teacher education might be built.

For building such a foundation, the growth of the self-study movement has been important: the many teacher educators who do research on their own practices help to promote insights into that which is going on in teacher education internationally. Zeichner (1999) observed that the self-study movement is "probably the single most significant development ever in the field of teacher education research" (p. 8). Self-studies show that at the core of expert practice is not the strict implementation of evidence-based practices, but the need to make subtle judgments in unique situations; a point well made by Hagger and McIntyre (2000). However, in this strand of research, too, methodological rigor and depth are often missing, as well as connections between studies (Loughran, 2010a, 2010b; Zeichner, 2007). On the one hand, it is noteworthy that solid quantitative research is rare within the self-study movement – yet such research could help make outcomes of pedagogical strategies more clear and also assist in comparing the effectiveness of strategies. On the other hand, a strong aspect of self-study research is that it tends to "provoke, challenge, and illuminate rather than confirm and settle" (Bullough & Pinnegar, 2001, p. 20).

Grossman and McDonald (2008) summarized the status quo in the research in this field as follows:

> To move forward, the fields of research on teaching and teacher education need to develop more programmatic research that addresses a set of critical questions over time as well as develop a range of common tools and approaches for making progress in answering those questions. (p. 198)

As we have not reached a point at which a robust, research-based knowledge base for the pedagogy of teacher education is available, teacher educators and policy-makers could be more critical regarding the implementation of strategies into their own practices, and be more aware that often views of 'good teacher education' may be nothing more than inspiring beliefs. Murray et al. (2008) suggested that the status quo is a natural result of the fact that teacher education is a new field, trying to prove itself.

Underlying Tensions

Grossman and McDonald (2008) discussed contextual factors that make the development of a solid pedagogy of teacher education difficult. First, through standards for accreditation and requirements for licensure, the contours of teacher education programmes are often dictated from above. Secondly, the vast majority of teacher education programmes are situated within institutions of higher education and operate within an institutional context that constrains the work of teacher education.

Thirdly, teacher education programmes are situated in local contexts and labor markets. Supply and demand issues often determine what is and is not possible.

Another problematic factor is that "there is no one right way of doing teaching" (Loughran, 2013, p. 14), and this is equally true for teaching teachers. Clarke and Hollingsworth (2002) stated that the problem of educating teachers is much more complex than often assumed (compare Bronkhorst, Meijer, Koster, & Vermunt, 2011). Berry (2007) described well how the work of teacher educators is characterized by underlying tensions (or dilemmas), such as those between telling and growth, confidence and uncertainty, action and intent, safety and challenge, valuing and reconstructing experience, or planning and being responsive. This chapter shows another important underlying tension in teacher education, one that originates in dilemmas about what the focus of teacher education should be. Should the focus be the development of adequate behavior, or the formation of a stable professional identity? Are solid competencies the most important features of good teachers or is it their awareness of their personal values and ideals that makes a difference? Korthagen (2004) discussed how throughout the history of teacher education, answers to these questions have shifted and that the field has not arrived at a view that is commonly shared. He introduced the so-called *onion model* (Fig. 8.2), which shows various levels on which professional reflection and learning can take place. Each level represents a different perspective on teacher learning and leads to a different answer to the question of what should be the focus and goal of teacher education.

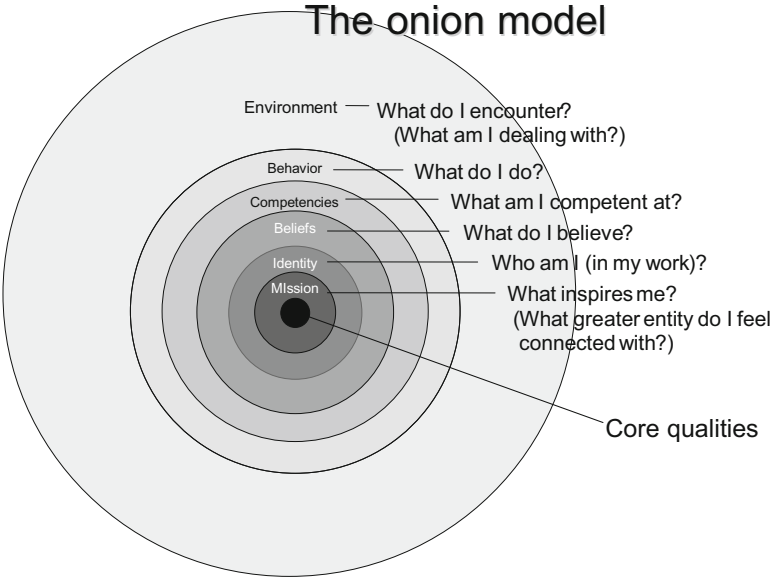

Fig. 8.2 The onion model

The basic idea underlying the onion model is that all levels always play a role in teacher behavior, professional development and teacher reflection, but that teachers may not always be aware of all these levels in themselves. Broadening their reflection, in particular by including the deeper levels of the onion model into the reflection process, can help the teacher bring alignment into the various levels (Korthagen et al., 2013). The level of mission is often overlooked by teacher educators and researchers, but seems to play an important role in the development of teacher identity, in particular when there is a contradiction between an ideal and the capacity to enact the ideal in the classroom (Anspel, Eisenschmidt, & Löfström, 2012; De Ruyter & Kole, 2010).

The onion model also points towards the risk of making the focus of professional development too limited, and of overlooking the fact that a good teacher is one in whom the various levels are in harmony with each other. This implies that many of the views, models, and strategies discussed in this chapter are not necessarily in contrast with each other, but that it is possible to use various perspectives in parallel to one another (Bronkhorst et al., 2011), ideally in a manner that supports harmonious merging of the various levels of the onion model.

Guidelines for Teacher Educators

Although it may be realistic to conclude that the pedagogy of teacher education is at its infancy as an academic area, it seems important to conclude this chapter by looking at what we do know and in what aspects a reasonable degree of consensus about an effective pedagogy of teacher education exists. Helpful in this respect are studies that aimed at finding a set of basic principles of good teacher education by comparing a number of teacher education programmes. One such attempt was made by Howey and Zimpher (1989), who studied six ‘exemplary’ elementary teacher education programmes in the US, chosen by peer nomination. Although the researchers emphasized that these programmes were not necessarily representative of programmes in general and that there were no data on the effectiveness of the programmes under study, they found 14 attributes, the most important of which were:

1. A clear set of shared ideas and values (a coherent vision).
2. Distinctive qualities of the programme that stimulate faculty to collaborate, which also creates ownership.
3. Clear, explicit, and reasonable programme goals.
4. Elaboration of these goals into themes permeating all programme elements.
5. High levels of rigor and academic challenge.
6. An integrative and interdisciplinary approach, with a balance between general knowledge, pedagogical knowledge, and experience.
7. Working in cohort groups of student teachers.
8. Close links between campus-based and school-based activities.

Darling-Hammond (2006) presented an overview of the research she and her colleagues conducted on seven distinctive teacher education programmes from across the US. These programmes were "sought out by principals and superintendents because they prove consistently capable of creating successful classrooms and helping to lead successful schools" (Darling-Hammond, 2006, p. 5). Common features of these programmes were (slightly abbreviated):

1. A shared, clear vision of good teaching, permeating all coursework and clinical experiences.
2. Well-defined standards of practice and performance.
3. The curriculum is grounded in knowledge of development, learning, social contexts, and subject matter pedagogy, taught in the context of practice.
4. Extended clinical experiences (at least 30 weeks) are carefully developed to support the ideas and practices in simultaneous, closely interwoven coursework.
5. Explicit strategies help students (1) confront their deep-seated beliefs about learning and students and (2) learn about the experiences of people different from themselves.
6. Strong relationships, common knowledge, and shared beliefs link school- and university-based faculty.
7. Case study methods, teacher research, performance assessments, and portfolio evaluation relate teachers' learning to classroom practice (Darling-Hammond, 2006, p. 41; Hammerness & Darling-Hammond, 2005, p. 406).

Korthagen, Loughran, and Russell (2006) took a more international perspective when they compared three programmes, in Australia, Canada, and the Netherlands, considered to be responsive to the expectations, needs, and practices of student teachers. From their analysis of these programmes, seven principles evolved. Briefly summarized, these authors stated that learning about teaching:

1. involves continuously conflicting and competing demands;
2. requires a view of knowledge as a subject to be created rather than as a created subject;
3. requires a shift in focus from the curriculum to the learner;
4. is enhanced through (student) teacher research;
5. requires an emphasis on those learning to teach working closely with their peers;
6. requires meaningful relationships between schools, universities, and student teachers; and,
7. is enhanced when the teaching and learning approaches advocated in the programme are modeled by the teacher educators in their own practice.

As Zeichner and Conklin (2005) concluded, we are still far from final conclusions about the attributes of effective teacher education programmes, but at least such lists of features resulting from comparative studies offer some first building blocks for a coherent pedagogy of teacher education.

The Education of Teacher Educators

The above discussion naturally leads to the need to create a knowledge base for teacher educators. First attempts to build such a knowledge base have been made, for example in Israel by the MOFET Institute, and in the Netherlands by the Dutch Association of Teacher Educators (Lunenberg, Dengerink, & Korthagen, 2014). The next question is how existing knowledge about the pedagogy of teacher education can start to positively influence the professional development of teacher educators. Here we encounter the remarkable situation that in many places in the world, the professional growth of teacher educators is not called into question at all, as many studies show (Butler, Burns, Frierman, Hawthorne, Innes, et al., 2014; Russell & Korthagen, 1995). There persists "a common taken-for-granted assumption that a good teacher will also make a good teacher educator" (Korthagen, Loughran, & Lunenberg, 2005, p. 110). However, many teacher educators report intense struggles with the transition from classroom teaching to teacher educator (e.g., Ritter, 2011; Williams, Ritter, & Bullock, 2012).

Buchberger et al. (2000) concluded:

> Most teacher educators … have never received education and training in methodologies of teaching, co-operation and learning appropriate for *adult learners* (student teachers and professional teachers). A number of problems of teacher education could arise from the fact that the whole issue of education of teacher educators has been rather neglected. (p. 56)

We can draw the remarkable conclusion that in teacher education, which has as its focus the professional development of teachers, that there has been a striking lack of attention to the education of teacher educators (Bates, Swennen, & Jones, 2011; Smith, 2003); although at some places in the world educational programmes for teacher educators do exist. In such programmes, fruitful pedagogical strategies can be taught, for example through explicit modeling (Korthagen et al., 2001). The experiences with professional development programmes for teacher educators that do exist have shown that they can be pivotal in developing an effective pedagogy of teacher education, in particular when carried out among teams of teacher educators (Hadar & Brody, 2010; Korthagen et al., 2001).

As Lunenberg et al. (2014) and Murray (2010) stated, the powerful instrument of self-study research should get a central place in the professional development of teacher educators. This kind of research into one's own practices helps teacher educators to develop a research-based fundament for their own practices. This is of crucial importance, as teacher education plays a central role in enhancing the quality of education in general. Hence, "developing a pedagogy of teacher education is a professional responsibility for all those teacher educators committed to deeper understandings of teaching, learning, and teaching about teaching and learning" (Loughran, 2006, p. 176).

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Chapter 9
Pedagogical Content Knowledge in Teacher Education

Amanda Berry, Fien Depaepe, and Jan van Driel

Conceptualizing Pre-service Teachers' Pedagogical Content Knowledge

More than 25 years ago, Lee Shulman introduced the concept of Pedagogical Content Knowledge (PCK) to describe the knowledge that teachers use to transform particular subject matter for student learning, taking into account possible (mis) conceptions and learning difficulties. Shulman (1987) identified PCK as one of seven categories of teachers' knowledge defining it as "that special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding" (p. 8). The other categories of teachers' knowledge included: (a) subject matter knowledge; (b) general pedagogical knowledge; (c) curriculum knowledge; (d) knowledge of learners and their characteristics; (e) knowledge of educational contexts; and, (f) knowledge of educational ends, purposes, and values, and their philosophical and historical grounds. In Shulman's conception of PCK, two components lie at its heart, namely knowledge of useful forms of representing and formulating specific subject matter (e.g., through schemes and analogies), and knowledge of students' conceptions, misconceptions and learning difficulties regarding that same subject matter.

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Shulman's notion of PCK closely connects to the broader and older concept of "subject-matter didactics" that stems from the European – and in particular German Didaktik tradition (Kansanen, 2009; Van Driel, Berry, & Meirink, 2014) and French Transposition Didactique (Chevellard, 1991). Although it is beyond the scope of this chapter to extensively elaborate on the distinction between PCK and "subject-matter didactics" research traditions, contrary to the first tradition the latter is not mainly empirical, but also often normative in nature (e.g., prescribing how effective instruction in a certain subject domain should look) and encompasses research regarding teachers' knowledge, as well as issues such as the relationship between a school subject and an academic discipline (Kansanen, 2009).

Although the notion of PCK was – and still is – very influential in research on teaching and teacher education in a variety of disciplines (e.g., natural sciences, mathematics, physical education), Shulman's conceptualization of PCK has also been criticized for a number of reasons. A first criticism relates to the lack of an empirical grounding for Shulman's claim about the importance of PCK as a component of teachers' knowledge. However, the development of valid instruments to measure teachers' knowledge, their instructional behaviour and student learning outcomes have revealed that both teachers' subject matter knowledge (hereafter referred to as SMK) and their PCK are important determinants of the quality of instruction and, consequently, students' progress (Baumert et al., 2010).

Second, PCK is criticized for its "fuzzy boundaries" (Marks, 1990) with other categories of teachers' knowledge, such as their SMK, their general pedagogical knowledge, and knowledge of the context in which teaching and learning takes place (Bromme, 1995). The concept and its relation to these other categories of teachers' knowledge have been conceived in many different ways (Depaepe, Verschaffel, & Kelchtermans, 2013). For example, Gess-Newsome (1999) made a distinction between an integrative and the transformative model of teacher knowledge. Within an integrative model PCK does not exist as a separate phenomenon and teaching is considered to be the act of integrating SMK, pedagogical knowledge, and knowledge of the context. In contrast, a transformative model, such as Shulman's conceptualization, treats PCK as a unique form of knowledge on which teachers rely while teaching.

Third, some scholars have criticized Shulman's narrow conceptualization of PCK in terms of teachers' knowledge of instructional strategies and representations, and their knowledge of students' conceptions, misconceptions and learning difficulties. They have argued for the need to broaden the concept to encompass, among others, curriculum knowledge (Grossman, 1990), beliefs (Friedrichsen, van Driel, & Abell, 2011), or emotions (Zembylas, 2007).

A fourth criticism is that Shulman presented a rather static view of teachers' PCK, as a form of factual knowledge that can be acquired and applied independently from the classroom context. For instance, Settlage (2013) argued that many PCK studies have been limited to investigating or portraying what teachers know or think, without relating this to what teachers actually do in classroom practice, let alone what their students gain from it. However, in a recent publication, Shulman reflected that "PCK was not to be construed as 'something' that teachers had in their heads but was a more dynamic construct that described the processes that teachers

employed when confronted with the challenge of teaching particular subjects to particular learners in specific settings." (Shulman, 2015, p. 9). Indeed, several scholars have advocated a dynamic view of PCK, treating it essentially as a knowing-to-act that is inherently linked to, and situated in, the act of teaching within a particular context (Cochran, DeRuiter, & King, 1993; Hodgen, 2011; Mason, 2008; Petrou & Goulding, 2011).

Related to this last criticism, there seem to be different views of PCK as either knowledge *for* teachers, or knowledge *of* teachers (Fenstermacher, 1994). According to the first view, PCK is seen as the knowledge of expert teachers, that, in a normative and prescriptive way, can or should be passed on to pre-service and beginning teachers (cf. Ball, Thames, & Phelps, 2008). Also, in this view PCK is perceived as standardized and thus measurable, making it possible to distinguish between teachers with 'strong' and 'weak' knowledge. On the other hand, PCK may be seen as the professional knowledge that each teacher develops on the basis of his/her experiences during teacher education and in practice, and that is inseparably connected with the context in which it is developed and used, and thus cannot be assessed in a comparative or normative way. This latter view echoes Shulman's original definition of PCK as "That special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding" (Shulman, 1987, p. 8; cf. knowledge *of* teachers; Fenstermacher, 1994).

Several scholars have refined Shulman's conceptualization, partly in an attempt to answer the above criticisms. In many cases, elements were added to PCK, thus countering the critique on Shulman's original conceptualization of PCK as being too narrow. For example, Grossman (1990) and Marks (1990) expanded the definition of PCK to include besides Shulman's two components (knowledge of students' understanding and knowledge of instructional strategies) also knowledge of curriculum and knowledge of purposes for teaching (Grossman, 1990) and knowledge of media for instruction and SMK (Marks, 1990).

Other scholars seek to highlight the dynamic nature of PCK. For instance, Cochran et al. (1993) used the term 'pedagogical content knowing' instead of PCK. Pedagogical content knowing is assumed to be the synthesis and integration of all knowledge elements needed to be an effective teacher, more particularly of pedagogy, SMK, student characteristics, and the environmental context of teaching and learning. These authors emphasize pedagogical content knowing as constructed knowledge, rather than representing a fixed body of objective truths and stress the important role of the specific teaching and learning context.

Models of Pedagogical Content Knowledge in Various Disciplines

As will become clear later on, it turns out that the large majority of empirical studies on PCK in pre-service teacher education have taken place in the domains of science and mathematics, complemented with a relatively small number of studies in physical

education, language, drama, geography and history. In science education, several reviews (Abell, 2007; Chinn, 2012; Kind 2009; Van Driel et al., 2014) and books (Berry, Friedrichsen & Loughran, 2015; Gess-Newsome & Lederman, 1999) about research on PCK have been published. However, none of these had a specific focus on the development of PCK within initial teacher education.

In several domains, specific models of PCK have been developed and used in research. In science education studies, the conceptualization of Magnusson, Krajcik, and Borko (1999) of PCK has become particularly influential (Friedrichsen, Van Driel, & Abell, 2011), and various adaptations of it have been published (e.g., Park & Oliver, 2008). As reflected in Fig. 9.1, Magnusson et al. conceived PCK as a separate and unique domain of knowledge, related to teaching of specific topics, consisting of five components: (1) orientations to science teaching; (2) knowledge and beliefs of curricula; (3) knowledge and beliefs of assessment; (4) knowledge and beliefs of students' understanding; and, (5) knowledge and beliefs of instructional strategies. Whereas the last two components are identical to Shulman's initial model, the first three components imply an extension of that model. Interestingly, Magnusson et al. include both knowledge and beliefs in their PCK model, suggesting their inherent connection.

Within mathematics education the most influential reconceptualization of PCK was done through the overarching construct "content knowledge for teaching mathematics" (CKTM) (e.g., Ball et al., 2008; Hill, Rowan, & Ball, 2005) that covers both SMK and PCK. As Fig. 9.2 shows, CKTM covers three categories that relate

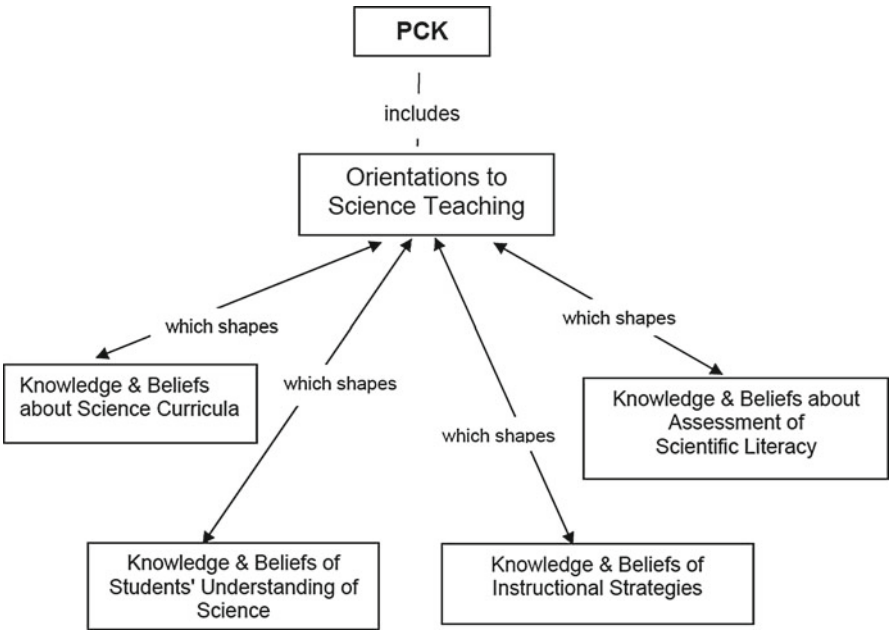

Fig. 9.1 Magnusson et al. (1999) model of pedagogical content knowledge (PCK)

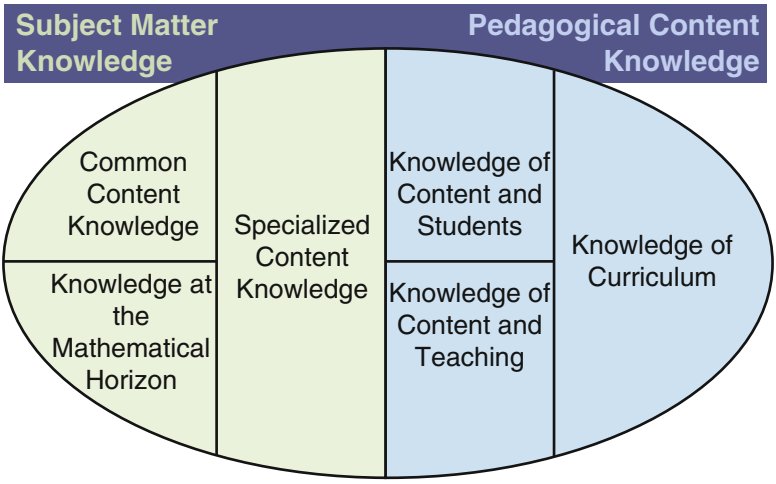

Fig. 9.2 Ball et al. (2008) model of Content Knowledge for Teaching Mathematics (CKTM)

to teachers' SMK: (1) common content knowledge (i.e., mathematical knowledge and skills used in settings other than teaching); (2) specialized content knowledge (i.e., mathematical knowledge and skills unique to teaching mathematics); and, (3) knowledge at the mathematical horizon (i.e., an awareness of how distinct mathematical topics are related to each other). Another three categories within CKTM concern teachers' PCK: (4) knowledge of content and students (i.e., knowledge about students' mathematical thinking, which requires and interaction between specific mathematical understanding and an understanding of students' mathematical thinking); (5) knowledge of content and teaching (i.e., knowledge of the design of instruction, which requires an interaction between mathematical understanding and an understanding of pedagogical issues that affect student learning); and, (6) knowledge of curriculum (i.e., knowledge about instructional materials and programmes). The fourth and fifth categories parallel respectively Shulman's two key-components of PCK: knowledge of students' (mis)conceptions and difficulties and knowledge of instructional strategies and representations.

CKTM differs from Shulman's conceptualization in that PCK and SMK are distinct categories in Shulman's (1986, 1987) conceptualization, whereas in the above model, they are integrated within one overarching category of knowledge, CKTM that teachers need to teach mathematics. Moreover, curriculum knowledge, which is a separate category in Shulman's conceptualization is part of the PCK components in Ball et al.'s (2008) CKTM, just as it is included in the Magnusson et al. model. Several researchers in mathematics education use the CKTM model.

In the domain of history education, Monte-Sano and Budano (2013) introduced a model of PCK for teaching history. This model is derived from the history education literature on the one hand, and on the broader education literature on the other hand. It consists of four components: (1) Representing history; (2) Transforming history; (3) Attending to students' ideas about history; and, (4) Framing history.

These authors compare their model explicitly with the CKTM model, suggesting that 'transforming history' is similar to 'knowledge of content and teaching' from the CKTM model, whereas 'attending to students' ideas' resembles the CKTM's 'knowledge of content and students'. These two components are also close to Shulman's initial key components (knowledge of instructional strategies, and knowledge of students' understanding, respectively). Representing history relates to ways of communicating the nature and the structure of historical knowledge, and historical ways of thinking, that promote student learning, while framing history refers to selecting and arranging topics from the curriculum in ways that illustrate the significance and connections between these topics. Interesting in the Monte-Sano and Budano model is that in each component, an explicit relation between teaching and learning is addressed. In this way, this model is different from those in other disciplines.

In other domains, such as language education and physical education, scholars stayed rather close to the initial ideas of Shulman, instead of proposing domain-specific models of PCK. In a review of PCK research in the domain of physical education, Amade-Escot (2000) argued that the development of PCK entails the transformation of SMK and pedagogical knowledge. Consequently, PCK is "composed of intimately linked and integrated knowledge, beliefs and experience" (p. 85). Amade-Escot concluded that all studies in this domain "underscore the complexity of PCK and the resulting difficulty in acquiring it during initial training" (p. 85). These difficulties are related to the nature and structure of PCK, such as its specificity to the content, or even the skill, which is taught, and the context in which teaching occurs.

These modifications of the Shulman model show how researchers have attempted to improve the original model, in particular by addressing what they saw as limitations, such as the narrow conceptualization of PCK, its relationship with SMK, and its static conception. Our overview is not exhaustive and other modifications and extensions exist (e.g., the addition of technological knowledge by Mishra and Koehler (2006) to extend PCK to Technological Pedagogical Content Knowledge). For the purpose of this chapter, we have chosen to include only those models that are commonly used in research on teacher education in certain disciplines, that is, science, mathematics, history, language, and physical education.

Method

The literature search for the present review started with articles indexed in the Web of Science from 1985 to August 2014, using the following combinations of keywords as search terms: "preservice" AND "pedagogical content knowledge" (resulting in 106 unique hits), "pre-service" AND "pedagogical content knowledge" (162 unique hits) and "initial teacher education" AND "pedagogical content knowledge" (43

unique hits). Combining sets let to a total of 285 unique hits. Additional searches were conducted in ERIC and PsychInfo, resulting in an additional 36 unique hits. Excluding articles that were not about pre-service teachers, but on in-service teachers, reduced the total number of articles. This number was further reduced by including only publications in the form of peer-reviewed articles, written in English. These criteria were applied to ensure that the studies were of a scholarly nature, in a language accessible to the chapter authors. Next, in order to respect the focus of the review study on *pedagogical content knowledge*, we excluded articles on the topic of technological pedagogical content knowledge, or studies that focused primarily on another component of teacher knowledge such as curriculum knowledge, context knowledge, SMK, or general pedagogical knowledge.

Eventually, 66 articles are included in the present review, including empirical studies, literature reviews, position papers, and articles on the testing and development of instruments and procedures. The distribution of studies of PCK across different discipline areas in pre-service teacher education varied widely. Most studies are located in Mathematics (34) and Science disciplines (24), respectively, complemented with studies in Physical Education (3), Language (2), History (1), Geography (1), and Drama education (1). The numbers of studies in elementary and secondary pre-service teacher education were more or less the same; some studies concentrated on middle school (Grades 4–8).

Analysis of the final set was conducted using a within-case analysis of each of the 66 articles, whereby the unit of analysis was the article. Each article was summarised according to a classification scheme based on the following questions: (i) How was PCK conceptualized (e.g., Magnusson or CKTM model)?; (ii) Was PCK investigated at one moment in time, or at multiple moments (i.e., to study PCK development or growth)?; (iii) Was PCK investigated in the context of a course undertaken within the teacher education programme and/or in relation to teaching practice in the field?; (iv) How many participants were involved in the study, and in what kind of teacher education programme (e.g., elementary or secondary)?; (v) Which research design was applied, and what kind of instruments were used to capture PCK?; and, (vi) What were the main findings and conclusions regarding PCK, and/or its development? Next, a cross-case analysis was performed comparing the findings of the studies across articles, domains, countries, and types of teacher education programmes which led to a division of the articles into three broad categories: (1) studies that investigated PCK at one moment in time (n = 20); (2) studies that investigated PCK multiple times in the context of a university based programme (n = 15); and, (3) studies that investigated PCK multiple times in a programme that also included field-based activities (i.e., practice teaching; n = 26).

In the section that follows we present the findings from these studies, according to the above mentioned three broad categories. As might be expected, some studies were difficult to classify as belonging to a specific category either because of insufficient detail provided by the authors or because the study included elements from more than one category. In these cases, we noted such aspects in the text. We begin by describing studies that focus on investigating PCK at one point in time.

Studies Investigating Pre-service Teachers' PCK at One Moment in Time

Different themes emerge from studies that investigate pre-service teachers' PCK at one particular moment in time. We present the studies according to four emerging subgroups: (1) the nature and quality of pre-service teachers' PCK; (2) individual differences in pre-service teachers' PCK; (2) the relationship between pre-service teachers' PCK and SMK; and, (4) differential effects of teacher education programmes on pre-service teachers' PCK. We will refer to pre-service teachers as PSTs hereafter.

Focusing on the Nature of PCK

Some authors assessed the nature and quality of pre-service teachers' PCK at a particular moment of time in their teacher education programme. Isiksal and Cakiroglu (2011), adopting the basic Shulman model of PCK, conducted a study on Turkish elementary PSTs' knowledge of common students' misconceptions on the topic of fractions, sources of these misconceptions, and instructional strategies to overcome them. The authors developed and administered a Multiplication of Fractions Questionnaire among 28 PSTs at the end of their 4-year teacher education programme; 17 of them were interviewed afterwards. It was found that PSTs knew many difficulties that elementary students may experience in understanding this topic, and stated that these difficulties and misconceptions stemmed from students' lack of formal knowledge, rote memorization of the algorithms, or poor attitude towards mathematics. The instructional strategies to overcome these difficulties suggested by PSTs were based on teaching methods (e.g., using multiple representations), formal knowledge of fractions (e.g., focusing on the meaning of the concept), and psychological constructs (e.g., developing positive attitudes towards mathematics).

Aguirre, Del Rosario Zavala, and Katanyoutanant (2012) developed a culturally responsive mathematics teaching tool, comprised of scales, some of which were based on Grossman's conceptualization of PCK. This instrument was administered among a sample of 40 elementary PSTs in the US. In addition, lesson plans and self-assessments plus reflections on lessons the PSTs taught were collected. Analysis of the data showed that PSTs felt very confident that they were able to address children's mathematical thinking within their lesson in adequate ways. This led the authors to conclude: "Since a subset of PCK clearly links to beliefs about children's mathematical thinking, knowing the curriculum, and instructional strategies, these responses reflect a positive disposition toward these traditional elements of PCK and provide evidence of integrating these elements into their developing practice" (p. 130). However, PSTs gave very different responses to issues related to language, culture and social justice, which the authors interpret in terms of "non-traditional" elements of PCK. The authors call for attention to these components "within a [more] robust framing of PCK" (p. 130).

Within the domain of science education, Aydeniz and Kirbulut (2014) assessed the content and quality of Turkish chemistry pre-service teachers' PCK of galvanic cells, a concept within the domain of electrochemistry. Relying on the Magnusson model, they developed an instrument to measure PCK, but, surprisingly, they excluded the component 'knowledge of student learning', focusing only on knowledge of curriculum, instruction, and assessment strategies. The instrument consisted of 30 items divided over these three components, each item formulated as a statement (e.g., "The teacher poses open-ended questions"), to which PSTs were asked "to provide examples and comments" (p. 166). Based on an analysis of the written answers of 31 PSTs, the authors were able to discriminate between PSTs with naïve, developing or sophisticated knowledge for each of the three components. In a follow-up activity, PSTs discussed their answers with each other, which according to the authors "can potentially enhance their PCK because of their exposure to diverse ideas, through the feedback that they receive from their peers, and the improvement of their initial ideas" (p. 160).

Individual Differences in PCK

A number of studies related differences in pre-service teachers' PCK to previous experiences, such as previous teaching experiences or having attended methods courses in teacher education. Within the domain of biology, Friedrichsen et al. (2009) examined the effect of prior teaching experience on pre-service teachers' PCK development related to the topic of genetic variation. Also using the Magnusson model, the researchers constructed PCK profiles of a sample of PSTs entering a U.S. alternative certification teaching programme, comparing two PSTs with 2 years of prior teaching experience with two PSTs without experience. The study revealed that prior teaching experience made little difference to participants' PCK for teaching this topic. Both groups drew on general pedagogical knowledge and possessed little PCK for the topic. The researchers asserted that teaching experience, in the absence of teacher education, did not appear to contribute to the development of PCK, however, teaching experience did seem to lead to more integration of the different PCK components from the Magnusson model.

In the domain of language education, Hlas and Hildebrandt (2010) tested the PCK of Spanish Education majors (n = 9) in comparison with Spanish Liberal Arts majors (n = 9) in a Midwestern university in the U.S., focusing on teacher writing tasks. They administered a performance assessment that consisted of typical writing tasks in teaching Spanish (e.g., worksheets, test questions and comments on student papers), with a reflective paragraph to explain decisions made while writing, and analysed the responses in terms of language awareness (i.e., "the knowledge that teachers have of the underlying systems of the language that enables them to teach effectively", p. 12), knowledge of effective teaching and knowledge of learners. In all areas, the PSTs outperformed the liberal arts majors, which, according to the authors, suggests a distinction in the development of PCK between those with education courses and those without, and thus demonstrates the importance of teacher education courses.

Focusing on the Relationship Between PCK and SMK

A particular branch of studies related individual differences in PSTs' PCK to differences in their SMK. Within the domain of science education, Kaya (2009) studied the PCK of Turkish PSTs about ozone layer depletion, combining the results of a survey on SMK (n = 216) with interviews with three groups of 25 PSTs, identified as having high, average and low-ability in the domain. The interviews were structured according to the PCK components from the Magnusson model, excluding science teaching orientations. The authors found medium to strong correlations between SMK and the various PCK components (between .32 and .77); however, knowledge of assessment was not correlated to the other three PCK components. The authors concluded that "for the PSTs with strong subject matter knowledge, there was more appropriate pedagogical knowledge, whereas there was more naïve pedagogical knowledge for those with low subject matter knowledge" (p. 979).

Other scholars have also investigated the relation between science pre-service teachers' SMK and PCK, using other models and activities requiring PSTs to enact their PCK. Johnston and Ahtee (2006) investigated elementary PSTs' attitudes, SMK and PCK in physics in two institutions in England (n = 98) and Finland (n = 89), using a practical physics activity and a questionnaire. The authors found that unless PSTs had developed sound SMK, PCK was bound to be minimal. They advocate that teacher education programmes in physics should particularly concentrate on helping PSTs to teach difficult concepts in a meaningful and accessible way, developing positive attitudes alongside understanding and pedagogical skills.

Similarly, Käplyä, Heikkinen, and Asunta (2009) investigated the effect of the amount and quality of SMK on the PCK of 10 elementary and 10 secondary Finnish PSTs on the topics of photosynthesis and plant growth. Questionnaires were administered to determine PSTs' SMK for these topics, with PCK determined via the lesson preparation method (Van der Valk & Broekman, 1999) and an interview. As might be expected, there was considerable variance across pre-service teachers' SMK, with secondary biology PSTs having few misconceptions and inaccuracies compared with their elementary counterparts. Elementary PSTs appeared not to be aware of students' conceptual difficulties and had problems in choosing the most important lesson content. However, "better content knowledge had no significant effect on student-teachers' knowledge of experiments and demonstrations suitable for teaching" (p.1408) since neither group had any knowledge of these, which limited the development of their PCK.

The same instruments were applied in a study by Kellner, Gullberg, Attorps, Thoren, and Tarneberg (2011), however, these authors focused on Swedish PSTs' (n = 32) knowledge of students' difficulties in four science and mathematics areas (i.e., plant growth, gases, equations, heat and temperature), as a precursor to PCK development. While PSTs claimed no prior knowledge of specific student difficulties, the study revealed that collectively, they were able to identify many relevant and realistic learning difficulties. The authors concluded that PSTs' "awareness of pupils' difficulties constitutes a useful foundation in order to develop PCK, including teaching strategies, during the teacher education programme" (pp. 858–859).

Usak, Özden, and Eilks (2011) also included beliefs about science teaching in their study. They conducted a study on Turkish PSTs' (n = 30) knowledge and beliefs on the topic of chemical reactions. The authors reported deficits in the pre-service teachers' SMK, who also appeared to hold very traditional and teacher-centred beliefs about chemistry teaching at the secondary level. According to the authors, these beliefs, plus their limited SMK, would hinder the formation of PCK.

Similarly, in the domain of mathematics, several studies were performed that focused on the relationship between SMK and PCK. Turnuklu and Yesildere (2007) used an instrument that consisted of four open-ended problems about mathematical teaching situations in the domain of fractions, decimal numbers, and integers with 45 Turkish elementary PSTs in their final year of teacher education. Responses were analysed in terms of three PCK components, that is, knowledge of student misconceptions, knowledge of instructional strategies and representations and knowledge of assessment. The authors found that PSTs, even at the end of their teacher education programme, typically lacked solid SMK and that, consequently, their PCK tended to be incomplete and superficial.

In another study of a cohort of 122 students in an Australian elementary teacher education programme, Norton (2012) tested the levels of SMK at entry and exit of a mathematics methods course, and administered a PCK test only at the end of the programme. It turned out that most students had limitations in their SMK and that (pre- and post-test) SMK and PCK were strongly correlated. Norton concludes that "most pre-service teachers who have completed limited mathematics study in high school, know less when they commence tertiary teacher preparation study and exit with lower levels of content and PCK than other pre-service teachers" (p. 17). In particular, studying calculus appears to be a strong predictor of scores on mathematics content and PCK. However, the author cannot explain this finding, acknowledging that many variables that were not part of the study may impact these scores, and suggests that a more in-depth study of the relationship between SMK and PCK is needed.

Similar findings were reported almost 20 years earlier by Even (1993), who investigated the SMK and PCK of a sample (n = 152) of pre-service secondary teachers in Israel who completed an open-ended questionnaire about functions. Ten of these PSTs were interviewed afterwards. Most PSTs had a limited conception of functions, which influenced their pedagogical thinking. Like Norton, Even emphasizes the importance of subject matter preparation. In particular, since PSTs seem to focus on providing students with rules rather than understanding, Even suggests that "mathematics courses [in teacher education] should be constructed differently, in line with the constructivist views on teaching and learning, so that better, more comprehensive and articulated understanding of knowledge of is developed" (p. 113). Such courses need to be combined with a powerful content-specific pedagogical preparation enabling future teachers of mathematics "to create learning environments for their students that foster the development of students' mathematical power" (p. 114).

Only one study was found in which PCK and SMK were related to PSTs' actual classroom behaviour. Hadfield, Littleton, Steiner, and Woods (1998) measured the

PCK of PSTs (n = 48) by means of a test, together with SMK, spatial ability and maths anxiety, and compared the results to the instructional quality as measured by applying a coding scheme to videotaped lessons (i.e., microteaching). Not ignoring the importance of SMK for the development of PCK, the authors found that PCK was the only significant predictor of actual teaching behaviour (cf. Baumert et al., 2010), measured through videotapes of micro-teaching lessons). They concluded that methods courses are much important determinants of PSTs' instructional quality than mathematical content courses.

Comparing PCK Across Different Teacher Education Programmes

A distinct line of research that is particularly dominant in the domain of mathematics education is the examination of pre-service teachers' PCK at one moment of time and the comparison of that PCK across different teacher education programmes (within one country or between countries). Most of these studies comprise large data sets and measure PCK through the administration of a written test. One exception is the small-scale study of Meredith (1993) examining 12 British secondary PSTs' views on PCK through a Likert-type questionnaire involving items, such as "mathematical knowledge is more important than knowledge of how to provide appropriate mathematical activities for pupils". The participating PSTs were enrolled in three different types of teacher education programmes, differing from each other in their duration (e.g., 1 versus 2 years) and level (e.g., bachelor versus postgraduate). The results showed strong evidence for the fact that PSTs' views on PCK were related to the type of programme, although it seemed that PSTs who were in a programme with an emphasis on mathematical knowledge expressed less positive attitudes towards PCK compared to those who were in a programme that included teaching practice.

Investigating differences between teacher education programmes in Germany in terms of developing PCK and SMK, Kleickmann et al. (2013) conducted a cross-sectional study of first year PSTs (n = 117), third year PSTs (n = 126), teachers in their induction phase (n = 539), and experienced teachers (n = 198). These four groups of teachers were enrolled in programmes to teach either in academic-track high schools (teacher education programme consisting of nine semesters, with a main focus on SMK), or non-academic high schools (seven semesters, with a main focus on PCK and general pedagogical knowledge). The SMK of pre- and in-service teachers (as well as the growth of SMK from pre- to in-service teachers) was found to be significantly higher for those following the academic track than those following the non-academic track. The same holds true for the PCK of academic and non-academic prepared in-service teachers, although during teacher education this difference in PCK between the academic and non-academic track was not significant. The authors consequently conclude that even in terms of developing PCK a profound preparation in SMK is needed.

Investigating the PCK, SMK and professional beliefs of 294 PSTs from seven universities in Australia, Beswick and Goos (2012) used an online multiple-choice instrument which comprised nine beliefs statements and one confidence item with which respondents indicated the extent of their agreement on 5-point Likert-type scales; 45 items concerned with SMK; and 29 designed to address PCK. The PCK items were "intended to capture the following aspects of the construct: (1) analysing/anticipating/diagnosing student thinking, (2) constructing/choosing tasks/tools for teaching, (3) knowledge of representations, and (4) explaining mathematical concepts" (p. 76). The authors explained differences in PSTs' professional knowledge and beliefs in terms of teacher characteristics (e.g., self-confidence in mathematics) and teacher education programmes (Bachelor of Education, combined Degree programme, Master of Teaching, Diploma of Education). Differences between PSTs involved in different teacher education programmes were only observed for SMK, but not for PCK or professional beliefs. That is, scores on PCK were *not* related to confidence, and did *not* differ for grouping variables, such as prior education level or highest mathematics or statistics studied, or type of teacher education programme.

Besides these studies comparing pre-service teachers' PCK and SMK across different teacher education programmes within one country, there are also comparative studies that compare the PSTs' knowledge base across countries. Three international comparative studies in our dataset are all part of the TEDS-M study (Teacher Education and Development Study in Mathematics) which examined the competencies of elementary and secondary PSTs in 16 countries at the end of their teacher education programme (Tatto et al., 2012). In TEDS-M, PCK was measured through a test across distinct mathematics sub domains (number, algebra, geometry, and data) requesting PSTs to apply curricular and planning knowledge (e.g., establishing learning goals) as well as knowledge about how to enact mathematics for teaching and learning (e.g., diagnosing typical students' responses). Based on a dataset of 15,000 elementary PSTs Blömeke, Suhl, and Kaiser (2011) observed international differences in the levels of SMK and PCK. Countries also differed in their ranking of SMK and PCK. Whereas some countries performed very well on both SMK and PCK (e.g., Singapore and Taiwan), other countries mainly performed well on SMK (e.g., Switzerland), or mainly on PCK (e.g., U.S.). Concerning the impact of PSTs' background characteristics on their SMK and PCK, gender differences were found for SMK (in favour of males) but not for PCK, whereas perceived high school achievement and motivation impacted both SMK and PCK (in favour of higher perceived high-school achievement and higher subject-related and lower extrinsic motives, respectively). Blömeke, Suhl, Kaiser, and Döhrmann (2012) observed that differences in elementary pre-service teachers' PCK could be explained in terms of self-reported opportunities to learn mathematics SMK (i.e., the quantity and quality of occasions to learn about particular topics) in their teacher education programme, whereas less additional variance in PCK was explained by opportunities to learn in mathematics pedagogy. These results indicate – again – the importance of incorporating sufficient opportunities to learn and exercise SMK in teacher education programmes. Including data of both elementary and lower-secondary PSTs (n = 23,000), Blömeke, Suhl, and Döhrmann (2013) found similar patterns across countries (in terms of not

performing well on either or both SMK and PCK) for elementary and lower-secondary PSTs. Moreover, the nature and format of items in the TEDS-M test were important factors in explaining differences in PSTs' knowledge across countries. PSTs from Taiwan and Singapore performed well on SMK items and items in the format of constructed-response items. U.S. and Norwegian PSTs scored high on PCK items. PSTs from Russia and Poland performed well on items requiring non-standard mathematical operations. Consequently, it seems that PSTs knowledge base is impacted by its cultural context.

In summary, studies that aim to compare the SMK and/or PCK of pre-service teachers across programmes and countries have shown mixed and sometimes contradictory results. This demonstrates the importance of valid, standardized instruments that are sensitive to the specific contexts of programmes and countries.

Studies of PCK at Multiple Moments in Time – Within Institute

Whereas some studies focus only on investigating PCK at one point in time, other studies focus on PCK over multiple moments. In these kinds of studies, researchers are mainly looking for evidence of how the quality and nature of one or more PCK components develop among a targeted group of pre-service teachers over time. Studies that aim to capture PCK at multiple moments can be further divided according to two main groups: those that focus on pre-service teachers experiences within their teacher education institute, and those that include field experiences in addition to institute based experiences (see section "Studies of PCK Over Multiple Moments in Time - Including Fieldwork"). Studies in the former category, investigating pre-service teachers' PCK at multiple moments within the institute, typically take place within the framework of a discipline specific methods course and vary from modification of coursework, for instance to include specific interventions or workshops, the use of specific tools or scaffolds aimed at PCK development, through to longer-term studies investigating the development of PCK over an entire programme.

Modifying Course Content

Several studies in the context of mathematics education, modified or enriched methods course content, and used a form of pre-post test design to examine its effect in improving pre-service teachers' SMK and PCK. Burton, Daane, and Giessen (2008) used a quasi-experimental design to investigate the effect of integrating mathematical content in a one-semester elementary mathematics methods course in the U.S. Forty-four PSTs were randomly assigned to two conditions. In the experimental condition, 12 mathematics methods sessions were enriched with 20 min of grade 5 and 6 mathematics SMK. In the control conditions, PSTs followed similar

mathematics methods sessions, although without the integrated SMK. At the beginning and end of the semester all PSTs completed a 'Content Knowledge for Teaching Mathematics' (CKTM) test simultaneously addressing SMK and PCK. The results indicated a statistically significant increase ($p = .007$) in the CKTM scores of the experimental group, whereas no increase was observed in the control group ($p = .157$). Consequently, the authors stress the importance of integrating SMK in a mathematics methods course for developing prospective teachers' content knowledge for teaching mathematics.

Tirosh (2000) examined the development of SMK and PCK of elementary PSTs ($n = 30$) in a one-semester mathematics methods course for second year students in Israel. The course incorporated both SMK and PCK with a special focus on learning about students' errors and sources of these errors in the division of fractions. Changes in pre-service teachers' SMK and PCK were determined through a pre and post-test using mathematical expressions and word problems. PSTs were asked to solve the expression/word problem (SMK), and to list some common students' mistakes and possible sources of these mistakes (PCK). The course seemed to be successful in fostering pre-service teachers' SMK and PCK. In the post-test, PSTs were able to predict more possible students' mistakes and did not only refer to algorithmically based errors (as in the pre-test) but also to intuitively based mistakes.

In another small-scale study, Davis (2009) investigated the use of two different mathematics textbooks on secondary pre-service teachers' SMK and PCK on the topic of exponential functions. After a pre-test on SMK and PCK for 12th grade exponential functions, PSTs were randomly assigned to two groups. The 2-week intervention consisted of two parts, with each part followed by a SMK and PCK test. In the first week, one group used textbook A to make lesson plans for teaching 12th grade exponential functions, while the other group used textbook B. In the second week, this order was reversed. The two textbooks differed in the way in which they presented the mathematics content and provided support for teachers (e.g., whether or not alerting where students might encounter difficulties, providing more or fewer instructional representations). Afterwards, interviews were conducted with a heterogeneous group (gender, age, prior knowledge) of seven PSTs to understand changes across the SMK and PCK tests and how they related to their interaction with the two textbooks. While the pre-tests revealed considerable limitations in pre-service teachers' SMK about exponential functions and their PCK (i.e., almost none of the participating PSTs could predict students' difficulties with exponential functions, nor could they think of a particular context for teaching exponential functions), the post-tests in both groups of PSTs indicated that pre-service teachers' SMK and PCK had developed through working with the textbooks. Based on these results, Davis suggests the potential value of using different kinds of texts in teacher education to develop SMK and PCK.

In a different study of pre-service mathematics teachers, Harr, Eichler, and Renkel (2014) investigated the impact of incorporating general pedagogical knowledge and PCK about multiple representations in the domain of fractions via a one-off workshop. Fifty-nine pre-service German mathematics teachers were randomly assigned to two conditions: an integrated condition in which general pedagogical

knowledge and PCK were simultaneously addressed in a computer-based learning environment and a separated condition in which pedagogical knowledge and PCK were separately addressed in two distinct computer-based learning environments. Pre- and post-tests on pedagogical knowledge and PCK were administered to all participants. In the post-test PSTs were confronted with classroom scenarios in a different content domain (i.e., on data and chance). The study showed greater progress in general pedagogical knowledge for the integrated, compared to the separated, condition. However, no differential effect on the development of PCK was observed. By contrast, PSTs in the integrated condition applied PCK and pedagogical knowledge more simultaneously in reacting to the classroom scenarios, whereas the participants of the separated condition more often only relied on one type of knowledge. The authors concluded that teacher education should aim at integrating general pedagogical courses with methods courses to foster PSTs' development of both types of knowledge and that an integrated approach might lead to more effective application of different types of professional knowledge in actual classroom settings.

Other studies modifying course content draw on various forms of exploratory research and span a range of content areas including science, geography and mathematics. Several studies investigated the SMK and PCK of PSTs within the domain of a science methods course. For example, Davis and Petish (2005) studied two pairs of undergraduate elementary PSTs during a one-semester science methods course in the U.S. Their study focused on the relationship between pre-service teachers' SMK and PCK, and in particular, their knowledge of instructional representations for the topics, 'sound' and 'plants'. Essential to the study was the use of 'real-world applications' to mediate the development of pre-service teachers' SMK and PCK. Data sources included PSTs' written work plans and individual interviews conducted twice during the semester. Outcomes of the study indicated that while PSTs held limited SMK for the science topics, they brought a rich set of real-world experiences that became key in developing their PCK by serving as a mediating step between limited SMK and instructional representations. Importantly, these authors claim that because of their typically limited SMK, elementary PSTs need to develop their SMK and PCK simultaneously, and making real-world representations may help to promote that development.

In another study of pre-service elementary teachers, Nelson and Davis (2012) incorporated a unit in their science methods course to support PSTs in evaluating student-generated scientific models. They focused on four PSTs' changing knowledge, scientific model evaluation skills, and self-efficacy for evaluating scientific models as aspects of their developing PCK of scientific models. Data sources included interviews conducted prior to, and following, the methods course in which PSTs carried out 'think aloud' evaluations of two school-student generated models on different science topics. Findings from the study indicated that in order to effectively evaluate their students' scientific models, PSTs needed to develop SMK about the science represented in the model, as well as knowledge of scientific models and modelling practices, including knowledge of relevant model evaluation criteria. Having multiple, scaffolded opportunities to engage in the work of modelling,

learning about novel pedagogies and developing confidence in their own knowledge and skills in model evaluation were instrumental in developing the pre-service teachers' PCK. Moreover, the study findings revealed that each PST "evolved uniquely in her model evaluation skills and criteria of emphasis" (p. 1939) suggesting the individual nature of their PCK development.

Within the context of secondary science teacher education, Sperandeo-Mineo, Fazio, and Tarantino (2006) investigated the PCK development of a group of 28 Italian pre-service physics teachers, within the domain of modelling thermal physical phenomena. PSTs participated in a workshop that immersed them in the same kind of learning environments they were expected to implement in their future classrooms. Data were collected in the form of pre- and post-tests about experimental situations involving thermal processes, and artefacts from the workshop, including reports of discussions, worksheets and observations of laboratory work. The researchers concluded that the workshop environment was effective in guiding the PSTs "towards the construction of an appropriate PCK" (p. 260) because they were forced to make explicit, analyse and reconstruct their own representations and explanations of thermal phenomena. In a similar study, Hume (2012) sought to develop pre-service elementary teachers' SMK and PCK of the topic, electricity, using a specific curriculum package ("Primary Connections: Linking science with literacy", Australian Academy of Science, 2005) and by modelling a classroom approach consistent with the constructivist view of learning underpinning the resource package. The study, involving 11 PSTs in New Zealand, investigated whether the combined materials and teaching approach enhanced pre-service teachers' SMK and PCK. The study outcomes revealed that teaching SMK and PCK together "helped student teachers transform the type of knowledge they acquired during course work into the type of knowledge they might need to teach in a primary school context" (p. 564).

Using Specific Tools or Scaffolds to Support PCK Development

Several studies across different subject domains focused on the use of particular tools in scaffolding and documenting pre-service teachers' PCK development. In a form of pre- and post-test design, Adadan and Oner (2014) investigated the development of two secondary pre-service teachers' PCK within the context of a one semester chemistry methods course in Turkey. These researchers used the Content Representation (CoRe) tool of Loughran et al. (2004) that is structured around a set of prompts related to some of the elements of Shulman's knowledge base, in particular teachers' understanding of specific aspects that represent and shape the content for teaching. The PSTs produced CoRes at the beginning and end of the semester on the topic, 'behaviour of gases' followed by individual interviews to elicit further details about their written CoRe responses. CoRe and interview data were analysed according to the components of the Magnusson model and Schneider and Plasman's (2011) Learning Progression criteria, in order to identify changes in

the pre-service teachers' PCK. While both PSTs entered the programme with strong SMK for the topic and a limited repertoire of representations for all PCK components, the nature and extent of development of each PCK component differed noticeably between participants by the end of semester. The authors suggest that differences in PSTs feelings of self-efficacy at least accounted for some of the differences. The CoRe tool was identified as very useful for explicitly building PSTs understandings of the nature of PCK components and focusing PSTs' attention on what is important in designing lessons.

Within the domain of mathematics, Kinach (2002) designed a heuristic to guide secondary PSTs' transformation of their SMK for mathematics teaching. The heuristic was used with 21 PSTs in a one-semester mathematics methods class in the U.S. PSTs carried out three tasks designed to elicit, assess, challenge, and develop their instructional explanations for addition and subtraction of integers. Data sources included PSTs' written journals and assignments along with transcribed video of classroom discussions about what counts as 'good' instructional explanation. Study outcomes indicated that PCK development is not always a one directional process of converting existing subject matter knowledge directly into PCK, but rather that transformation of SMK is more of a dialectical 'conversation' between pre-service teachers' conceptions of subject matter and appropriate pedagogy, with changes in subject-matter pedagogy occurring as a result of changes in knowledge of subject matter itself. Kinach's study highlights the role of teacher educators as models of effective practice to guide the knowledge transformation process in pre-service teachers.

Within the domain of geography, Jo and Bednarz (2014) aimed to build the PCK of 24 PSTs in the United States, on the topic of 'spatial thinking'. Via a one-off workshop, PSTs were introduced to the concept of spatial thinking, along with strategies for incorporating spatial thinking into teaching practice and a taxonomic tool for evaluating elements of spatial thinking. Lesson plans produced before and after the workshop were analysed for evidence of PCK development, focusing on three components: formulating appropriate learning objectives, employing effective classroom activities and asking questions to facilitate student thinking. The workshop was successful in enhancing pre-service teachers' PCK in terms of improved understanding of spatial concepts, promoting confidence about teaching these concepts, and greater incorporation of the concepts and teaching approaches into PST's lesson plans. Two aspects of the workshop were notable for their influence: analysis of a video of exemplary teaching from a content perspective, and the explicit use of the 'taxonomy of spatial thinking' tool.

In another study using video, Lin (2005) investigated the effect of using research-based video-cases on improving mathematics pre-service teachers' PCK in the U.S. PSTs (n = 43) enrolled in an elementary mathematics methods course viewed and discussed video-cases of elementary teachers teaching and then participated in peer microteaching activities. Results of the study indicated that using video-cases improved the quality of PSTs concerns about students' cognition. PSTs' construction of pedagogical representations and their ability to identify a problematic situation with multiple perspectives appeared to be influenced by three factors: vicarious

experience (through video) to complement personal experience, discussing research-based video-cases, and journal writing to foster deeper thinking about student learning.

Longitudinal Studies of PCK Development

Three studies investigated PCK development using longitudinal designs. Lim-Teo, Chua, Cheang, and Yeo (2007) studied the mathematics PCK development of 80 PSTs in a 2-year elementary teacher education programme in Singapore. Pre-service teachers' PCK was measured via a 16 item test administered at the beginning and end of their teacher education programme. The test instrument explored four PCK components: mathematical subject matter knowledge; knowledge of a range of different representations; knowledge of cognitive demands of mathematical tasks on learners; and, knowledge of students' learning difficulties and misconceptions. Whereas PSTs' knowledge of students' learning difficulties and misconceptions did not improve during the programme, there was improvement on the three other PCK components. However, the authors observed that at the end of teacher education programme, the PCK of these PSTs remained low.

Blömeke, Buchholtz, Suhl, and Kaiser (2014) measured the development of 183 German secondary mathematics pre-service teachers' PCK and beliefs about teaching and learning mathematics, at the end of their first, second and third years of their teacher education programme. PCK was measured using a standardized test, while beliefs about teaching were surveyed using a Likert type scale to distinguish between 'transmission' and 'constructivist' views. The study revealed four main findings: (i) pre-service teachers' PCK and beliefs mainly developed from the second to the third year in their teacher education; (ii) prior performance on PCK predicted later performance on PCK, similarly for PSTs' beliefs; (iii) at all three measurement moments, pre-service teachers' PCK and beliefs were significantly positively related: higher PCK was associated with more constructivist beliefs towards teaching and learning mathematics; and, (iv) there was evidence for a causal relationship between PCK and beliefs: higher PCK predicted more constructivist beliefs in later assessments. By contrast, no causality was observed between prior beliefs and later PCK performance.

Also within the context of German mathematics teacher education, Buchholtz and Kaiser (2013) compared the development of pre-service teachers' SMK and PCK in two innovative elementary mathematics teacher education programmes with students in traditional mathematics teacher education programmes. The two innovative programmes differed from the traditional programme in that they included a focus on PCK, which was absent in the traditional programmes. One hundred and sixty-seven pre-service teachers across traditional and innovative programmes were administered SMK and PCK tests (i.e., from the TEDS-M study; Tatto et al., 2012) in each year of their 3-year programme. The study outcomes revealed that: (i) at all three measurement times, the students in the traditional track

outperformed the students in the innovative teacher programmes on SMK and, more surprisingly, also on PCK; (ii) all groups made a significant gain in SMK and PCK from the first to the third year; and, (iii) at all three measurement times, there was a significant moderately positive correlation between participants' scores on the SMK and PCK test.

In summary, studies on the development of PCK and SMK in the context of institution based coursework in teacher education programmes (i.e., method courses) generally indicate that specific approaches and interventions in such courses can be successful. However, growth of PCK cannot always be explained as resulting from a certain intervention. For instance, the development of PCK and SMK appear to be reciprocal processes, rather than PCK development following up, or being built on, SMK. The role of teacher educators seems important in the development of pre-service teachers' PCK, however, very little research has been done on this role. In the next section, we will review studies on PCK development that combine institute based activities with a fieldwork component.

Studies of PCK Over Multiple Moments in Time Including Fieldwork

One group of studies focuses on the combined interaction of field based and institute experiences on pre-service teachers' PCK development over time, compared with the 'institute-only' studies in the previous section. This is not so surprising given conceptions of PCK as including an enactment component (i.e., what teachers actually do in practice) and the structure of many pre-service teacher education programmes that integrate fieldwork with methods courses (where PCK studies are typically located). We first discuss the studies that have been conducted in different domains (i.e., science, mathematics, and other subject domains). Next, we discuss studies that specifically focus on the effects of field work and mentors on PCK development.

Capturing the Development of PCK Resulting from Institute Activities Combined with Fieldwork: Science Education

The first group of studies were conducted in the context of science teacher education programmes that combine method courses and internships. In two studies on chemistry PSTs, Van Driel, de Jong, and Verloop (2002), and De Jong, Van Driel, and Verloop (2005), used a workshop format in which two cohorts of Dutch PSTs (n = 12, in both studies) were asked to prepare and teach a series of lessons on the topic of particle models to secondary school students. Following the workshops, all participants could describe specific learning difficulties of secondary students in relating properties of substances to constituent particles. PSTs also developed their

knowledge of instructional strategies about particle models, although development varied among the PSTs. Reflecting on and discussing teaching experiences appeared to be crucial for this development. Justi and Van Driel (2006) also found significant gains in the growth of PCK through short-term workshops focusing on the design of lesson series within an action research project for Dutch secondary science PSTs (n = 5). It was found that, in particular, reflective activities (such as writing reports and sharing experiences in collective meetings) stimulated the development of PCK, both in terms of enhancing PSTs' understanding of student learning as developing their knowledge of adequate teaching strategies, but also pre-service teachers' SMK. Other studies also reported success in developing PCK alongside SMK in the course of a teacher education programme. Bektas et al. (2013) reported similar findings from their study of seven Turkish chemistry pre-service teachers' PCK of Nature of Science (NOS) teaching the particle nature of matter. PSTs' knowledge about students' learning difficulties and misconceptions of the target aspects of NOS appeared to develop with teaching experience and while observing their mentors, and utilizing chemistry textbooks while preparing their lesson plans.

Nilsson (2008) studied elementary PSTs (n = 4) in Sweden, who taught physics over 1 year to students aged 9–11 years. The study portrayed the complex nature of the development of PCK as a transformative process, based on PSTs' existing SMK and pedagogical knowledge. The role of teaching experience and reflection with peers was crucial in this development. In another study in elementary science, Beyer and Davis (2012) investigated how PSTs (n = 24) in a U.S. science methods course developed and used their PCK to identify strengths and weaknesses in science curriculum materials and whether they were able to make productive adaptations in planning for instruction. The researchers provided two different scaffolds to the PSTs: a criterion-based approach to analyse the lesson materials and a set of criteria representing key ideas about effective science teaching. Results showed that the pre-service teachers' PCK improved significantly over time when they had multiple opportunities to practice applying the same criterion in their planning. Brown, Friedrichsen, and Abell (2013) investigated the development and interaction of three components of the Magnusson model (science teaching orientations, knowledge of science learners, and knowledge of instructional sequence) for four secondary biology PSTs during a 1-year teacher education programme in the U.S. The researchers found that during their teacher education programme, as PSTs' knowledge and experience increased, the interaction between their knowledge of learners and knowledge of instructional sequences became more integrated.

In several studies, CoRes (Content Representations) and PaP-eRs (Pedagogical and Professional-experience Repertoires), developed by Loughran, Mulhall, and Berry (2008), were used to stimulate the development of, and promote awareness about, PCK of PSTs in their science teacher education. (CoRes have been described in a previous section of this chapter; PaP-eRs are short narratives that explicate the teaching of a specific topic along with the teacher's decision making in relation to the teaching and learning.) Loughran et al. employed a modified version of their CoRe and PaP-eRs framework in such a programme, whereby secondary PSTs developed their own CoRes and PaP-eRs based on their learning about PCK at uni-

versity, and from their experiences of teaching science in schools. A science teacher educator worked with PSTs during the final year of their teacher education programme in Australia. The teacher educator combined the structured framework of the CoRes and PaP-eRs with ongoing reflective activities to sensitize PSTs to the notion of PCK and what it might mean for their practice. In this way, PSTs developed more sophisticated ways to think about and conceptualize their understanding of teaching science. Similar studies using adapted versions of CoRes and/or PaP-eRs have been reported by Hume and Berry (2011, 2013) and Nilsson and Loughran (2012). For example, in a study by Hume and Berry (2013), chemistry PSTs in New Zealand designed CoRes in negotiation with their school-based mentor teachers on topics they were teaching in practicum. PSTs refined their CoRes based on their teaching experiences and through ongoing discussions with their mentors. Findings indicated that the CoRe task improved PSTs' awareness of the different PCK components and provided a useful framework for focused conversations about chemistry teaching between PSTs and their mentor teachers. Nilsson and Loughran (2012) used a modified version of CoRes with PSTs as part of an elementary science methods course in Sweden, to stimulate the development of pre-service teachers' PCK and to create an awareness of the value of PCK for teaching.

Capturing the Development of PCK Resulting from Institute Activities Combined with Fieldwork: Mathematics Education

Studies similar to the ones above in terms of research design and instruments have been conducted in the domain of mathematics teacher education. The following studies also combined methods courses and teaching practice. Studies differed in their emphases on PCK among other concepts, and in the way PCK was conceptualized. Blanco (2004) described the design of a teacher education programme, aimed to foster the development of both 'static' and 'dynamic' PCK of mathematics PSTs using a 4-stage model. This model was tested for the case of problem solving in elementary school. In Stage 1 awareness of PSTs' conceptions, beliefs, and attitudes on problem solving is promoted through semi-open interviews and a subsequent analysis of these interviews by the PSTs themselves. Stage 2 focuses on exercises with the subject matter (i.e., PSTs working on problem solving). In Stage 3, the PSTs are confronted in the teacher education institute with cases that originate from actual teaching/learning of problem solving. Finally, Stage 4 involves PSTs' actual classroom teaching and a subsequent reflection on this teaching through discussion with peers of video recordings of these lessons.

Foss and Kleinsasser (1996) described elementary PSTs' views on SMK and PCK during a 16-week mathematics methods course and teaching practice of three mathematics lessons in a teacher education programme (n = 22), relying on interviews, observations, and video-taped practice lessons. Interviews were held at the beginning, middle, and end of the one-semester course, and focused on conceptions of mathematics (e.g., "How do you define mathematics?"), conceptions of learning

mathematics (e.g., "How do children learn mathematics?"), conceptions of mathematics teaching (e.g., "What are your goals in mathematics instruction?"). PSTs' conceptions were related to their actual teaching behaviour. The results indicated that PSTs' views on SMK and PCK were rather traditional (e.g., conceptions of mathematics methods as practice and memorization) and remained constant throughout the course, suggesting that it is difficult to develop PSTs' conceptions: "They rely on personal and/or previous experiences that influence their existing views on both pedagogical and subject matter content knowledge" (p. 440). It was also observed that these conceptions impacted PSTs' traditional instructional behaviour.

Bukova-Güzel (2010) investigated three mathematics secondary pre-service teachers' PCK using a teaching unit on solid objects. Based on a literature review, three components were distinguished in PCK, that is, knowledge of teaching strategies and multiple representations (e.g., using real-world examples and analogies in instruction), knowledge of learners (e.g., having knowledge of the difficulties students will face during instruction), and knowledge of curriculum (e.g., having both horizontal and vertical programme knowledge of a topic, and being aware of the instruments to measure student learning and how to use them). Data were collected through lesson plans, video recordings of PSTs' practice teaching, and semi-structured interviews with PSTs' on their PCK about solid objects. The results, first, indicated the importance of PSTs' SMK: "The effect of a teacher in helping his/her students understand topic cannot exceed his/her conception of that topic" (p. 1879). Second, strengths in pre-service teachers' PCK were, among others, their use of different representations to help students learn solid objects and new learning tools of mathematics curriculum. Third, gaps in pre-service teachers' PCK related to their knowledge of students' possible misconceptions and the development of assessment instruments appropriate to the curriculum. Bukova-Güzel stresses the importance for teacher education to meet these PSTs' limitations in their PCK.

Similarly, Stump (2001) examined how a methods course in teacher education programme can help PSTs develop PCK about the topic of slope. More specifically, its effect is investigated on three PSTs' knowledge of students' difficulties with slope, and on their knowledge of various representations for teaching slope. The methods course incorporated field experiences in which PSTs had to interview a high school and college student on their understanding of slope, and compare the interviews through a written analysis. Moreover, as part of the methods course, they had to make lesson plans. Besides this fieldwork, the methods course focused on PSTs' expansion of their repertoire of representations for teaching slope. The development of pre-service teachers' PCK was investigated through an analysis of their prior knowledge on PCK (e.g., "What difficulties do you think pupils might have with slope?"), the knowledge developed in the methods class (e.g., the interview assignment, the lesson plans), and finally knowledge demonstrated in the actual teaching of a lesson on slope the semester after following the methods course. The results indicated that the development of PCK of the three PSTs followed very different paths, but that in all three cases the methods course was effective in challenging and developing their initial PCK. Combining fieldwork and classroom activities provided opportunities for PSTs to relate theory to practical situations.

Likewise, Karp (2010) investigated pre-service teachers' PCK applied in the context of a teaching methods course that involved actual teaching and reflexive analysis of this teaching. As part of this course, 25 secondary PSTs volunteered to teach at least three times in optional Saturday problem-solving classes with 9th and 10th graders, and agreed to attend and discuss their peers' teaching of these classes. Moreover, they had to conduct at least one individual interview with a student while solving a problem. Data sources included observations of their actual teaching and document analyses of reflexive journals, online discussion boards and lesson plans. The data revealed PSTs' difficulties towards distinct components of PCK, namely, they possessed insufficient knowledge of content and students (e.g., difficulties to grasp solutions suggested by students), insufficient knowledge of content and teaching (e.g., inability to construct interrelated sets of problems), and insufficient knowledge of curriculum (e.g., insufficient knowledge of instructional material). However, Karp argued that the course including this type of fieldwork had been effective in promoting pre-service teachers' PCK, in that their difficulties and insufficiencies had decreased.

Compared to the previously discussed studies, these studies in mathematics teacher education also demonstrate the importance of teaching practice in combination with institute based input and reflective activities. Additionally, these studies highlight the personal differences between PSTs in their PCK development trajectories. Interestingly, some of these studies incorporate PSTs interviewing students as an effective way to promote their understanding of student learning difficulties. The importance of interacting with students to develop PCK is central in a study by Jenkins (2010). He showed how the incorporation of field experiences in a mathematics methods course could enhance the development of beginning middle school PSTs' PCK, and more specifically their insight into students' thinking. As part of their field experience, six PSTs had to interview students based on a mathematical task through a structured interview process. During the interview students were requested to 'think aloud'. After the interviews PSTs were asked to analyse, report on and discuss with peers the data of the interview. The study indicated that through a phase of three structured interviews, PSTs' knowledge of students' thinking was developed: "the process develops listening skills for accessing students' mathematical thinking and awareness of the variety of ways middle school students make sense of mathematics" (p. 150). As such this structured interviewing process served as a scaffold to develop PCK in a methods course in teacher education.

The potential of lesson plans as a tool to both develop and investigate the mathematics PCK of PSTs is highlighted in a study by Prescott, Bausch, and Bruder (2013), who developed a Teacher Education Lesson Plan survey (TELPS) for this purpose. Using the Content Knowledge for Teaching Mathematics (CKTM) model and repertory grid technique, the design of TELPS is based on the idea that constructs concerning the designing of a 'good' lesson plan are linked with pre-service teachers' PCK. TELPS consists of four elements: questions about the PSTs' degree programme; brainstorming criteria of a good lesson, comparison of lesson plans using a repertory grid, and evaluation of lesson plans. Using the TELPS tool, the authors assessed the PCK of Australian (A) and German (G) pre-service mathematics

teachers at the beginning (A = 53; G = 122), and end (A = 30; G = 51) of their respective teacher education programmes, which differed substantially in terms of duration, organization, structure, and content. Results of the study showed increasing PCK of PSTs over time, evidenced through a change in the focus of analysis of final year PSTs' lesson plans and differentiation of the lesson plan into a greater number of themes. The authors concluded that the TELPS tool offers potential for measuring pre-service teachers' PCK since "it discloses important constructs of lesson planning", while lesson plans "sum up the content and activities of a whole lesson in a clear and concise way" (p. 49).

Capturing the Development of PCK Resulting from Institute Activities Combined with Fieldwork: Other Subject Domains

Studies in teacher education programmes in other subject domains, such as physical education and language, have also looked at the development of PCK as a result of the interaction between university based method courses and teaching practice. Rovegno (1992) studied the PCK development of seven physical education PSTs in the U.S. during a semester that combined a methods with field experiences in nearby elementary schools. Data included observations of classes, interviews, and PSTs' written work. PCK development was described in terms of increased differentiation, for instance, PSTs learned to shift their focus from a general level of content to a more detailed level. Also, the authors found that PSTs, combining their experiences in the methods course with those during teaching practice, were able to explicate relations between knowing "that" (i.e., knowing about teaching content) and knowing "how" (i.e., teaching and observing children learning that content). Stran and Curtner-Smith (2010) compared the relative importance of the different components in Shulman's knowledge base in a U.S. study of two PSTs of physical education who implemented a particular Sport Education model in their teaching practice. Based on data from observations and interviews, the authors concluded that the PSTs had delivered the full version of the model effectively, and that curricular knowledge had been of prime importance. General pedagogical knowledge, SMK, PCK, and knowledge of learners also made a significant contribution to the PSTs' success.

Atay, Kaslioglu, and Kurt (2010) studied the PCK development in a sample of 18 Turkish PSTs of English language. For this purpose, they required the PSTs to write a reflective narrative after performing an experiential task, which consisted of reading a novel (i.e., 'The Giver' by L. Lowry), followed by planning and teaching lessons about this novel. Finally, PSTs were interviewed in focus groups of six. Findings revealed that the combination of a methods course with the experiential task contributed to the development of their PCK, in particular to PSTs' understanding "how to unpack and present the content so that students can learn with understanding." (p. 1425).

In the domain of history education, Monte-Sano and Budano (2013) studied the PCK development of two beginning history teachers during teacher education, and, interestingly, 2 years after graduation. Data included observations of teaching, interviews with teachers, and classroom artefacts (lesson plans, student assignments) from the participants' 3 years in the study. Applying a model of PCK that is specific to the domain of history (discussed in the introduction section of this chapter), the authors found that both teachers' PCK continued to grow after their initial teacher education, although the pace and substance of this development varied between the two. In particular, attending to students' ideas about history and framing history remained more challenging aspects of PCK for these novice teachers.

Effects of Field Experience

A few studies applied an experimental design to investigate the effect of field experience on PCK development, either as an added element in teacher education programmes (Strawhecker, 2005), or as a variable with different duration (Capraro, Capraro, Parker, Kulm, & Raulerson, 2005). Adopting the CKTM model (Hill, Schilling, & Ball, 2004), Strawhecker (2005) investigated the effect of being or not being simultaneously enrolled in mathematics content courses (aimed at SMK development), mathematics methods courses (aimed at PCK development), and field experience (one-to-one meetings with an elementary school student in the domain of mathematics) over the term of a semester. Existing groups of PSTs (n = 86) followed one out of four teacher education programmes: (1) concurrently enrolled in a course focusing on SMK, a PCK course, and 20 h of field experience (n = 28); (2) concurrently enrolled in a PCK course and 20 h of field experience (n = 15); (3) being only enrolled in a PCK course, but with previous SMK coursework and field experience (aimed at general pedagogical knowledge) in a former stage of teacher education (n = 36); and, (4) being only enrolled in a course focusing on SMK, without any PCK coursework or field experience (n = 17). The pre-test assessed differences between the four groups of PSTs in terms of a general SMK-test, the number of high school courses followed, and their self-rating ability, however, no significant differences between the groups were found. As a post-test, the CKTM measure (Hill et al., 2004) was administered. Significant differences between the four groups of PSTs were observed for the CKTM-test, in favour of the group that was enrolled in field experience: the groups that were simultaneously exposed to (1) field experiences, SMK and PCK courses, or (2) field experiences and PCK courses, significantly outperformed the other two groups of PSTs that were not exposed to field experiences in mathematics during that semester (groups 3 and 4).

Also building on the assumption that field experience in teacher education is important to develop pre-service teachers' PCK, Capraro et al. (2005) investigated the impact of the duration of field experience in U.S. elementary teacher education programmes within one university. These scholars compared the effectiveness of teacher education programmes with 4 days per week of field experiences, with a

program that had only 2 days per week of field experiences. In these different programmes, both the design of the methods courses and the field experiences were similar. The methods courses followed the same principles for development of PCK (e.g., fostering PSTs' reflection about experiences) and the field experiences were designed to closely integrate with the methods courses. Pre- and post SMK and PCK tests were administered to 193 PSTs in the different programmes. It was found that participating in a 4 days per week or 2days per week field-based assignment did not have any significant effect on the SMK and PCK development of PSTs. The authors conclude that it is probably not the duration of the fieldwork as such that impacts pre-service teachers' PCK but rather the quality of the fieldwork, for instance the quality of the mentor. In addition, this study found that PSTs with profound mathematical understanding (i.e., high scores on SMK tests) showed a larger gain in PCK from pre- to post-test measurement, however, the authors cautioned that having good SMK does not ensure PSTs will develop PCK.

Role of Mentors and Supervisors

Some studies, across different subject domains, focus on the role of mentors (Nilssen, 2010; Pitfield, 2012), supervisors (McDuffie, 2004) or coaches (Jenkins & Veal, 2002), as actors to promote PCK development of pre-service teachers. Nilssen (2010) argued that during student teaching internship the mentor plays a key role in PSTs' development of PCK. She showed how a school based mentor teacher supported first year PSTs' simultaneous and integrative development of Cochran et al.'s (1993) four components of pedagogical content knowing, that is, pedagogy, SMK, student characteristics, and the environmental context. Data were collected over a period of 6 weeks, including observations of mentoring conversations, interviews, and logbooks of the mentor and five PSTs. Field experiences seemed to provide learning opportunities for PSTs' development of PCK. The mentor's use of guided questioning helped PSTs to see possibilities when they "struggle with problems or dilemmas, or … that there is something they misunderstand or do not understand at all" (p. 440). Through interaction with PSTs the mentor supports the integrative development of PCK showing how knowledge of subject matter, pedagogy, context, and students in the class, are integrated in teaching. Similarly, Pitfield (2012) emphasized the role of mentors in the process of PCK development in her study of British PSTs in drama education. Pitfield construed PCK development as 'a debate' that follows from tensions between PSTs' previous experiences as drama experts, and the experiences in the context of learning to teach drama. PSTs were mentored by experienced, specialist drama practitioners in schools who turned out to be essential facilitators of this debate. Pitfield concluded, "Mentors have demonstrated, enabled, allowed experimentation, and encouraged collegial reflective practice, thus supporting the student-teachers in arriving at a model of practice and a set of positions around pedagogical content knowledge to which they can subscribe" (p. 440).

As an interesting contrast to these studies, McDuffie (2004) stressed the important role of university-based supervisors. Following two elementary PSTs during their internship over the course of one semester, McDuffie investigated how PSTs applied their PCK in reflecting about their classroom practices, both during planning and actual teaching. Both PSTs had followed a mathematics methods course aiming at the development of Grossman's four components of PCK: goals in teaching and learning, knowledge of students, curricular knowledge, and knowledge of instructional strategies. Data were collected through interviews and meetings with the PSTs, observations of their classroom teaching, and document analyses of reflective journal entries and lesson plans. An analysis of these data sources indicated that both PSTs applied strong PCK in Grossman's four components in planning the lessons, whereas despite this careful planning, limitations in PSTs' PCK were observed in the actual teaching. Since the data revealed PSTs' difficulties in reflecting on their instructional behaviour while in the act of teaching (reflection-in-action), McDuffie advocates for a focus on delayed reflection-on-action to further develop their PCK. According to McDuffie, university supervisors should support PSTs' development of PCK – rather than school based mentors who should mainly support the learning of the daily work of a teacher – by providing "opportunities to discuss in depth the teaching and learning issues for specific lessons to pose various problematic scenarios, both after teaching episodes and well in advance of lessons" (p. 56).

Jenkins and Veal (2002) studied peer coaching during an elementary physical education field-based methods course in the U.S. In a semester that included a methods course plus extensive field experiences in local elementary schools, eight PSTs worked in pairs, alternating the roles of 'coach' and 'teacher'. Data collection included observations, post-lesson conferences, and written reports. Using the concept pedagogical content knowing (Cochran et al., 1993), the authors found that in the role of teacher, developing pedagogical content knowing resulted initially from the integration of two knowledge components, that is, student characteristics and pedagogy. In this role, the focus seemed to be on classroom management, however, coach PSTs were quickly able to move beyond classroom management to identify context and subject matter concerns. The authors concluded, "since the roles of coach and teacher were complementary in the development of teacher knowledge and [pedagogical content knowing], we believe it is vital that PSTs have opportunities to learn about and engage in both roles" (p. 65).

In summary, the previous studies have shown that being enrolled in methods courses in teacher education institutes, in combination with field experiences, positively impact the PCK development of pre-service teachers. Experimental studies have shown that a simultaneous enrolment in fieldwork and methods courses is more effective than a separate enrolment or no enrolment in fieldwork. Not the quantity, but mainly the quality of fieldwork seems to promote PCK development. Scaffolding tools (e.g., CoRe and criteria to analyse lessons) foster this process by providing PSTs with learning opportunities to develop more sophisticated concep-

tions regarding how to teach a particular subject matter. Especially reflecting on their own and peers' teaching activities stimulate a change in PCK. Additionally, school based mentors play a key role in ensuring the quality of field experiences. Particular instructional activities of mentors, such as guided questioning, might encourage PSTs' reflection (in-action and on-action) and, consequently, PCK development. At the same time, university-based supervisors might help PSTs to link theory to practice and stimulate reflection-on-action.

Discussion

While research in PCK is flourishing worldwide, we note with interest that this review is the first of its kind, an international handbook chapter focusing exclusively on PCK in pre-service teacher education that aims to gather together, and examine, PCK research across different subject domains. At the same time, the results of this review suggest that what we know in this field is still rather patchy and that the development of PCK through pre-service teacher education, while considered highly desirable, is nevertheless challenging due to several reasons including: definitions of the construct (i.e., general "fuzziness" about what constitutes PCK); the relatively short time period of pre-service preparation (thus limiting opportunities to develop PCK), and the structure and organisation of teacher education programmes (for example, in the sequencing of institute based courses and fieldwork, and different emphases on different knowledge components and their integration).

Two Main Views of PCK as 'Static' and 'Dynamic'

Looking across the studies in this chapter, there is considerable diversity in the ways that researchers have conceptualised PCK (cf., general fuzziness, above). Yet, within this diversity, two main views can be distinguished, between those researchers who conceptualise PCK as a static form of teacher knowledge, and those who conceptualise PCK as more dynamic in nature. This distinction was already mentioned in the introduction to this chapter, when we discussed critiques of Shulman's original notion of PCK. In their review of PCK in mathematics education, Depaepe et al. (2013) explained the static view as stemming from a mainly cognitive perspective, in which PCK is seen as knowledge needed to teach specific subject matter. The dynamic view is related to a more situated cognitive perspective in which PCK is a form of 'knowledge in action' (Depaepe et al., 2013, p. 15). Depending on their views, researchers have different goals and applied different methods in studies on PCK.

Summary of 'Static' PCK Studies

These types of studies tend to work from the assumption that what constitutes PCK for specific subject matter is independent of the person and his or her context. PCK can thus be assessed or measured via the use of a specific instrument, usually in the form of a standardized test, administered either at a single moment in time, or over multiple moments in the short or longer term, for example, across the length of a methods course (weeks) or a pre-service programme (year/s). Studies belonging to this group are usually seeking to establish the quality and/or extent of pre-service teachers' PCK and are typically conducted as large-scale, experimental, longitudinal, and/or comparative studies. 'Static' PCK studies tend to be more frequently encountered in the domain of mathematics.

Studies adhering to a static conceptualization of PCK have contributed to our understanding of pre-service teachers' PCK, more particularly, how it relates to other aspects of PSTs' professional competence (e.g., their SMK, affective aspects, and their instructional behaviour), and how the design of a methods course and teacher education programme might influence its development. The main research findings can be summarized as follows:

- *SMK and PCK relationship*. These studies have revealed that SMK and PCK are significantly positively correlated (e.g., Buchholtz & Kaiser, 2013; Kaya, 2009; Kleickmann et al., 2013; Norton, 2012). Data show that many PSTs at the entry level of teacher education lack adequate SMK (Lim-Teo et al., 2007; Norton, 2012) and that these limitations in their SMK hinder a high-quality development of PCK (Even, 1993; Turnuklu & Yesildere, 2007). However, although SMK is an important predictor for PCK, simply having SMK does not guarantee PCK development (Turnuklu & Yesildere, 2007).
- *PCK and affective aspects.* A few 'static' PCK studies have investigated the relationship between PSTs' PCK and affective variables. Beswick and Goos (2012) observed no association between self-confidence and PCK, whereas Blömeke et al. (2011) found that higher subject-related and lower extrinsic motives for being a teacher were related to higher PCK. In a longitudinal study, Blömeke et al. (2014) observed a causal relationship between PSTs' PCK and their beliefs about teaching and learning: Whereas higher pre PCK affects more constructivist beliefs towards teaching and learning, pre beliefs did not significantly impact post PCK.
- *PCK and PSTs' instructional behaviour.* Hadfield et al. (1998) were the only researchers to investigate the impact of PCK as measured by a quiz on PSTs' actual teaching behaviour as demonstrated through micro-teaching. They concluded that PCK, contrary to SMK or math anxiety, was a significant predictor for instructional quality.
- *Role of methods courses.* Some studies using a pre and post PCK test investigated the effect of methods courses in teacher education on PSTs' development of PCK. The inclusion of information on students' conceptual difficulties regarding the subject matter (Tirosh, 2000), the integration of SMK (Burton et al.,

2008), and the integration of pedagogical knowledge (Harr et al., 2014) in a methods course resulted in a greater development of PCK (Burton et al., 2008; Tirosh, 2000) and stronger simultaneous application of distinct knowledge types to classroom situations (Harr et al., 2014).

- *Role of teacher education programmes.* By means of cross-sectional and longitudinal studies, the effectiveness of teacher education programmes in view of PSTs' PCK development was investigated. Lim-Teo et al. (2007) observed a significant increase in PSTs' PCK from the beginning to the end of teacher education, except for the component knowledge of students' misconceptions. When comparing different types of teacher education programmes, it was observed that stronger subject matter education not only resulted in greater learning gains in terms of SMK, but also in terms of PCK (Blömeke et al., 2012; Buchholtz & Kaiser, 2013; Kleickmann et al., 2013). Moreover, concurrently enrolling PSTs in theoretical courses (SMK and/or PCK) and fieldwork had a positive effect on PSTs' development of PCK, compared to teacher education programmes in which fieldwork and theoretical courses were separated (Strawhecker, 2005). However, it seems that the quality rather than the quantity of fieldwork, has a positive effect on PCK development (Capraro et al., 2005).

Summary of 'Dynamic' PCK Studies

These types of studies tend to incorporate more complex, in-depth and/or multiple measures to capture the dynamic nature of PCK, and often focus on PCK development as a process of transformation or integration of different knowledge components. Such studies also typically include aspects of pre-service teachers' reasoning and classroom actions. Studies belonging to this group tend to be smaller in scale, and located across a range of domains (although relatively many are in science).

The main research findings from these kinds of studies can be summarised as follows:

- *SMK and PCK relationship*. Consistent with the findings from the 'static' studies, the 'dynamic' studies also confirm the importance of sound SMK as a basis for the development of PCK and that many (particularly elementary) PSTs lack adequate SMK when they begin their teacher education that then minimises or restricts the development of their PCK (cf., Johnstone & Ahtee, 2006; Käpylä, Heikkinen, & Asunta, 2009). These findings are also confirmed by other PCK review studies (Abell, 2008; Kind, 2009). At the same time, the quality of SMK is also important. When SMK is conceptual and linked, rather than discrete, isolated pieces of knowledge, PCK development is enhanced. Moreover, the relationship between SMK and PCK is not a 'one-sided affair'; there is an important interplay between SMK and PCK – as one component is strengthened, this influences and strengthens the other, and so on, in a two-directional relationship (Davis & Petish, 2005; Kinach 2002). Some studies indicated that having sound

SMK is linked to PSTs' ability to more readily identify the likely areas of potential subject matter difficulties of their students as well the ability to select appropriate instructional strategies (Van Driel et al., 2002). Yet, there appear to be differences between elementary and secondary PSTs in this respect.

- *PCK and affective components.* In association with SMK, other factors also have an important shaping influence on pre-service teachers' PCK development, in particular, self-confidence and self-efficacy. Strong SMK seems to be related to higher levels of confidence that, in turn, can lead to willingness to try alternative classroom approaches, such as inquiry activities or formative assessment tasks (Adadan & Oner, 2014). In contrast, negative prior experiences of learning science can influence PSTs' attitude towards teaching science that leads them to feel less confident and/or less willing to use different approaches to teaching, including exploring student thinking, that consequently limits the development of their PCK (Isiksal & Cakiroglu, 2011). Further, orientations towards teaching science seem to influence readiness to transform teaching approaches in ways that support student learning (as transmissive, constructivist; see Usak et al., 2011).

Summary of Dynamic and Static Studies

In summary, we see benefits of researching PCK from both dynamic and static perspectives. Drawing on a static perspective allows researchers to identify and compare PCK across different populations, and in different locations, thus contributing to a big picture perspective of a population of pre-service teachers. Yet, an important limitation of these 'static' studies is that they do not reveal any details of the mechanisms or processes that have led to changes in pre-service teachers' PCK. On the other hand, studies conceptualising PCK as 'dynamic' can reveal more about the contextual characteristics and individual experiences shaping pre-service teachers' PCK development, although they are limited in scope due to resources required. It is rare that researchers draw on both static and dynamic perspectives. Blanco (2004) is one example in which both aspects are simultaneously taken into account (at least on a conceptual level). Blanco asserted that programmes of teacher education should also simultaneously address the static and dynamic components to appropriately develop pre-service teachers' PCK.

Implications for the Design of Teacher Education Programmes

In terms of the broad design of initial teacher education, the studies in this review point to, at least, the importance of formal teacher education in developing PCK. Friedrichsen et al.'s (2009) study highlights that prior teaching experience in

the absence of an organised programme does not lead to the development of PCK, although overall findings from our review appear inconclusive regarding programme length or the academic level at which it is conducted (i.e., Bachelor, Master) in influencing PCK development. Although prior teaching experience may have limited value in developing pre-service teachers' PCK, it is apparent that interactions with learners/fieldwork conducted within the structure of a teacher education programme, can play an important role. One aspect of what makes fieldwork important is that through interactions with specific students, PSTs learn about their students' subject matter ideas, which is important for transforming knowledge for teaching. Another important aspect lies with the role of mentors and supervisors in stimulating and supporting PCK across sites and fieldwork experiences. Participation in methods courses (either combined with SMK courses or not) simultaneously with fieldwork seems to promote pre-service teachers' PCK development, compared with programmes where fieldwork is not related to methods courses or where no fieldwork is involved.

In addition, the use of specific tools or scaffolds seems to be useful in mediating and fostering PCK development. These may be in the form of innovative curriculum materials (e.g., Davis, 2009; Hume 2012) promoting PCK development through highlighting potential areas of student difficulty with the content, or scaffolding tools, such as CoRes (e.g., Loughran et al., 2008) that can be used to help PSTs recognise components of effective practice and problematize content and pedagogy in ways that traditional kinds of curriculum materials do not offer. The use of video to demonstrate and analyse exemplary teaching to promote PCK development also appears to be useful. Many studies report combining scaffolds with guided processes such as observation, discussion, and reflection on teaching as a means of enhancing PCK. Such sense-making activities encourage PSTs to reflect on, analyse and share their developing knowledge and seem to promote PCK development by stimulating and supporting the integration of components, and strengthening coherence amongst components.

Approaches to Researching PCK: Current Limitations and Future Directions

In terms of their research approaches, this review points out several limitations: the number of systematic studies, both quantitative and qualitative (possibly due to the lack of good instruments to capture PCK); a lack of process-information on the development of PCK; and, the fact that few studies build on previous design features or results. Most studies are conducted within a limited number of subject domains (mostly mathematics and science), although PCK research is internationally well represented. Most difficulties in researching PCK relate to the nature and structure of PCK, such as its specificity to the content, or the context in which teaching occurs.

In terms of future directions, we suggest that research should focus not only on short-term measures of pre-service teachers' PCK but also longer term, through for example, the inclusion of retention measures. Also, the role of teacher educators, both institutional and school based, in PCK development deserves more attention in future studies. In addition, the differential impact of interventions on PSTs, depending on differences in cognitive, metacognitive and affective aspects, might provide further insights into the ways that PCK might be developed in initial teacher education. Since many of the studies using quasi-experimental designs are conducted in the domain of mathematics, it would be interesting to conduct such studies in other domains.

With respect to more exploratory research approaches, emerging issues include the following: Is there an 'ideal sequence' in terms of what to focus on in developing PCK in PSTs? Which PCK elements might be more important to emphasize more than others in making a good foundation for PCK development? Which elements lie more on the periphery? Do some particular elements combine well in developing PCK? And, what, if anything, can be generalised across different subject areas?

Returning to Criticisms

In framing our introduction to this chapter, we identified several broad criticisms of PCK research related to its empirical grounding, definitional boundaries and relationship with other knowledge types, as well as assumptions related to its nature, as knowledge *of*, or *for*, teachers. Clearly, the studies in this review add to the weight of empirical evidence both in terms of the importance of PCK in a teacher's knowledge base and particular ways of capturing it – we have made progress in relation to this critique. Definitional issues continue, with this review highlighting a major line of difference between static and dynamic conceptions.

Final Comments

Cochran et al. (1993) identified that "PCK develops over time as a result of experience in many classroom settings with many students" (pp. 264–265). This means that inevitably, any initial teacher education programme will be limited in its capacity to influence the PCK development of beginning teachers due to its (relatively) short duration. Developing PCK must be an ongoing process that begins in teacher education, continues with teaching practice and ongoing learning. Teacher education programmes need to offer appropriate and coherent learning opportunities to assist preservice teachers in their knowledge progression. This review points out aspects that can help build and strengthen PCK development.

We consider that PCK includes both static and dynamic components – that is knowledge *of*, expressed *in* action: "PCK is the knowledge of, reasoning behind, and enactment of the teaching of particular topics in a particular way with particular students for particular reasons for enhanced student outcomes." (Carlson, Stokes, Helmes, Gess-Newsome, & Gardner, 2015, p. 24). Supporting the development of new teachers therefore requires asking different questions than*: how much?*, that is, how much SMK, how many courses and how much fieldwork? Supporting the development of future teachers who can effectively facilitate student learning, requires addressing different kinds of questions about: *what kind and how*? in terms of the nature, quality and interaction of PCK components.

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Chapter 10
Pedagogical Reasoning in Teacher Education

John Loughran, Stephen Keast, and Rebecca Cooper

> … studies illustrate, [that] concerns about learning to teach highlight the importance of pedagogical reasoning and how that influences approaches to teaching … the processes underpinning pedagogical reasoning … [require] particular actions … if teachers [are] to transform their personal comprehension of subject matter into forms that might be comprehensible to pupils. Pedagogical reasoning though is not as simple as just thinking about teaching. (Nilsson, 2009, p. 242)

The foundations on which teaching is constructed hint at ways of thinking and knowing that shape pedagogy and illustrate why simplistic notions of teaching as telling and learning as listening do not suffice (Loughran, 2013). As a consequence, teaching is perhaps best understood as being problematic because it exists in what Schön (1983) described as the swampy lowlands where important but messy problems exist that cannot be simply resolved or technically managed. Teachers work with uncertainty in an 'indeterminate zone of practice' (Schön, 1987) in which professional knowledge develops in response to, and is informed by, the context. In exploring the uncertainty inherent in navigating the swampy lowlands of practice, pedagogical reasoning – the scaffolding that supports the sophisticated business of professional practice – comes into sharp focus. Understanding pedagogical reasoning, how it develops and the manner in which it influences practice is important. Making that clear for others, especially students of teaching, is a challenge that should not be eschewed in teacher education programmes.

> The mark of an expert is that they are sensitised to notice things which novices overlook. They have finer discernment. They make things look easy, because they have a refined sensitivity to professional situations and a rich collection of responses on which to draw. Among other things, experts are aware of their actions … (Mason, 2002, p. 1)

The research literature highlights time and again that, to the untrained observer, teaching looks easy (see for example, Labaree, 2000; Russell, 2007). However, the

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reality is that teaching is complex and dilemma laden, so much so that the underpinnings that support quality practice are not immediately obvious or observable. Because teaching is often narrowly defined in terms of that which is seen to be happening during practice, other important features that have led to, and follow-on from that practice tend to be overlooked; as does the thinking, judgments and decision-making associated with managing teaching 'in action'. These unseen elements of practice offer access to pedagogical reasoning and create possibilities for uncovering the complex reality of teaching for students of teaching through their experiences of learning to teach.

Pedagogical Reasoning

In a previous era of 'educational reform[1]' Shulman (1987) made a compelling case for the need to articulate the knowledge base of teaching. In so doing, he highlighted the importance of better understanding and valuing the *wisdom of practice*. He noted how his efforts followed in the 'footsteps of many eminent scholars, including Dewey (1904), Scheffler (1965), Green (1971), and Fenstermacher (1986) … [as their] discussions of what qualities and understandings, skills and abilities, and what traits and sensibilities render someone a competent teacher have continued to echo in the conference rooms of educators for generations' (p. 4).

The notion of *wisdom of practice* offers a way of conceptualizing more fully that which Polanyi (1966) described as teachers' tacit knowledge which, in part, perhaps helps to explain why teaching and teacher education is so often called into question and therefore so continually 'in need of reform'. Although teachers 'know a great deal that they have never tried to articulate … [it is also the case that] a knowledge base for teaching is not fixed and final' (Shulman, 1987, p. 12). Therefore, Shulman's proposed Model of Pedagogical Reasoning can be seen as a starting point for unpacking the unseen aspects of practice and as a way of beginning to make clear that an expert pedagogue (Berliner, 1986) is a skillful and thoughtful practitioner who is informed by a knowledge base and responsive to the diversity of learning needs, demands and expectations inherent in a given teaching-learning experience. Shulman's model of pedagogical reasoning comprised a cycle of activities that included:

[1] Throughout the literature, educational reform is a term often associated with times in which political imperatives lead to questioning about the 'quality' and/or 'standards' of teaching and teacher education. In such times, it is typical for teaching/teacher education to be viewed as a technical skill to be mastered so that the correct content can be delivered in the best way to maximize outcomes. In recent times, international testing has led to an increased focus on teacher education as the 'cause' of many issues with schooling and student success (or otherwise). Calls for 'reform' thus abound and are conveniently distanced from, or ignorant of, arguments about the shortcomings of education as a system by scholars such as Sarason (1990, 1996).

- Comprehension – of purposes, subject matter structure, ideas within and outside the discipline.
- Transformation – (which involves) preparation, representation, selection, and adaptation to students' characteristics.
- Instruction – the activities associated with doing teaching.
- Evaluation – checking student understanding, assessing learning and evaluating and adjusting one's own performance.
- Reflection – reviewing, reconstructing and analyzing in light of evidence of one's own and students' performance.
- New comprehensions – of purposes, subject matter, students, teaching and self; consolidation of new understandings and learnings from experience. (p. 15)

As Shulman described each of the activities that he considered comprised pedagogical reasoning, he did so in ways that illustrated how teaching was so much more than the transmission of information. Comprehension, as his beginning point, illustrated well his conception of teaching.

> We engage in teaching to achieve educational purposes, to accomplish ends having to do with student literacy, student freedom to use and enjoy, student responsibility to care and care for, to believe and respect, to inquire and discover, to develop understandings, skills, and values needed to function in a free and just society … Although most teaching begins with some sort of text, and the learning of that text can be a worthy end in itself, we should not lose sight of the fact that the text is often a vehicle for achieving other educational purposes. The goals of education transcend the comprehension of particular texts … (pp. 14–15)

Following from comprehension, transformation is about the necessary shift from understanding subject matter from a teacher's perspective to ways in which it might best be understood by, and motivate the learning of, students. He considered transformation as another process (elements of which comprised a repertoire), 'wherein one moves from personal comprehension to preparing for the comprehension of others … [and is] the essence of the act of pedagogical reasoning, of teaching as thinking, and of planning – whether explicitly or implicitly – the performance of teaching' (p. 16). These two aspects of pedagogical reasoning then could be seen as preparing for the act of teaching – a deep consideration of how instruction might be conducted. Teaching, with all the interactions associated with probing, questioning, managing and responding to students' learning needs encapsulates all of the 'processes of pedagogical reasoning and performance that are prospective and enactive' (p. 18). The retrospective elements begin with post-instruction evaluation.

Evaluation includes how instruction might be reconsidered in light of the student learning experience, and crucially, how the construction and performance of the pedagogical experience was carried out, including the value and nature of materials and activities employed in teaching. As Shulman described it, evaluation naturally flows into the next element, that of reflection. Reflection, as an element of pedagogical reasoning, was seen as looking back at 'the teaching and learning that has occurred, [it about how one] reconstructs, reenacts, and/or recaptures the events, the emotions, and the accomplishments [of the pedagogical experience] … central to this process is the review of the teaching in comparison to the ends sought' (p. 19).

Through Shulman's model, evaluation and reflection flow neatly to an important learning about teaching outcome, that of *new comprehension*.

New comprehension is what Shulman viewed as a new beginning because of the expectation that 'through acts of teaching that are "reasoned" and "reasonable" the teacher achieves new comprehension, both of purposes and of the subjects to be taught, and also of the students and the processes of pedagogy themselves [but] … New comprehension does not automatically occur, even after evaluation and reflection. Specific strategies for documentation, analysis, and discussion are needed' (p. 19); and it is through this intention that learning about pedagogy might be purposefully pursued.

An important, and perhaps sometimes overlooked, aspect of Shulman's model is that although it is offered as a cycle of interactive elements, he did make clear that in explicating a model, it was not meant to imply that the processes were always connected in a particular order. He stated that not all elements needed to necessarily occur, they may be 'truncated or elaborated' or given 'short shift'. What was central to his view was that a teacher should be able to, 'demonstrate the capacity to engage in these processes [and that] teacher education should provide students with the understandings and performance abilities they will need to reason their ways through and to enact a complete act of pedagogy' (p. 19). In so doing, pedagogical reasoning offers an overt illustration of the complex and sophisticated nature of practice – something important for students of teaching to see, experience and understand through their experiences of learning about teaching in teacher education.

Shulman's work on pedagogical reasoning arose in an era in which teaching was under increasing political scrutiny. His efforts to highlight the deep thinking associated with teaching was closely tied to attempts to better capture and portray teachers' professional knowledge and to address superficial views of teaching as the delivery of information (transmissive views of teaching as described, for example, by Barnes, 1976). In many ways, it sparked research programmes into teacher thinking that further illustrated how complicated teaching is when moving beyond a technical-rational view of practice.

Teacher Thinking

When teacher thinking (see Craig, Meijer, & Broeckmans, 2013 for a comprehensive overview of the field) began to be taken up in the research literature it was largely because, as an:

> … approach to the study of teaching [there is the assumption that] what teachers do is affected by what they think. This cognitive information processing approach is concerned with teacher judgment, decision-making, and planning. The study of the thinking processes of teachers – how teachers gather, organize, interpret, and evaluate information – is expected to lead to understandings of the uniquely human processes that guide and determine teacher behavior. (Clark & Yinger, 1977, p. 279)

This relationship between teacher thinking and teacher behaviour offers another link to pedagogical reasoning. Through the research on teacher thinking (which was particularly strong around the 1980s–1990s), the desire to know more about 'what teachers do and why they do it' created new opportunities to better understand not only how teachers' expertise developed, but also the type of learning that underpinned that development. Clark and Peterson (1986) were particularly interested in the range of knowledge teachers drew on to do their work. Elbaz (1983), through an extensive case-study of an English teacher, created five categories to describe what she considered to be a teacher's practical knowledge (i.e., knowledge of: self; milieu of teaching; subject matter; instruction; and, curriculum). Through the teacher thinking research, the nature of teachers' decision-making and the desire to understand more about the ways in which teachers' cognition and information processing interacted to shape the ways in which practice was informed and conducted, was increasingly highlighted.

Mitchell and Marland (1989) demonstrated how teaching experience influenced the nature of teacher thinking. They showed that there was a discernible difference between novice and experienced teachers in how they framed approaches to student learning stating that a, '… feature that appears to distinguish the thinking of the experienced teacher from that of the neophyte lies in the ways in which the perceived stimuli are made sense of, and consequently reacted to by the teachers … [experienced teachers have] a number of identifiable "frames" or "schemata" with which … to interpret [the] classroom environment' (p. 125). Further to this, Carlgren and Lindblad (1991) were interested in how teachers' social contexts influenced their thinking and subsequent production of knowledge. Through this lens into teacher thinking, they were concerned to understand how teachers' practical reasoning could enhance knowledge of practice as a way of helping to 'establish a systematic relation between theory and practice so that practice can be controlled by, rather than control, teachers' (p. 515).

Zeichner (1994) related the work of teacher thinking to that of reflective practice in teacher education, and suggested that both were borne of a concern of teacher educators to pursue the development of teachers who were more thoughtful and analytic about their practice. However, he also noted that having such a concern did not mean that the ideas were translated into teacher education practices and that:

> … no matter what we do in our teacher education programmes, and no matter how well we do them, at best, we can only prepare teachers to begin teaching … With [teacher thinking and] the concept of reflective teaching, there is a commitment by teacher educators to helping prospective teachers internalize during their initial training, the disposition and skill to study their teaching and to become better at teaching over time, a commitment to take responsibility for their own professional development. (p. 11)

This recognition of the difference between a conception of teacher thinking/reflective practice (and by extension, pedagogical reasoning) and the reality of implementing deeper understandings of it in teacher education programmes, is something that has been played out in many ways across the generations. In trying to help pre-service teachers begin to learn about the complex nature of teaching, and to grasp what that might mean for their own personal and professional learning,

teacher educators have found it difficult to find productive ways of progressing such work or of incorporating the ideas into the curriculum of teacher education in ways that could be shown to make a difference.

What it means to teach about teaching and the commensurate impact of that on the nature of learning about teaching has meant that creating ways of making pedagogical reasoning clear to prospective teachers has proved demanding. Even if Shulman's model of pedagogical reasoning has traction with teacher educators, conceptualizing positive and productive ways of teaching about preparing for teaching can be fraught. There is little doubt that there are:

> … numerous difficulties in teacher education … [for example] teacher planning is not a rational, linear process … [it is] much more creative, interactive, problem-finding and problem-solving process, where teachers may start with an idea, a child's difficulty … to construct eventually a conception of a classroom activity or series of activities … in teacher education we have a body of painful experience that tells us that planning is something that is difficult to teach to students. (Calderhead, 1993, p. 15)

It seems clear then that in order to develop ways of illustrating the nature of pedagogical reasoning in teacher education, that the concept alone is not sufficient. Making pedagogical reasoning tangible for pre-service teachers is a challenge that has proved difficult to address. Considering pedagogical reasoning as a framework for practice has offered possibilities for finding a way to move forward.

Pedagogical Reasoning as a Framework for Practice

It could well be argued that pedagogical reasoning is evident in the way a teacher works with students to uncover their prior knowledge in relation to the particular topic under consideration. Pedagogical reasoning then shapes understandings of how to work with differences in learners, or as Grimmett and MacKinnon (1992) described it, the learning about teaching through the development of 'craft knowledge' – a term that attracted attention at the time as it was seen by some as a contradiction in terms (see for example, Tom & Valli, 1990), whilst for others craft knowledge was most apt. For example Van Driel, Verloop, and De Vos (1998) noted that:

> we define craft knowledge as integrated knowledge which represents teachers' accumulated wisdom with respect to their teaching practice. As this knowledge guides teachers' actions in practice, it encompasses teachers' knowledge and beliefs with respect to various aspects such as pedagogy, students, subject matter, and the curriculum. Although deeply rooted in teachers' practical work, craft knowledge is, in our view, not opposite theoretical or scientific knowledge. Instead, craft knowledge encompasses knowledge derived from prior education as well as from ongoing schooling activities … craft knowledge is supposedly influenced by factors related to teachers' personal backgrounds and by the context in which they work … research on craft knowledge cannot lead to the establishment of a knowledge base with a prescriptive nature. However, research on craft knowledge should attempt to surpass the idiosyncratic level of individual narratives. As for us, we are looking for common patterns in craft knowledge and in the development of this knowledge to develop "frameworks" … (p. 674)

The notion of a framework as a way of thinking about and shaping practice could well be central to conceptualizing pedagogical reasoning. As Shulman's model suggests, teachers need to think deeply about what it means to learn different things about subject matter and teaching in different contexts. Teachers need to understand how to structure interactions with, and between, students so that meaningful learning is fostered. It has well been illustrated that 'experienced teachers develop repertoires of strategies for dealing with the multifarious signs and signals that demand immediate attention in the course of a normal lesson; teaching is in its very essence interactive' (Barnes, 1992, p. 15).

Teachers' frames are important to understand because their pedagogical experience shapes what and how they see in a given situation. As Barnes (1992) illustrated, teachers picture situations differently from other observers such as curriculum developers, academics and advisors. Thus framing is an important aspect of practice as a 'frame (Minsky, 1975; Schön, 1983; Wyer & Srull, 1984) can be used to consider the ways in which teachers perceive and execute their professional tasks. The term 'frame' is used to refer to the clustered set of standard expectations through which all adults organize, not only their knowledge of the world but their behavior within it' (Barnes, 1992, p. 15).

As has long been abundantly clear in the literature that framing influences how teachers develop their knowledge of practice through such things as reflection, collaboration, reviewing their practice in relation to their students' learning, and testing their new and developing understandings in their own classrooms with their own students (see for example, Borko, 2004; Bullock, 2009; Clandinin, 1995; Hoban, 2000; Mitchell, 2002; Smith, 2011).

> What did teachers themselves consider to be the engines of their growth in knowledge, skill, and pedagogical reasoning … [they] believed that reflecting about their experience in trying ideas in the classroom and observing pupils' learning was the primary source of their development. This involved trial and error and reformulation of activities and instructions from year to year … a keen eye to "unpick the processes of learning and the things that work and don't work" through comments and written assignments. All of the teachers were engaged in this process of observing, diagnosing, reflecting, refining, practicing, and experimenting anew—reasoning pedagogically, in other words; whatever its starting point, it seemed to be a natural and spontaneous cycle. (Cunningham, 2007, p. 612)

Studies designed to explore pedagogical reasoning exist across a range of teaching and learning contexts (see for example, Cunningham, 2007; Elliott, 1996; Risko, Vukelich, & Roskos, 2009; Zangori, Forbes, & Biggers, 2013). Many demonstrate well the link to Shulman's model as a starting point for considering the notion of pedagogical reasoning, and in some cases, authors propose modifications designed to address changes in understandings of teaching and learning that have come about over time. Common to all is the idea that any form of model serves as a framework for thinking about practice as comprising much more than just the act of "doing teaching". Webb (2002) offered a comprehensive explanation of pedagogical reasoning in teaching ICT in secondary schools whilst Starkey (2010, p. 243) advanced Shulman's framework, adapting it to the following form:

Comprehension of subject (content knowledge) including:

- substantive knowledge (concepts and principles) and
- syntactic knowledge (subject methodologies).

Enabling connections – preparation for teaching (pedagogical content knowledge) including:

- selecting appropriate resources and methods to enable students to make connections between prior knowledge and developing subject knowledge;
- transforming existing knowledge into teachable content;
- enabling opportunities for students to create, critique and share knowledge;
- enabling connections between groups and individuals to develop knowledge of the subject;
- adaptation and tailoring (personalising) learning for the students being taught.

Teaching and learning – knowledge of context (including):

- formative and summative evaluations of student learning with feedback to the students (from a variety of sources), and modifications of the teaching process where appropriate.

Reflection – reviewing and critically analysing teaching decisions based on evidence.

New comprehensions – about the subject, students and teaching.

Starkey (2010) explained her adaptation of Shulman's model based on the need to update it to account for learning in the digital age. She was of the view that beginning teachers were moving into the profession with a rich understanding of digital technologies from their personal and academic lives which stood them apart from many experienced teachers on which many studies of pedagogical reasoning had been based in the past. She explained the need to adapt the model (as described in the quote below) implicitly placing an expectation on teacher education to similarly respond through the manner of the teaching and learning experiences to be created for pre-service teachers:

> The two major differences between the original developed by Shulman in 1987 and [the modified model] are the change from transformation to enabling connections and the integration of evaluation and instruction into one teaching and learning aspect. A fundamental change since 1987 is the underpinning idea of students creating knowledge in the digital era through connections in an open and flexible curriculum, rather than the teacher transmitting 'truths' and methodologies of a subject according to a prescribed curriculum. Both models assume that the students will construct an understanding of the content through a variety of pedagogical approaches to build on their existing knowledge, though in the last 20 years assessment or evaluation has been recognized as being integral to the teaching process, hence the combining of these aspects. (Starkey, 2010, p. 242)

Peterson and Treagust (1992, 1995, 1998) explored how pre-service teachers' pedagogical reasoning ability was developed and refined through a problem-based learning approach. Once again, Shulman's model was used as framework for pedagogical reasoning, and in so doing, offered a way of structuring both the way in which a science education unit was organized as well as structuring data collection

and analysis. Peterson and Treagust (1995) organized the teaching of the science education unit in a pre-service teacher education programme based around a guiding framework that prompted their pre-service teacher participants to structure their practice based on questions designed to bring Shulman's elements of pedagogical reasoning to life. The framework used by Peterson and Treagust (1995, p. 294) to frame pedagogical reasoning was organized as follows:

Comprehension

What do you know or understand in the topic you will be investigating?
Draw a concept map for your topic.
Which ideas do you fully understand?
Which ideas don't you understand?
What did you learn through these [practical] activities?

Transformation

How will these ideas be presented and explained to another person?
In what order would you present the ideas to this person? How will the science ideas be explained?

Instruction

How will you teach your topic to another person?

Evaluation

What aspects of the lesson wet well?
What aspects did not go as well as expected?
How well were these ideas understood [by this person]?

Reflection

What changes would you make?

New Comprehension

List all of the ideas you now have and understand on the topic, and re-draw your concept map.

Peterson and Treagust interviewed participants about their experience of being in the unit with a major emphasis around planning for and teaching primary science. They were of the view that their pre-service teachers developed their science content knowledge and their knowledge of curriculum as a consequence of the experience and concluded that, 'the use of a problem-based approach in which the problem was placed in a context enabled the preservice teachers to begin exploring their pedagogical reasoning ability, and to apply their knowledge of science, curriculum and learners to the situation … Through the process, individual preservice teachers focused on issues which were relevant to their own learning needs, and their developing understanding of the teaching process' (Peterson & Treagust, 1995, p. 304). Likewise, Stoiber (1991), who studied the links between reflection,

pedagogical reasoning and problem solving, also noted how pre-service teachers' analysis of pedagogy was enhanced as a consequence of the conceptual relationships between problem solving and the active aspects of reflection.

Buxton, Salinas, Mahotiere, Lee, and Secada (2013) also pursued understandings of pedagogical reasoning through students' problem solving activities. They used the term 'pedagogical reasoning complexity' as a way of examining 'the quality of an individual's reasoning about another person's learning in an engagement task' (p. 32). Their interest in pedagogical reasoning was partly driven by the view that the field was underdeveloped in relation to the research on reasoning skills. Working with a framework derived of studies into science reasoning complexity (drawn from studies by, Hogan, Nastasi, & Pressley, 2000; Resnick, Salmon, & Zeitz, 1993), they 'adapted these reasoning typologies to create a new framework designed to assess teachers' pedagogical reasoning about their students' problem solving in science' (p. 33). The framework they developed was designed to examine individual teachers' reasoning about students' engagement in problem solving tasks and consisted of 'four key dimensions of reasoning: (a) the generativity of assertions, (b) the elaboration of assertions with supporting examples, (c) the justification of assertions with evidence, and (d) the explanation of assertions through links to underlying structures, mechanisms or theories' (p. 33). Their view was that these four key dimensions offered insights into the strength of reasoning and although they could be evaluated individually, viewing them together as a 'connected set of skills' made explicit the complexity of pedagogical reasoning. They anticipated that in seeking to improve teachers' pedagogical reasoning it might provide a useful way of connecting 'content area learning goals with students' cultural and linguistic backgrounds' (p. 40). Not surprisingly, implementing such an approach in teacher education programmes was seen as a very important beginning point in that process.

In a similar vein, and also in science, James and Scharmann (2007) investigated the development of pre-service teachers' pedagogical reasoning through the use of analogies in teaching. Their research illustrated substantial gains in participants' pedagogy and associated confidence in teaching science and intimated that the use of analogies was a catalyst for pedagogical reasoning (drawing again on Shulman's model). As a consequence, pre-service teachers' practice explicitly changed from the transmission of science facts to teaching for conceptual understanding. James and Scharmann were of the view that the use of analogies, 'was strongly correlated with other positive indicants of pedagogical ability (meaningful interactions, number of explanations, number of application level questions, and less use of jargon)' (p. 581). They found that the elements of pedagogical reasoning combined in a process that clearly informed practice – and therefore impacted student learning – and helped pre-service teachers engage with subject matter knowledge in new and different ways. This enhancement of practice through pedagogical reasoning was also highlighted in the research of Youngs and Bird (2010) who used embedded assessments to promote pedagogical reasoning in secondary teaching candidates. Their study illustrated the importance of beginning to make pedagogical reasoning clear and explicit in teacher education, not least because it created opportunities to

genuinely accelerate learning about teaching and facilitate pre-service teachers' pedagogical development; something that is always difficult because:

> Teacher educators face the challenge of mounting powerful pedagogies that reasonably could be expected to help teacher candidates learn much from their time in teacher preparation programmes. Further, they must address this challenge in the face of powerful forces including the strong continuity of the ideas that teaching candidates bring to teacher preparation from their experience as elementary and secondary students. (p. 192)

Drawing on data from more than 180 pre-service teacher candidates Youngs and Bird (2010) concluded that their research illustrated that their participants:

> … were able to begin moving from the survival stage of teaching toward the mastery stage … assessments revealed that many were able to hypothesise about factors that seemed to influence student engagement and performance, to modify their instruction accordingly, and to analyse the implications of their decisions and actions … [they were] moving from being focussed on themselves and student behavior to engaging in pedagogical reasoning and analysing the effects of their instructional decisions on student engagement and learning … a key part of the process of moving to the master stage of teaching is the ability to consider multiple explanations for student motivation or behavior, reason through the possible consequences of different teacher responses, and reflect on and modify instructional practice based on the outcomes of one's decisions … [participants'] performance on the embedded assessments described [showed that] many of the teaching candidates in this study were moving toward the mastery stage of teaching. (p. 192)

Another example of the use of Shulman's pedagogical reasoning model as a 'way in' to explore the development of pre-service teachers' practice is through the work of Nilsson (2009). She used critical incidents (Tripp, 1993) in order to access the questions, issues and concerns that pre-service teachers reflected upon in their practice as they came to understand, and grapple with, the problematic nature of teaching. As noted by Youngs and Bird (above), Lortie's (1975) *Apprenticeship of Observation* has ramifications in terms of that which pre-service teachers anticipate might comprise learning about teaching; and that is often focused on doing, more so than thinking and reasoning, as Nilsson noted:

> Student teachers are often interested in knowledge that is practical and can be applied in the classroom … they do not always manage to make explicit connections between teachers' actions and the pedagogical theories that inform practice. For student teachers, the theoretical knowledge (subject matter as well as pedagogy) might not always be experienced as immediately useful in addressing their problems in practice. However, through teaching experiences that are reasoned and reflected … [they] might recognize their knowledge needs and, thus, bridge theory and practice in a meaningful way. (Nilsson, 2009, pp. 239–240)

In Nilsson's study, pedagogical reasoning was used as a methodological framework, designed to capture and analyse her pre-service primary science teachers' reflections around critical incidents. As illustrated in the framework (Fig. 10.1), she had three major data collection points (A, B & C) that created ways of using the framework to help structure an approach to thematic analysis; from which three major themes emerged.

Nilsson's first theme was associated with critical incidents that influenced pedagogical reasoning in learning to teach and included two major sub-groups: critical

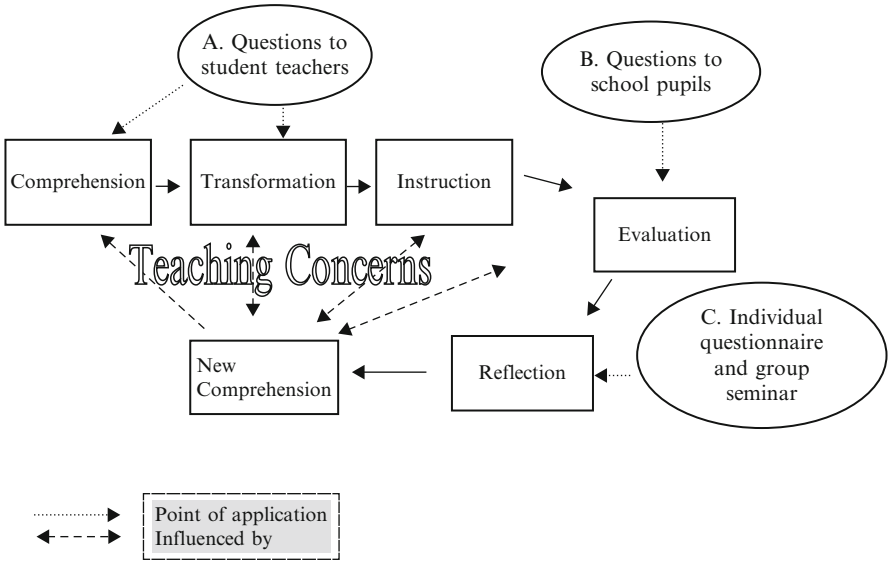

Fig. 10.1 The process of pedagogical reasoning and action (Nilsson, 2009, p. 244)

incidents connected to classroom management; and, critical incidents connected to pupils' attitudes and learning. Her second major theme was related to teaching concerns of which there were three sub-groups: adjusting instruction to pupils' learning needs and prior conceptions; stimulating pupils' interest in learning science; and, developing learning about teaching primary science. Her third major theme was associated with teaching needs that helped to address participants' teaching concerns of which there were four sub-groups, the need for: good subject matter knowledge; a repertoire of experiments and activities; knowledge of students' prior knowledge and learning; and, knowing how to be self-reflective.

Importantly, and echoing the work of many others in teacher education (Berry, 2007; Brandenburg, 2008; Bullock, 2009; Darling-Hammond, 2013; Korthagen, Kessels, Koster, Langerwarf, & Wubbels, 2001; Loughran, 2006; Ritter, 2007; Russell & Loughran, 2007; Zeichner, 2005), Nilsson came to see that, in exploring pre-service teachers' experiences of learning to teach, that a crucial implication of so doing was the need for a sharper focus on a pedagogy of teacher education. She suggested the need for teacher educators to be much more conscious of not only what was happening in teacher education programmatically, but also to link the learning about teaching experiences of pre-service teachers explicitly to the way in which teacher education itself is structured and conducted. She stated that:

> … by helping student teachers focus on their critical incidents, by empowering student teachers to trust in the authority of their own experience (Munby & Russell, 1994) and by linking those experiences with concrete aspects of their own pedagogical reasoning, student teachers can direct their own professional development. In that sense, it is crucial that teacher educators, in developing their pedagogy of teacher education, seek to find ways of

> incorporating such practice into their teaching about teaching in ways that are based on student teachers' own recent and real experiences of teaching. (p. 255)

As the literature demonstrates, Shulman's model of pedagogical reasoning has been used in different ways in teacher education over the years. However, the focus has been more on researching pedagogical reasoning than necessarily explicating ways of teaching about it; or making its development an explicit aspect of learning about teaching. Therefore to understand how pedagogical reasoning has been included in teaching in teacher education programmes often requires looking beyond the label of pedagogical reasoning to other aspects of teaching and learning in order to gain insights into how the thinking that underpins expert practice is included in teaching and learning about teaching. Not surprisingly, it is in the efforts of those concerned with embedding reflective practice in teacher preparation and/or who have attempted to document and portray their pedagogy of teacher education that insights into the teaching of pedagogical reasoning most commonly tend to be found.

Teaching About Pedagogical Reasoning in Teacher Education

> To me as a teacher educator the appeal of Shulman's model resides in its dynamic nature and in its focus on transformation of subject matter as an aspect of pedagogical reasoning. (Wilkes, 1994, p. 4)

Reflection

It is not difficult to see how research into reflection intersects with the thinking around the elements of pedagogical reasoning proposed in Shulman's model (above). As even a cursory glimpse of the literature shows, Dewey's (1933) notion of reflection has resonated down through the ages, perhaps because it sits so comfortably with the idea that learning through experience matters in shaping knowledge of practice. Skillful teachers that are able to unpack and articulate the thinking underpinning their actions could well be described as reflective practitioners. However, reflection, in a manner similar to that of pedagogical reasoning, is more than simply thinking about teaching. It is about deeper understandings of the 'why' of practice; being able to recognize and respond to the problematic nature of teaching and being able to do so in the very crucible of teaching and learning that is the action present of the classroom.

As alluded to earlier in this chapter, understanding teachers as professionals goes to the heart of Schön's (1983, 1987, 1991) differentiation between the high ground of academia and the swampy lowlands of practice. In so doing, Schön created a new wave of interest in reflection and reflective practice, that led to a revisiting of

Dewey's (1904, 1933) seminal work in the field and, for a time, dramatically shaped the expectations for, and practices of, teacher education.

> Fifty years after Dewey made his historic distinction between "routine action" (action that takes the definition of social reality for granted and the goals towards which action is directed as given, while allowing for variation in the means by which goals might be achieved) and "reflective action" ("active, persistent and careful consideration of any belief or supposed form of knowledge in light of the grounds that support it and the further consequences to which it leads" [Dewey, 1933, p. 9]), teacher education seems to have become caught up in a seemingly inexplicable wave of enthusiasm for reflective approaches. (Smyth, 1992, p. 268)

Smyth was skeptical of the allure of reflection because of the ways in which he perceived it was being adopted in teaching and teacher education. He was of the view that reflection was being taken up in technical ways in response to the educational conservatism of the day: 'My view is that reflective teaching is entering a phase, like many other educational ideas and reforms, where it has become co-opted and institutionalized. Like most educational reforms before it, it is being "cast in the mold of the technological mindset and thus support[s] standard practice rather than challenge[s] it" [(Gibboney, 1990, p. 40)]' (Smyth, 1992, p. 275). However, there were numerous others who documented their approaches to incorporating reflection into teaching, and more importantly, in their teaching of teaching, that transcended the notion of a 'bandwagon of reform' or a technical adaptation to satisfy calls for change (see for example, Baird, 1990; Clarke, 1995; Clift, Houston, & Pugach, 1990; Korthagen & Russell, 1995; LaBoskey, 1991; Loughran, 1996; MacKinnon, 1989; Richert, 1992; Russell & Munby, 1991; Zeichner, 1995).

Many teacher educators saw reflection as a valuable way of making pedagogical decision-making and 'teacher thinking' more explicit for pre-service teachers i.e., as a way of uncovering the tacit knowledge of practice and to make the problematic nature of teaching accessible.

> … reflection continually emerges as a suggested way of helping practitioners better understand what they know and do as they develop their knowledge of practice through reconsidering what they learn in practice … [it] places an emphasis on learning through questioning and investigation to lead to a development of understanding … [Reflection] is important in sustaining one's professional health and competence and … the ability to exercise professional judgment is in fact informed through reflection on practice … (Loughran, 2002, p. 34)

The relationship between reflection and pedagogical reasoning is not difficult to see. From Dewey's (1933) three attitudes that 'predispose an individual to reflect' through to his five phases of reflection, the synergies with pedagogical reasoning are strong and clear. Through a focus on teaching, Dewey's explication of reflection illustrated well how an artful teacher might create and respond to conditions that arouse intellectual responses and also actively cultivate 'the attitudes that are favourable to the use of the best methods of inquiry and testing' (p. 29); in short, to explore not just the what, but also the how and why of professional practice.

Dewey's attitudes of open-mindedness (the ability to consider problems in different ways), whole-heartedness (experiencing the flood of ideas and thoughts about

an issue or topic) and responsibility (considering the consequences of actions and knowing why something is worth doing), offer a window into the deep thinking associated with deciding what to do, how and why as a teacher. More so though, in conducting pedagogical action, Dewey's reflective phases: (1) suggestions – ideas that come to the fore when confronted by a problem; (2) problem/intellectualization – seeing the puzzle as a whole not as discrete entities; (3) hypothesis – considering a suggestion in terms of what might be done and/or how it could be used; (4) reasoning – linking ideas, experiences and information to extend thinking about a situation; and, (5) testing – putting an hypothesis to the test (in reality or through a 'thought-experiment'), shows how closely aligned the notion of pedagogical reasoning is to the foundations of that which is reflective practice.

In making reflection explicit and integral to teaching *and* learning about teaching, even without the label of pedagogical reasoning, it is obvious that Dewey's views of that which comprise reflection could help a novice teacher see beyond the technical and into the problematic. Through reflection, it becomes possible to see that the uncertainty of the swampy lowlands of practice require much more than the application of a teaching script or routine to appropriately navigate.

Schön helped to rekindle interest in reflection when he introduced the ideas of reflection-on, and reflection-in, practice. Importantly, at the centre of his work was a concentration on the 'problem'. Dewey (1933) had previously described his five phases as 'not simply a sequence of ideas, but a *consequence* – a consecutive ordering in such a way that each determines the next as its proper outcome … successive portions of reflective thought flow out of one another and support one another' (p. 4). When Schön encapsulated the essence of these ideas through the practices inherent in 'reflection-on-action' and then pushed thinking further through his ideas of 'reflection-in-action', a centre-piece of his argument was about coming to see and understand 'the problem' in new and different ways. Schön introduced framing and reframing as integral to viewing a problem and in so doing, placed added emphasis on what was happening through reflection and again, can be seen as strengthening the synergies between reflection and pedagogical reasoning.

> As [teachers/teacher educators] frame the problem of the situation, they determine the features to which they will attend, the order they will attempt to impose on the situation, the directions in which they will try to change it. In this process, they identify both the ends to be sought and the means to be employed. (Schön, 1983, p. 165)

Schön illustrated how, through framing, practitioners create alternative ways of looking into a situation in order to develop new ways of perceiving 'the problem', and therefore encouraging new ways of responding to that situation. Seeing the problem is something that has been examined in many ways. Dewey (1933) outlined the notion of problem in terms of that which captures a teacher's attention in a situation; the puzzling, curious or engaging instance that encourages one to 'look again' at the situation. It may well be that allowing problems to surface in practice (Chak, 2006) is an overt display of those attitudes that predispose reflective thought (as per Dewey, 1933) and which leads a teacher to apprehend issues in practice and

frame them in a positive manner when reconsidering pedagogical experiences and situations.

Mason (2002) similarly drew attention to the centrality of problem recognition through his concept of 'noticing':

> Every act of teaching depends on noticing: noticing what children are doing, how they respond, evaluating what is being said or done against expectations and criteria, and considering what might be said or done next. It is almost too obvious to say that what you do not notice, you cannot act upon; you cannot choose to act if you do not notice an opportunity. … Noticing requires sensitivity. I cannot notice that some students are bored if my attention is focused on my own nervousness or insecurity. I need to become aware of the ebb and flow of energy in the classroom (and each class is different in this respect.) (pp. 7–8)

Mason highlighted the fact that 'noticing' is important if practice is to be reconsidered and alternative actions taken. Noticing is problem recognition framed in such a way as triggering the need to respond; lack of noticing suggests that changes in practice are less likely – and may well be a limiting factor in conceptualizing teaching as being problematic. Therefore, noticing not only begins to place the problem front and centre in a pedagogical situation, it also invites reconsideration in terms of alternative perspectives and developing informed judgments about what has been happening, what might happen from a different perspective and how learning might change as a consequence of adjustments to a teaching approach. Through problem recognition, reflection may be initiated, but equally, problem recognition has obvious links to other aspects of practice. Therefore, yet again, the relationship with pedagogical reasoning stands out; and markedly so when considered in relation to the 'time of reflection'.

Schön's differentiation between reflection-on-practice and reflection-in-practice highlighted how practitioners' knowledge and skills develop through the ways in which they reflect at different times. His description of reflection-on-practice resonated with Dewey's explication as a deliberate, thoughtful and purposeful approach to reasoning. However, reflection-in-action (as the term suggests, the reflection that occurs during teaching) was about the sub-conscious, highly refined and somewhat tacit knowledge that is apparent when confronted by a problem in the action present. Reflection-in-action could then also be seen as a way of understanding the manner in which knowledge of practice is refined and, as a consequence, how pedagogical reasoning is initiated and enacted. Reflection-in-action, as a fast moving, sub-conscious, *consequence* of events also illustrates why the highly refined knowledge of practice of the expert pedagogue is so often tacit in nature and difficult to articulate, capture and portray. It also illustrates why preservice teachers may not be aware of experienced teachers' reflection-in-action as it is not obvious when observing a teacher teaching, nor a common aspect of teacher talk when discussing their practice. The tacit nature of reflection then can make it difficult to access and understand; an issue pertinent to teacher education.

It could be argued that Brookfield (1995) attempted to make the tacit more explicit through his notion of the critically reflective practitioner. For Brookfield, being critically reflective meant becoming much more aware of the different vantage points for looking into practice (an idea that resonates with Schön's framing and

reframing). His ideas for critical reflection centred on four aspects/lenses of seeing into practice:

1. autobiographical: a self-lens through which teachers are able to focus on their practice in order to begin to see possibilities for adjustment and/or strengthening;
2. students' eyes: a lens through which students' views of teaching and learning are able to be captured and responded to;
3. colleagues' experiences: a peer lens through which unnoticed aspects of practice might be highlighted as well as opportunities for innovative solutions to teaching situations to be trialed and tested with support; and,
4. theoretical literature: a theory lens that can provide a language for teaching and learning and offer new 'ways in' to understanding teaching.

In defining these four major perspectives, Brookfield suggested that, by working through these processes and by examining the assumptions underpinning one's individual approaches to practice, that the conditions necessary to becoming an expert teacher were more likely to be created. Thus, if a practitioner recognized and responded to such conditions then it was more probable that it would lead to powerful learning outcomes because one would also learn to 'teach more responsively' (Brookfield, 1995, p. 35). Again, Brookfield's explanations of critical reflective practice illustrate strong links with pedagogical reasoning and how synergistic the two concepts are – conceptually and practically.

Through critical reflective practice, Brookfield was drawing attention to the need for teachers to recognize the assumptions that underpin their practice. Clearly, in so doing, a great deal of understanding about what is being done, how and why is able to be brought to the surface, mulled over, worked through and developed. It therefore seems fair to assert that such a process must surely lead a practitioner to becoming more informed about, and responsive to the nature of pedagogy.

In teacher education, this focus on reflective practice has led to many qualifiers being placed in front of the term in order to more precisely define what reflection might mean, how it might be enacted and what it might look like. The notion of effective reflective practice (Loughran, 2002) emerged as an attempt to bring to the surface the learning through reflection that might occur in the process of learning to teach and to make that learning explicit and articulable. As noted earlier by Smyth (1992), the 'take-up' of reflection in teacher education could be seen as part of a 'wave of enthusiasm for reflective approaches', or worse, it could simply be seen as more theory from the 'high ground of academia'.

The need to help pre-service teachers understand reflection as something more than rhetoric matters in order to focus serious attention on the thinking that underpins pedagogical decision-making. If that is the case then pre-service teachers might begin to better identify the foundations crucial to underpinning their developing knowledge of practice. Thus effective reflective practice was as much about ensuring that pre-service teachers did not allow 'rationalization to masquerade as reflection' (Loughran, 2002, p. 35) and that, through 'problem recognition', the thoughts, actions and processes that could effectively shape subsequent practice in meaning-

ful ways might be triggered, recognized and grasped. As the quote below (from a pre-service teacher) demonstrates, there is great value in questioning taken-for-granted assumptions about teaching and the process can be a trigger for reflection that leads to new learning. In the quotation (below), by reframing the situation the pre-service teacher came to realize enhanced pedagogical outcomes for her students and a deeper knowledge of her own practice. She clearly experienced that which could be regarded as effective reflective practice; again, the link to pedagogical reasoning is inescapable.

> I assumed as a consequence of my own lack of enthusiasm that the students had a negative relationship with the subject. I sought to identify the factors contributing to their experience and experiment with alternative ways of teaching based on the feedback I received. … It was in their [students'] responses that I realized that my perceptions were not entirely accurate … I was surprised to find that the students generally felt positive towards the subject, but identified key elements that took away from their learning experience … This made me feel confident that choosing to pursue ways of responding to some of these "highlighted issues" in my teaching practice could make the environment more stimulating for my students. (Loughran, 2002, pp. 35–36)

In seeking to develop reflective practitioners through the experiences of teacher education, approaches to, and practices of, teacher preparation have been brought into sharper focus. That has inevitably meant that the ways in which teacher educators teach about teaching have been called into question. Like many before, and those that have followed, Segall (2002) saw a need to focus serious attention on the practices of teacher education. He called for teacher educators to purposefully model the teaching that they expected their pre-service teachers to enact in their own practice.

Modelling Teaching

> … in order to improve the impact of teacher education, and especially the potential of teacher education to develop new visions of learning and the related practices in their graduates, one aspect that we have to look at carefully is the role of the teacher educator and educational practices within teacher education itself. (Lunenberg, Korthagen, & Swennen, 2007, p. 588)

As the literature clearly demonstrates calls for teacher educators to look at their own practice have been enduring. For example, Northfield and Gunstone (1997) outlined a number of assumptions that underpinned what they described as their principles for teacher education and explained that, 'Teacher education programs should model the teaching and learning approaches being advocated and promote the vision of the profession for which they are preparing teachers' (p. 49). Russell (1999) went further stating more boldly that, 'university-based teacher educators particularly, have no right to recommend to teachers any teaching practices that they have not themselves used successfully at the university' (p. 220).

This focus on the teaching of teacher educators has had ramifications. It has led to calls for more modelling of practice in teacher education programmes, for teacher educators to have recent and relevant classroom experience, and in more recent times, for teacher education itself to be located in schools rather than universities. On the one hand, such calls have been driven by concerns for pre-service teachers to 'see into teaching' in new ways. On the other hand, such calls can also be seen as a reaction to the perceived need to 'train teachers to be classroom ready'. The point of difference may well be linked to whether or not teaching is viewed as being problematic and whether or not 'being problematic' is a conceptualization that drives teaching about teaching. If modelling teaching is perceived to be about a technical-rational approach to teaching and is regarded simply as working to a training regime, then modelling will serve a very different purpose from that of modelling the complexity of practice.

Modelling

> Research in teacher education has found teachers' beliefs drive classroom actions (Richardson, 1996). These conceptions often resist change; over time, for example, teachers continue to emphasize the personal facets of teaching and downplay the academic side of teaching (Wideen, Mayer-Smith, & Moon, 1998). Findings such as these have made it clear that it is not enough for teacher education simply to inform students of theoretical and pedagogical information … Prospective teachers must be convinced that theoretically and pedagogically sound information is more accurate and useful than their own preinstructional conceptions. Without such intervention, prospective teachers may retain their initial beliefs rather than transforming them into sound professional teaching knowledge … (Goeke, 2008, p. 21)

Teacher educators have long been challenged to 'walk the talk' in teaching about teaching (see for example, Aubusson & Schuck, 2006; Crowe & Berry, 2007; Guilfoyle, Hamilton, Pinnegar, & Placier, 1995; Kosnick, 2007; Myers, 2002). The need to model the teaching that they hope their pre-service teachers might experiment with and employ in their own practice seems to be a statement of the obvious. When done well, modelling teaching with pre-service teachers appears to assist them to see the pedagogical intentions underpinning teaching and to see the value in developing deeper understandings of practice. However, how that might happen in a teacher education programme is not as straight forward as one might imagine.

Myers (2002) made clear that a 'teaching as telling, showing, guided practice approach' (p. 131) does not suffice as an approach to modelling teaching. When modelling is interpreted as a way for pre-service teachers to copy or mimic the practice of their teacher educators, the development of understanding of practice tends to be quite limited. Modelling with the aim of helping pre-service teachers recognize, access and develop pedagogical reasoning requires much more than guided practice. Opportunities to see and experience the nature of pedagogical reasoning through the shared experiences of teaching and learning are essential.

Berry (2001, 2004) shared her thinking about her teaching through an online diary which she made public to her pre-service teachers. In so doing, she laid bare her reactions to her teaching and her students' learning and created genuine opportunities for her pre-service teachers to understand the pedagogical reasoning that underpinned her practice; practice that they experienced themselves as learners in her class. Berry worked in such a way as to illustrate to her pre-service teachers that 'there is more to teaching than meets the eye … [because of her desire to help] pre-service teachers recognize the complex and uncertain nature of teaching' (Berry, 2001, p. 1).

Berry's use of an online journal worked at a number of levels. It was able to demonstrate the pedagogical reasoning underpinning how she thought about and prepared for teaching, as well as offering a strong mechanism for reflection following a class. However, at another level, it made it possible for her to reconsider (and articulate) some of the crucial 'in-action' reasoning that influenced what she did (or did not do) and how she interpreted, responded to and made decisions about her teaching during teaching. She explained it as:

> My previous experiences of working with student teachers … led me to understand that learning about teaching is enhanced through embedding learning in experience and that modelling particular aspects of teaching has a much greater impact on student teachers' thinking about practice than what I tell them. Therefore, in my own teaching I have tried to model an attitude and approach to exploring the effect of my teaching on my students' learning, so my student teachers may consider a similar approach for their learning. However, I have found that this is not an easy goal to 'live' as a teacher educator. I am not always conscious of my actions, in action, nor am I always readily able to articulate my pedagogical reasoning 'on the spot'. Hence my decision to keep a public journal which gave me extra thinking time to question and examine my thoughts and feelings and decide what might be most useful to bring to my students' attention. I hoped that by publishing my thinking I might also encourage students to re-think their experiences of a session, and hopefully engage in a conversation (electronic or otherwise) about practice with me and/or their peers. (Berry, 2004, p. 18)

Berry's modelling of her teaching, and as a consequence making her pedagogical reasoning accessible to her pre-service teachers through her online journal, led to learning outcomes that might not have been so likely had she not made the journal public. She recognized that she learnt to better articulate her own pedagogical reasoning and that, in itself, enhanced her teaching. However, beyond her own practice, the dialogue, feedback and sharing that occurred with her pre-service teachers through (and as a result of) the journal, also opened her eyes to new ways of understanding their learning experiences in her classes, and as a consequence, encouraged her to see new ways of framing different aspects of teaching *and* learning about teaching. But just making pedagogical reasoning explicit for her pre-service teachers was not a goal unto itself because, 'Making a choice about what to make explicit both in my talking about practice during classes and in my journal entries was a constant dilemma for me. I had to choose carefully what I held up for public examination that would be useful and accessible for these student teachers' (Berry, 2001, p. 5).

Berry (above) hints at an issue inherent in 'think aloud' approaches to explicating pedagogical reasoning in the teaching of teaching. Just as modelling can be misinterpreted as a script to be copied (Loughran & Berry, 2005), so too teacher educators making their pedagogical reasoning explicit can inadvertently create an impression amongst their pre-service teachers that they are justifying or rationalizing their actions in action. It is important that in trying to open up for scrutiny the pedagogical reasoning underpinning a teacher educator's practice that it is done in ways that assist pre-service teachers learn about pedagogy (through the dilemmas, issues and concerns that make teaching problematic, see for example, Loughran, 1995), not be confused by, or lose confidence in their teacher educator.

> Choosing an appropriate time to explain that I would be "thinking out loud" and the purpose for doing so was important. I had to have a sense of trust in the class and they with me otherwise my behaviour could appear to be peculiar rather than purposeful. There was a danger that talking aloud about what I was or was not doing, and why, could be interpreted as lacking appropriate direction. (Loughran, 1996, p. 39)

Moreso, the purpose of a 'talk aloud' approach to the teaching and learning about teaching needs to be clear not only from a teacher educator's perspective (in terms of doing it), but the purpose needs to be well understood (and seen as useful) from a pre-service teacher's perspective. In her teaching about teaching, Berry described the search for the alignment of these perspectives as tensions (Berry, 2007), which powerfully portrayed the challenges confronted by teacher educators when conceptualizing their teaching of teaching in relation to their students' learning about teaching. Equally, her collaborative efforts with Crowe to help their pre-service teachers begin to 'think like a teacher' (Crowe & Berry, 2007), highlighted the difficulties of making pedagogical reasoning clear, meaningful and useful, but also how professionally rewarding it could be when purpose and practice align and some form of harmony in teaching and learning about teaching is achieved. Bullock's (2009, 2011) work in this field is equally impressive. He illustrated what it means to learn about being a teacher educator and how, through researching his own practice, he was able to move beyond superficial views of modelling teaching in order to make unpacking pedagogical reasoning central to a demonstration of expertise in teaching – and as a consequence, the teaching of teaching.

In many ways, all of these efforts to make pedagogical reasoning clear and explicit for pre-service teachers can be seen as a belated response to Clark's (1988) earlier challenge to teacher educators when he asked whether or not:

> … teachers of teachers have the courage to think aloud as they themselves wrestle with troubling dilemmas such as striking a balance between depth and breadth of content studied, distribution of time and attention among individual students, making inferences about what students know and what grades they should be assigned, or with how to repair errors, teaching disasters, and the human mistakes that even experienced teacher educators make from time to time? (p. 10)

The increasing focus in the literature on a pedagogy of teacher education might now be considered as a real outcome of much of this earlier work through which the desire to make pedagogical reasoning overt to pre-service teachers has now become

a meaningful part of some teacher educators' practice. The following section takes up the explication of pedagogical reasoning through an extended case of the efforts of two teacher educators.

Making Pedagogical Reasoning Explicit in Teacher Education

Making pedagogical reasoning in the teaching of teaching explicit is a powerful way of helping students of teaching to see into the problematic nature of practice. Just as reflection in teacher education led to a variety of ways in which teacher educators began to share their learning with their students of teaching through journaling (e.g., Nicol, 1997), so too, in some fields, the use of a 'think aloud' or 'talk aloud' approach has been used to access students' thinking processes as seen in: the learning of chemistry (Bowen, 1994); prior experiences of pedagogy (Powell, 1992); the teaching and learning of reading (Bereiter & Bird, 1985; Collins, Seely Brown, & Newman, 1989); and, teaching and learning of languages (Chamot & Kupper, 1989).

In a similar vein, think aloud has also been used by some teacher educators to share their thoughts and actions during their teaching of teaching as a way of articulating for their students of teaching their pedagogical reasoning in-action (see for example, Berry, 2007; Loughran, 1996). As the outcomes of such work demonstrate, when students of teaching are able to see and hear their teacher educator's pedagogical reasoning during their shared teaching and learning experiences, the complex nature of teaching comes to the fore and the notion of a script or recipe as a way of learning about teaching is challenged. Working to make pedagogical reasoning in the teaching of teaching clear and explicit is neither simple, nor straightforward. It involves a commitment to opening up for scrutiny one's own practice and comes with a heightened sense of vulnerability and a questioning of that which might be perceived as comprising expertise. The following case study is designed to illustrate how two teacher educators, working as a team, sought to pursue the explication of their pedagogical reasoning for their students of teaching.

Case-Study

The following case study is drawn from the work of Stephen Keast and Rebecca Cooper, two teacher educators who worked together over 8 years in what started out as a study into the articulation of the professional wisdom of practice and transformed into a project about sharing their pedagogical reasoning with their preservice teachers. It began when Cooper started teaching for the first time in a university teacher education programme with Keast. At that time she was a part-time sessional science method tutor while still teaching in a secondary school. Of

interest to Keast at that time was exploring the learning derived of sharing his pedagogical knowledge with his pre-service teachers.

Teaching together had led Keast and Cooper to have a strong relationship of trust and respect from which the opportunity to research and improve their practice through critical reflection of their teaching of teaching together could be examined. In so doing, Keast soon began to 'unpack' his professional wisdom which was bound up in tacit knowledge he carried as a teacher educator. He began to make that knowledge explicit for himself and to also share it with Cooper as they developed their pedagogy of teacher education. Through team teaching they learnt to question and critique the reasoning underpinning their teaching together and were encouraged to do so as a consequence of what they learnt together as teachers and from their students as learners of teaching:

> *The students are stuck viewing things as students and can't seem to view things from a teacher's point of view. They are trying to make the transition from student to teacher but seem to be finding it difficult. They all have different ideas about what is important for them to know and for the students to know. I know we all have different approaches to teaching but I think it would be good to be at least on the same page about this.*
>
> *I couldn't believe that it took an hour to get through the pancakes homework! I'm out of practice breaking things down in such detail. Stephen was trying to help the students to talk their way to understanding but unfortunately they were not really joining him on the journey. The students did not want to volunteer their ideas and were finding it difficult to support each other.[Cooper]* (Keast & Cooper, 2010, p. 3)

It is often the case that good teachers are offered opportunities to be teacher educators with little or no induction, almost as if there is a misguided expectation that teacher education is no different to teaching. That view is of course in stark contrast to the argument put by Korthagen, Loughran, and Lunenberg (2005) who argued that teaching in teacher education is not the same as teaching in school. Rosean and Wilson (1995) drew attention to the fact that teachers who became teacher educators often struggled to maintain a teacher education focus; they did not problematise their teaching about teaching in the same way as they problematized their classroom practice (Rosaen & Wilson, 1995). Cooper, on the other hand, was introduced to teaching in teacher education in a supportive and reflective manner and was not confronted by the 'sink or swim' approach that often happens to beginning teacher educators who are left to work alone (Korthagen et al., 2005).

> *Rebecca and Stephen constantly discussed their practice both during and after class and never did they view their roles as novice and expert in an effort to model collaborative roles for the pre-service teachers. They received and acted on feedback from each other and collaborated on their beliefs about teacher education. Rebecca viewed her transition as a process; a continuation of her teaching journey, while Stephen viewed it as an opportunity to articulate his knowledge, improve his practice and continue his teaching journey.* (Cooper & Keast, 2009, p. 46)

As Keast and Cooper planned their teaching together and shared their pedagogical reasoning it supported Cooper in her learning through reflection about teaching. Having Keast share his practice and his reasons for choosing what he did helped to smooth the path for Cooper's transition from school teacher to teacher educator. By

researching and reporting on their practice, they made explicit that which was tacit in their practice and by deliberately researching their experiences, purposefully began to develop the knowledge underpinning their pedagogy of teacher education.

In the first years of working together, they shared their planning and opened up their pedagogical reasoning to the scrutiny of the other (Rebecca Cooper & Keast, 2009). They developed a routine through which Keast would teach the morning class while Cooper observed. Then, following the class, they would debrief and record the conversation for later analysis. Cooper then taught the afternoon class and Keast observed. In addition to recording their debrief of the second class they would also build on both events to develop the teaching for the following week.

Initially the focus of their research and discussion was twofold, the sharing of their developing pedagogy of teacher education and sharing their pedagogical thinking of practice with their pre-service teachers. Throughout their work together they wanted to share with their pre-service teachers the thinking and to make explicit the pedagogical reasoning; something that is often not shared with pre-service teachers. In so doing, they were opening up for scrutiny that which may be described as *secret teacher business*.

Of course, the transition from teacher to teacher educator was not easy, Cooper grappled with the change in role and the challenges of working with Keast in a way that was not part of the normal 'script' of teaching and learning about teaching:

> *The focus when teaching secondary students is on helping students to understand the subject matter in such a way that students can apply this knowledge effectively, to complete set tasks. In teaching pre-service teachers, the focus is more on helping pre-service teachers understand the context and different ways that the teacher manages this context so that school students can maximise their learning. However, for many pre-service teachers, I noted that their thinking was directed towards the subject matter and it was difficult to move them to thinking less about the content and thinking more about why the content is being presented in the first place and the impact of how that content is presented and assessed.* (Cooper & Keast, 2008, pp. 78–79)

Importantly, Cooper had a clear vision of her role as a teacher educator, but that did not mean it could always be achieved as planned.

> *I found it difficult to engage the students who were not expecting to have to discuss their own teaching but were expecting just to sit back and be told how to teach. I used a variety of approaches to help these students engage with the class and explore their thoughts but found it challenging and at times frustrating.* (Cooper & Keast, 2008, p. 78)

Not only did they interrogate their practice with each other, but they quickly established a routine to do the same in class in front of their students. In so doing, they were able to share their pedagogical reasoning in the moment. They answered questions such as: "Why are you teaching this way?" "Why is that example/resource important?" Being questioned in that way not only helped each of them articulate their pedagogical reasoning for themselves but unlooked the world of their secret teacher business for their pre-service teachers.

> *It was beneficial therefore, to have Stephen in the classroom to question me during my teaching to help tease out my intentions within the class situation. A shared teaching*

> *arrangement enabled this to happen, as being in each other's classes allowed each to support the other to take our students further than we would have been able to on our own.* (Cooper & Keast, 2008, p. 79)

As they developed their knowledge and skills at making their pedagogical reasoning accessible for their students they introduced the use of cases (Loughran & Berry, 2006). However, in the first instance, neither was pleased with the teaching experience and how it was unpacked their classes.

> *During our debrief Stephen commented that he was trying to create an "ah-ha moment" for his pre-service teachers with respect to the link between the work we do with them at university and the experiences on their teaching round. I wondered if there was a midpoint somewhere between; without spelling it out for them and the "ah-ha moment" but have since decided that this would be an almost impossible judgement to make as it could be different for every student in the room. When Stephen told me what he had planned I thought it was perfectly clear to me and that he did not need to do any more than just introduce the cases and let it all unfold. We talked about many possibilities for why the pre-service teachers had not jumped on this opportunity to explore their teaching which included; not understanding the task, us not making the task explicit and the pre-service teachers not being able to view themselves as teachers whilst being in a class as students. (Cooper, journal – week 5: Lunch debrief)* (Cooper & Keast, 2009, p. 45)

As an experienced teacher educator Keast recognized the messy, complex and dilemma driven nature of teaching. He was well aware that careful planning does not always lead to the learning that is planned or expected. Through the cases experience (above), the pre-service teachers were not making the links as expected but it created new questions and issues for Keast and Cooper about their teaching that impacted their planning for the next class. It also made clear that teacher education was not the same as teaching – even though many of the problems may appear are the same. Teachers cannot always plan for the type of learning they want their students to engage in, accepting that learning is idiosyncratic and personal is important, responding to it is crucial.

In time there was a shift in Keast and Cooper's teaching approach whereby rather than one teaching while the other observed, their practice had morphed into something congruent with team teaching. They had become very familiar with each other's style of teaching and their values closely aligned which gave greater strength to their teaching. As they became more expert at sharing their pedagogical reasoning with their pre-service teachers they recognized the importance of acknowledging and responding to the different teaching and learning expectations:

> *I could have offered the pre-service teachers a list of useful teaching strategies that have been successful during my teaching career. Instead, I attempted to help my pre-service teachers unravel the complexities of teaching that they may face and encouraged them to articulate what they struggled with in their own classrooms during teaching rounds … At the same time, I have learnt about myself as a teacher and a teacher educator; I am developing my pedagogy of teacher education. I understand my experiences as the first step on a journey that involves my shifting thinking about teaching towards a view that allows for creating and engaging in possibilities rather than denying them. Finally, I have learnt that learning about teacher education means sharing the frustrations of my teaching with Stephen in order to encourage others to begin to consider doing the same.* (Cooper & Keast, 2008, p. 80)

While sharing their pedagogical reasoning with their pre-service teachers was valuable to Keast and Cooper in terms of their own practice, trying to get their pre-service teachers to share their pedagogical reasoning was much more difficult. However, one useful tool they found was slowmation (Hoban, 2007; Hoban, Loughran, & Nielsen, 2011, also see www.slowmation.com). They encouraged their pre-service teachers to use the procedure with their students whilst on their practicum and to then share the experience with their teacher education peers when they returned to university (Keast, Cooper, Berry, Loughran, & Hoban, 2008). What emerged was a teaching procedure that allowed the teacher educators to explore the pedagogical reasoning of their pre-service teachers. As pre-service teachers showed the movies of their students in class they recounted what the students had learnt and in so doing what they learnt about their teaching which also helped to make clear their developing understanding of their pedagogical reasoning:

> *In this movie, they have taken survival of the fittest to mean the survival of the biggest and the strongest at the top of the food chain. Rather than the process of survival as in evolution (PST9). Yeah so they have mixed up survival of the fittest with the food chain. A bigger animal or scarier animal kills a smaller animal and survives. (PST10, classroom presentation, 2008)*(Keast, Cooper, Berry, Loughran, & Hoban, 2010, p. 8)

The pre-service teacher (in the extract above) had become aware of students' alternative conceptions in terms of food chains. By using slowmation, the pre-service teacher recognised a learning issue that otherwise may have gone unnoticed. More importantly the pre-service teacher had obtained vital information about a feature of learning that could influence future teaching of the food chain. Of significance to Keast and Cooper through the slowmation procedure and debriefing was the fact that their pre-service teachers began to interrogate each other's practice collaboratively and supportively.

> *When I taught Mitosis on my previous round I noticed they [students] thought it was a process that went phase 1, phase 2, phase 3, etc. not that it gradually changed. They just think they [cells] divide and that's it, not that it's a cyclic process.*
>
> *[PST6 2008 responds] That's what we got at the end of our video, in fact we didn't even get two cells. We actually got, they've pulled apart, that's it. That's the end of the process. I think that's one of the things I would address, like with animation, and could show, the connection of the processes rather than just stage 1, stage 2, stage 3.* (Keast et al., 2010, p. 9)

Watching their 'school student created' slowmations gave the pre-service teachers a way of observing how their students understood some of the abstract scientific concepts they were teaching. Not only did it give insights that assisted them (pre-service teachers) to rethink the subject matter content, but it also gave them ways of thinking out loud about what they saw in terms of student learning and how that influenced their thinking about their practice.

> *In terms of group work, I found that everyone could be working hard, but not doing very much about science. So in groups of 3, I found one person tended to be the director, someone would be the media player whiz, who was getting it all going on the computer and someone would be really involved in making the models. But they wouldn't really engage with the science at all. So you couldn't say that they weren't working because they were, but they weren't doing the sort of work that I wanted. So I don't know what the answer to that*

would be, because to get everyone to do an individual one [Slowmation] is too time consuming and resource consuming. (PST2, Classroom presentation 2007) (Keast et al., 2010, p. 10)

The discussion (above) led to a deep and engaging interchange between the pre-service teachers about whether or not the issue could be solved. At the end of the discussion they came to the realisation that not everything could be 'solved' and that teaching was complex, deeply embedded in the situation, messy and full of dilemmas. There were no simple answers. By explicating their pedagogical reasoning they jointly developed a greater understanding of what it meant to be a teacher of science.

Keast and Cooper's collaborative inquiry gave them a base that allowed them to gain funding for a research assistant who was able to join their class and act as a critical friend (CF) to support their research. The classes were video-taped, CF took notes during class and analysed the video for themes. As an outside observer the CF was able to look into their practice with new eyes and offer a fresh perspective on their shared practice:

Stephen's Journal for Week 1

This first week is very important for setting the scene for the rest of the semester, I want to push their understanding and question what they really know about content. They enter our class expecting to be shown how to teach, and more importantly how to teach certain topics. I don't intend to do this, so this first week is about explaining why they won't be getting what they desire and why, and keeping them onside. If it fell over badly this week, the whole semester of learning for them and teaching for me would be disastrous. It is about walking the fine line between pushing and listening, reading their reactions and moving them forward. [Keast week 1, 2010]

Here Stephen exposes his concerns for his pre-service teachers' expectations. On the one hand he wants to meet the needs of his pre-service teachers and on the other he recognises that what they expect is not what they need to be learning about teaching. It is a dilemma as he is torn between meeting their needs and challenging their expectations. In his pre-service teachers' eyes he could well be seen as a "living contradiction" (Whitehead, 1993). [CF week 1, 2010](Keast & Cooper, 2012, p. 71)

In further expanding on his practice Keast continued to 'unpack' his pedagogical reasoning for the first week of the semester and give the CF insight into the ideas that underpinned his approach to practice.

Many of the pre-service teachers at first thought this was fun but didn't see the science. Important for us to note in our teaching that while it is fun, what is our purpose and what is the learning we want from our pre-service teachers, just as they need to think about the learning of their students. The unpacking was important to demonstrate where the science was, and how such an activity could be used to bring out science concepts often taught in an abstract way using unfamiliar chemicals. By the end of the discussion most of the pre-service teachers could see the benefit of this approach. (Keast)

The need to allow their pre-service teachers into the way they think about their teaching is important to both Stephen and Rebecca. While fun activities and engaged students are important, making sure they see the science and recognise the scientific concepts is the main point to teaching science. While promoting the Human Qualities of science we are also promoting the cognitive value of science. The need to identify with the science concepts within the human endeavour appears to be an underpinning aspect of their approach to teaching about science teaching. (CF)

> *There are many concerns I took into this week and just as many I take out of it. If I push them too hard about their lack of 'real' understanding of simple concepts like change of state and chemical reaction, it will take a few weeks to get them back to take risks and discuss openly what they know, what they don't know and how they know it. Did I push them too hard? We will only know next week! Humour and the practical nature of the activity helped this year to keep it less confronting than previous years. (Keast)*
>
> *In his journal, Stephen is telling his story, what Hamilton (Pinnegar & Hamilton, 2009) described as "story of self." Often the first step in self-study is to make explicit your own thoughts and ideas about your teaching; Stephen does that here. (CF)* (Keast & Cooper, 2012, pp. 71–72)

The critical friend offered insights into their practice that gave a new perspective on their teaching. Keast and Cooper had been teaching together for 5 years and so the fresh eyes, for them, created possibilities that they could not fully grasp alone. As a consequence, their pedagogical reasoning was more closely analysed and they came to see new aspects of their practice and the ways in which their students interpreted their practice, that they had previously not recognized.

A significant finding from working with the critical friend was the lack of connection that pre-service teachers made to Keast and Cooper's pedagogical reasoning. The pre-service teachers appeared to view the teaching from a technical skills perspective, thus not fully grasping that which was intended by the modelling and articulation of pedagogical reasoning at the heart of the experience.

> *Our critical friend's perspective on our practice has added another view to our understanding of our teaching of science teaching. While our critical friend could identify the values we were promoting, from the interactions with pre-service teachers, an issue persisted. It appeared to be difficult for the pre-service teachers to differentiate between the pedagogy and technical skills and the overarching values of science being promoted. Taking the pre-service teachers along on the learning journey with us, we could see a change in their attitudes to science and science teaching. However, we were aiming to make their values explicit; through our critical friend's reframing of our practice, we saw that we did not always meet that objective. Instead, the pre-service teachers viewed their practice in terms of technical skills rather than as higher levels of pedagogical reasoning.* (Keast & Cooper, 2012, pp. 75–76)

When reflecting on their learning experiences about their teaching about teaching, Keast and Cooper saw benefits in making their pedagogical reasoning explicit in the manner they developed together:

> *After reframing our practice through the eyes of our critical friend we have realised that discussions about our pedagogy that we openly share in front of our pre-service teachers not only make explicit our pedagogical reasoning, but models the types of discussion that are so important for them to engage in later in the semester as we encourage them to publicly articulate their own developing pedagogical reasoning. In one sense, this has confirmed for us that the pedagogical practices we have been developing and adopted, scaffold the type of learning we aim for at the beginning of semester. Our critical friend has made explicit several tacit aspects of our pedagogical reasoning, such as interjecting in the moment. This has opened our eyes to the impact such practice has on us individually and as a team and the impact it has on our preservice teachers and the course.* (Keast & Cooper, 2012, p. 80)

The manner in which Keast and Cooper developed pedagogically together centred around recording their thinking about their individual teaching as well as critiquing one another's practice in order to identify and challenge their ways of articulating their pedagogical reasoning. They responded to the challenge in multiple ways (keeping a journal, responding to questions about their decisions in class, being filmed and analysing the subsequent video-tape, and through the analysis and questions of a critical friend). It was a constructive and productive process for them, but much of their success was due to two important aspects that they came to better understand over time.

Firstly, it became apparent to them that by articulating their visions and goals for teacher education they developed a shared understanding which provided them with some common ground and shared knowledge so that even when they were not team teaching, those understandings informed their pedagogical reasoning and thus, their resultant practice. In having a shared understanding they developed a clarity that provided a stronger foundation from which to illicit their pedagogical reasoning. Secondly, and perhaps more importantly, together they established and maintained a professional relationship (between themselves and their pre-service teachers) that was built on trust that supported the open sharing of frustrations and failures as well the championing of success.

The process led to them both better understanding the assumptions that shape their ideas about teacher education and therefore their practice in relation to their pre-service teachers. For Cooper, in particular, the experience led to greater noticing about the difference between teaching and teaching about teaching; then having the support and the time to do something about that which stood out as a consequence. For both, the how and why of practice most definitely surfaced, was considered from multiple angles, grappled with, reshaped and taken up through new challenges and opportunities.

The work of Keast and Cooper is significant because it acknowledges the need to build a pedagogy of teacher education in ways that allow for quality outcomes for teacher educators and pre-service teachers together, thus shifting the notion of modelling quality practice to something that goes well beyond the status-quo and the expectation of simply sharing tips and tricks. Their articulation of pedagogical reasoning strengthened their ability to model practice in a way that exemplified teaching as being problematic, but it also offered windows into how 'problems' can be worked through. So rather than implying that teaching and learning are linked in a linear form dependent on a search for 'the solution', their approach exemplified the value of learning to become more informed about practice in order to make deliberate choices about what to do because the 'why' of practice directed that decision-making. In so doing, they were able to illustrate what it meant to seek to foster quality learning for themselves as teacher educators and, especially so for the learning about teaching of their pre-service teachers.

Conclusion

> We rarely talk with each other about teaching at any depth – and why should we when we have nothing more than "tips, tricks, and techniques" to discuss? That kind of talk fails to touch the heart of a teacher's experience. (Palmer, 1998, p. 11)

There are major challenges that confront teacher educators in their teaching about teaching. However, those challenges also offer opportunities to lay bare the underpinnings of practiced through explicating pedagogical reasoning. Making pedagogical reasoning explicit through the teaching and learning of teaching has implications for both the thinking about, and development of the teacher educators' practice, and the same clearly applies for pre-service teachers.

There is a great need to educate pre-service teachers in ways that extend beyond handing down teaching strategies that work. There is a crucial need to develop more robust understandings of what it means for a beginning teacher to be classroom ready, and promoting deeper thinking about teaching clearly can foster such development. That development can be evidenced in teachers' willingness to reframe, reconsider, contextualise and problematise their practice rather than seek to mimic or replicate the practices of those they observed through their experiences in teacher education.

The work of teacher education is not about training, it should be an educative process that develops thoughtful, informed and highly able professionals. By placing greater emphasis on pedagogical reasoning in the teaching and learning about teaching, pre-service teachers can be given genuine opportunities to better apprehend the complex nature of teaching and begin to develop a vision for their future professional learning.

> I have worked with countless teachers, and many of them have confirmed my own experience: as important as methods (teaching tips and tricks) may be, the most practical thing we can achieve in any kind of work is insight into what is happening inside us as we do it. (Palmer, 1998, p. 5)

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Chapter 11
The Place of Subject Matter Knowledge in Teacher Education

Marissa Rollnick and Elizabeth Mavhunga

Introduction

Nearly three decades ago, Shulman (1986) famously asked the question, "Where did the subject matter go?" He was interrogating the apparent lack of subject matter knowledge in teacher education in North American programmes in 1986. To support his argument, he produced in some detail several extracts from examinations set in the year 1875 for licensing prospective teachers. The examination covered 20 categories including topics in mathematics (written and mental arithmetic and algebra), language (including oral and written grammar, composition and reading, word analysis and vocabulary, penmanship and orthography), social studies (as geography and history and constitution of the United States), science (as physiology and physics and biology), vocal music, industrial drawing, theory and practice of teaching and School law of California. Only the last two could be said to be outside the realm of subject matter knowledge (SMK), counting for only 50 out of the 1000 possible points available in the examination. The primacy of SMK in those days was clearly more important than any considerations of educational theory or teaching method.

In 1985, the time of writing of his article, Shulman acknowledged the existence of state examinations for teacher qualification but rather than testing SMK, these were testing the ability to teach. At the time, these examinations were heavily influenced by research findings on teacher effectiveness including qualities such as organization in preparing and presenting instructional plans, evaluation, and recognition of individual differences, cultural awareness and understanding youth. All reference to SMK was considered as prerequisite for the teacher education programme and was no longer visible. But, by 2014 US licensing bodies had moved again and

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were specifying in some detail the subject matter requirements for teachers (e.g., for Massachusetts http://www.doe.mass.edu/lawsregs/603cmr7.html?section=06). Five different routes to qualification are outlined, including approved undergraduate and post baccalaureate programmes. All approved routes require a passing score on SMK tests based on requirements specified elsewhere in their regulations. The professional standards for teachers make no direct reference to SMK, apart from the ability to carry out adequate curriculum, planning and assessment, all of which are SMK dependent.

Shulman's original question stated above was a prelude to the rationale for his introduction of the now famous construct of Pedagogical Content Knowledge (PCK) as the content related knowledge required by teachers to teach for effective learning. In essence he was calling for a more nuanced focus on SMK related competencies in teacher education. However, the 2014 example described above shows that there is still a separation between SMK and its teaching. It is evident that little has really changed in the USA in regulatory terms since Shulman's articulation of PCK. The research literature on teacher education, however, tells a different story. The literature acknowledges the importance of teacher SMK and the need for a link to improved learner outcomes (Darling-Hammond & Bransford, 2005; Gess-Newsome et al., 2010; Grossman, Schoenfeld, & Lee, 2005) but debates about its place in the practice of teacher education still continue (Adler & Davis, 2006). The divide between the worlds of research and practice is evident, possibly caused by the hidden complexity of the type of subject matter knowledge required by teachers. Hence the terrain on which the learning of SMK rests is still contested (Zeidler, 2002).

The case highlighted by Shulman above illustrates the difficulties of balancing the "what" and the "how" of teacher education that plays out in many parts of the world raising questions about what teachers should know and how SMK should be taught. We use these questions to focus on the learning of prospective and practising teachers, particularly, the learning of subject matter knowledge. Although our introduction makes links to PCK, we distinguish SMK from PCK by defining it exclusively to refer to the conceptual facts and syntactic aspects held in the topics of a discipline.

In this chapter we therefore attempt to address questions about the teaching of SMK in teacher preparation programmes by uncovering the nature of its current offerings and the research conducted on its teaching to prospective teachers. We build on chapters in earlier handbooks (e.g., Ball & McDiarmid, 1990) by covering some similar ground but also broadening the view of SMK in teacher education. We begin by providing a brief description of our search methods before examining the origins of SMK in teacher education. We then interrogate the nature and format of SMK in teacher education followed by an account of SMK preparation across the globe. This is followed by an analysis of the location of SMK preparation and a review of studies focusing on pre service teachers' learning of SMK. We close the chapter by providing perspectives on the form and manner in which SMK might be offered in the initial teacher education curriculum. Overall we try to capture the current view about SMK and stimulate a discourse about a reasoned pedagogical direction and shape of SMK in teacher education.

We have used the following questions to organize our review and discussion:

1. What are the origins of SMK in Teacher Education?
2. What is the nature of SMK in Teacher Education?
3. How does SMK preparation in Teacher Education take place around the world?
4. Where does SMK preparation take place in teacher education?
5. What do studies on SMK in teacher education reveal?
6. In what form should SMK be offered?
7. How should SMK be taught to prospective teachers?

Before we start our discussion it is important to outline our research approaches and the issues we encountered in our survey of SMK literature. A variety of methods were used to source material for this chapter. Firstly seminal works on teacher education and subject matter such as that by Darling-Hammond (2006) and the work of Deborah Ball, the author of a similar article in a previous handbook (Ball & McDiarmid, 1990) were used. In addition, a number of special issues of journals and books in mathematics education were identified (Adler & Ball, 2009; Even & Ball, 2009; Sullivan, 2001). Another useful source was a recent special issue on teacher education internationally in the Journal of Science Teacher education (Lederman & Lederman, 2015). Online searches then yielded a further 70 articles of which only 13 were not in mathematics and science. A similar ratio was found by Berry, Depaepe and van Driel (Chap. 9, in this volume) for articles related to PCK. Policy documents for requirement of SMK in initial teacher education were also studied.

A confounding factor for this chapter has been the close relationship between SMK and PCK. There is overwhelming evidence for necessity for SMK to be taught in close proximity to its context in teaching (PCK) from a variety of disciplines, for example Mewborn (2001) and Ball (2000) in mathematics education, Abd-El-Khalick (2006) in science education, Freeman and Johnson (1998) in Language education and Grauer (1997) in art education. This point is elaborated further below.

There are three imbalances that need to be interrogated in the literature surveyed. Firstly the predominance of literature related to mathematics and science referred to above is evident in any search related to subject matter knowledge in teacher education. We have no ready answer to the reason for this conundrum but suggest that the difficulties experienced by teacher educators in preparing teachers to teach these two disciplines is possibly most strongly influenced by the difficulties associated with the disciplinary knowledge. Considerations in other disciplines may be due to the more horizontal structure of the subject matter knowledge (Bernstein, 1996) which lead to differing concerns. For example in the field of language Freeman and Johnson (1998) were more concerned with epistemological and pedagogical issues in teaching language and did not problematize the issue of SMK.

The second imbalance in the literature surveyed is in the countries of origin of the research. We were restricted to sources published in the English language and these sources are dominated by material from the USA. We made several efforts to address this imbalance, the easiest for the authors being to access course material from our own country and neighbouring countries. We also made efforts to include

work from Asia, Australia and Europe but this work is still overshadowed by the predominance of work from the USA.

Thirdly there is little recent work on SMK in teacher education. Most of the literature identified was published in the last two decades of the twentieth century. More recent material deals with pedagogical content knowledge in relation to SMK. This can be attributed to researchers aligning themselves with Shulman's (1986) view that SMK alone is insufficient for teaching.

The Origins of SMK in Teacher Education

In this section we provide a brief overview of the origins of SMK in teacher education, beginning with the North American context. Although actual histories in different countries may vary, the type of thinking underlying the increasing need for teachers does resonate in different contexts. SMK can be said to be at the very heart of teachers' practice – all teachers teach something. Hence a starting point to equip all teachers would be to ensure that they know the material they have to teach. Where there is widespread agreement about what is to be taught, a large part of preparing people to teach the material becomes a case of making sure they know the material well enough to pass it on to others. What teachers need to know beyond that is more complex and subject to more debate but early formal teacher education programmes, certainly in North America included a high proportion of SMK as part of the curriculum (Zeichner, 2006). The next highest component would generally be some kind of practical apprenticeship where the prospective teacher is exposed to the practice of teaching. Nevertheless it is axiomatic that the learning of the required SMK would be a widely agreed minimum prerequisite for teaching it. This minimum requirement becomes clear in a developing education system where a body of teachers is non-existent and cohorts of teachers need to be produced in a very short time. For example immediately after Mozambican independence in 1974 there was a need to close down 11th and 12th grades at high school and deploy the students to teach in secondary schools while primary school completers were sent to be trained as primary school teachers (Ogunniyi & Rollnick, 2015). This is not an unusual situation in developing countries. The authors' personal experience shows that the education system in South Africa has gradually changed from 2 years post school training for both primary and secondary teachers to the current situation where teaching is an all graduate profession with a minimum of 4 years training at all levels.

Similar origins are described in the Canadian and US context. See for example descriptions of nineteenth century teacher education in the USA (for example Shulman's account referred to above) and Labaree (2008) who traced early teacher education back to the formalization of the schooling system. Labaree, like Beeby (1966) before him, saw the earliest function of a teacher to be that of keeping order much like that in the dame schools of nineteenth century Britain and North America and vividly described in Charles Dickens' novels such as "Great Expectations" and "Nicolas Nickelby".

Labaree described the first formal attempts to prepare teachers in Canada beyond this role through summer institutes and on the job training which included both pedagogy and subject matter. A strong feature of this form of teacher preparation which persists to the present day is the idea of apprenticeship to an experienced practitioner. Labaree described how early teacher education was offered by teacher training schools, referred to as "normal" schools, which sought to tread the line between rigour and relevance initially through offering a 2-year programme. These institutions evolved into Liberal arts colleges which finally became teachers' colleges offering 4-year programmes, encompassing both SMK and pedagogy.

These developments in the USA and Canada took place alongside moves that led to the placing of teacher education in universities. Kitchen and Petrarca (2013) describe how in Ontario it was expected that high school teachers required a university education because of the emphasis on SMK as a central element in teacher knowledge. As can be seen later on in this chapter, the present day situation in many countries reflects this same tension.

Nature of SMK in Teacher Education

This section provides some clarity on terminology associated with SMK in teacher education. It then explores the nature of SMK in teacher education and describes two differing perspectives of SMK, that of the "didactic" school and the PCK perspective.

Differing terms for SMK are used in the literature, most commonly subject matter knowledge (SMK) and content knowledge. Shulman talks of three kinds of content knowledge – "subject matter content knowledge, pedagogical content knowledge and curricular knowledge" (Shulman, 1986, p. 9). Later in a more comprehensive account (Shulman, 1987), he lists content knowledge rather than "subject matter content knowledge" as one of seven categories of a teacher's knowledge base alongside PCK and curriculum knowledge.

In mathematics education, Ball, Thames, and Phelps (2008) interpreted content knowledge as knowledge of the subject and its organising structure implying that content knowledge is an overarching category which includes SMK. Their interpretation includes Schwab's distinction of syntactic and substantive knowledge structures (Schwab, 1978 in Shulman, 1986), syntactic referring to explanatory structures or paradigms of the field and the substantive to facts and concepts of SMK. In later work by Grossman, Wilson, and Shulman (1989), two further categories emerged – knowledge of content and beliefs about a discipline.

In science education, Cochran and Jones (1998, p. 708) defined SMK rather than content knowledge as the overarching category which included content knowledge considered as substantive knowledge only together with syntactic knowledge and beliefs about subject matter. In this chapter we use the term SMK to refer to all aspects of subject matter knowledge to be relevant to teacher education, including both substantive and syntactic aspects of the disciplines in question, though the term

content knowledge will be used when referring to particular studies where the term is used.

As can be seen, the difficulties of terminology arise from issues surrounding the nature of SMK itself. Schwab (1978) and Bruner (1977) have had an influence on the contemporary conceptualization of SMK in general. Schwab's work is regarded as providing the breakthrough that brought teachers back into research, breaking the vice of abstraction that existed in the research of the time that promoted the separation of theory and practice. His starting point was to influence the theories called upon to explain practitioners' actions and choices.

A strong feature of Schwab's work was the importation of the constructs of 'theory and practice' into the discourse about SMK in an education setting. This is evident in his conceptualization of SMK from the perspective of the structure of the subject. He viewed SMK as being more than just a body of facts; these he considered just part of SMK and he referred to them as substantive. He also included the knowledge of the ways in which a discipline evaluates and accepts new knowledge referring to it as syntactic knowledge. Schwab's fundamental view about the structure of SMK was that it is "a highly flexible pattern which is continually adapted and modified to fit the particular problems and situations to which it is applied" (Schwab, 1978, p. 239). The novelty of his conception lies in the elements of 'fit for purpose' and the authority of practitioners to continually 'adapt and modify' the subject. The influence of these elements on the two perspective alluded to above is discussed below.

In contrast to Schwab, the perspective provided by Bruner (1977) about the nature of SMK has been interpreted by some scholars (e.g. Ma, 1999) from a learning and teaching perspective. He explained two ways in which the structure of SMK serves the purpose of learning and teaching: firstly the specific applicability (transfer) of skills to tasks similar to those originally learned; secondly he explained the transfer of general principles and general attitudes learnt earlier thus making performance efficient (Bruner, 1977). In his view there are "certain general attitudes and approaches toward a subject that can be taught in the earlier grades that would have considerable relevance for later learning" (Bruner, 1977, p. 27). He viewed the understanding of a structure of a subject as a gateway into unlocking the understanding of how concepts in the subject are related. He identified the idea of a "critical mass" of stability in the structure of SMK to enable learning and 'specific applicability or transfer' for efficient performance in practice. Further to this, he drew attention to the emergence of 'relatedness of things' brought about by the understanding of the structure of a subject.

Both perspectives show the link between SMK and the context in which it is used. Dewey contextualized it into education by writing:

> Every study or subject thus has two aspects: one for the scientist as a scientist; the other for the teacher as teacher. These two aspects are in no sense opposed or conflicting. But neither are they immediately identical. (Dewey, 1990, p. 200)

Dewey's view expresses the proximity of subject matter to its teaching. The difficulty of making a clear boundary between them has been one of the challenges of

defining where knowledge of subject matter per se ends and where pedagogical content knowledge begins. Ball (2000) bemoaned the division of subject matter and pedagogy in the conceptualization of the curriculum of teacher education as she considered the knowledge of subject matter as being central to the core tasks of teaching. In a later paper she and others made a broader claim that mathematics for teaching can be thought of as a branch of mathematics (Ball et al., 2008) because of the mathematical nature of knowledge that teachers need to use when considering students' reasoning.

In the context of art education Grauer (1997) referred to the transformation of teachers' disciplinary knowledge as one of the first challenges of teaching. Kennedy (1998) further illuminated the nature of SMK required for teaching embracing both syntactic and substantive aspects. She began by arguing for the conceptual nature of the knowledge required, distinguishing between quantity and quality of knowledge and rejecting what she referred to as recitational knowledge, which she described as the recitation of knowledge and facts. While she appreciated the importance of possessing this knowledge, she considered it insufficient for teachers. She then proceeded to identify the important characteristics which she viewed as defining the unique character of SMK needed by teachers. Amongst these she listed conceptual understanding related to subject matter:

- Referring to the central concepts of the subject and their inter-relationships as well as their application in real world situations.
- As a sense of proportion, referring the scale of things in relation to each other.
- As understanding of the central ideas or being able to distinguish the main ideas from minutiae.
- As seeing interrelationship of ideas including the conception that some ideas are more fundamental than others.
- As elaborated knowledge, referring to the ability to elaborate on main ideas, as big ideas are generally constructed from detail.
- As reasoning ability referring to the ability to develop arguments.

Emerging from the above arguments there are two broad schools of thought on SMK in teacher education. The school of Pedagogical Content Knowledge (PCK) as initially introduced by Shulman (1986) in the USA and that of didactics in disciplines ascribed to Chevallard (1991) and Brousseau (1997) in France. We track the interpretation and the development of these two schools of thought and their influence on SMK in teacher education.

Both schools came about because of dissatisfaction with the generic nature of research into teaching such as the process-product research (Hill, Rowan, & Ball, 2005) that led to a need to give primacy to SMK. The key missing feature was a consideration of that which was referred to by Shulman (1986) as the 'missing paradigm'.

Shulman (1987) is well known for his perspective of Pedagogical Content Knowledge, while the French principle of didactic transposition is less well known in the English speaking world (Chevallard, 1991). Most of this work has been in the field of mathematics education on the didactics of disciplines by researchers such as

(Brousseau, 1997; Chevallard, 1991; Martinand, 1987). We turn now to look at SMK in teacher education from both perspectives starting with didactics in disciplines.

SMK in Teacher Education: Didactics in Disciplines

According to Amade-Escot (2006) the "didactic system" is defined as an irreducible three-way relationship linking teacher, students and knowledge taught. The object of didactics studies is "the description and explanation of activities connected with the communication of knowledge and the transformations, intentional or not, made by the protagonists in this communication, and the transformations of the knowledge itself" (Brousseau, 1986, p. 34, in Amade-Escot, 2006). The orientation of the didactics system promotes an understanding that the knowledge to be taught and the knowledge actually taught undergoes complex transformation processes at various stages of selection and teaching, which fundamentally distinguishes this knowledge from its origins in academic knowledge (Amade-Escot, 2000, p. 13). The didactics system draws from Schwab's view on the structure of subject matter knowledge in education, namely, 'fit for purpose' and the authority of practitioners to continually 'adapt and modify'.

Amade-Escot (2000) illustrated the influence of these features in the context of physical education. She argued that the teacher's conception of the subject matter is made up of a number of adaptations of content drawn from different considerations including choices made from the discipline to that which is elected to be taught and the characteristics of the students. The author termed this product the "teaching content". Inevitably continual changes are observed in 'teaching content' when it is brought into play in situations and activities. For example, she argued that 'teaching content' changes as the teacher provides instructions in a volley-ball serve reception as tactical cooperation between players, to the details of the content really taught through the feedback and comments that the teacher gives to students when they are performing the serve reception task. She further illustrated the point by referring to content taught in swimming and rhythmic gymnastics to be adaptations of content from several sciences (neuroscience, motor learning and biomechanics). These examples illustrate the fundamental principle by Schwab (1978) in the didactics approach of a structure of subject matter knowledge for teaching being a highly flexible pattern that is continually adapted and modified to fit the particular problems and situations.

The principle is further demonstrated in a number of research studies in mathematics education. A famous quote, is that by Brousseau (1997):

> Mathematicians don't communicate their results in the form in which they discover them; they re-organize them, they give them as general a form as possible. Mathematicians perform a "didactical practice" which consists of putting knowledge into a communicable, decontextualized, depersonalized, detemporalized form. The teacher first undertakes the opposite action; a recontextualization and a repersonalization of knowledge. She looks for

> situations which can give meaning to the knowledge to be taught. But when the student has responded to the proposed situation she will, with the assistance of the teacher, have to redepersonalize and redecontextualize the knowledge which she has produced so that she can see that it has a universal character, and that it is re-usable cultural knowledge. (p. 227)

Implied in the quote (above) is the understanding of subject matter knowledge of mathematics in ways that enable arrangement of situations for the student to discover knowledge and then depersonalize to recognize its universal character. Thus the teacher's understanding of subject matter needs to allow production of transformation of established knowledge into situations of learning and discovery.

The discussion above highlights the need to understand fully the value in recognizing SMK in teaching. This recognition requires continual adaptations and modifications to fit the particular problems and situations to which it is applied. Amade-Escot's work in physical education is unusual as most other work on didactic organization is in the field of mathematics education. Science education studies that engage heavily with SMK are largely limited to studies on learning sequence (e.g., Lijnse, 2010). Lijnse (2010) lamented the "flight away from content" in science education research as he considered it necessary for making didactical progress which he identified as linking teaching and learning; which requires a robust engagement with content. However, the more widespread view on SMK especially in the Anglophone world emanates from the conception of Pedagogical Content Knowledge (PCK).

Subject Matter Knowledge: A PCK Perspective

According to Amade-Escot (2000) the PCK perspective makes a clear distinction between SMK and PCK. Shulman (1987) described the pedagogical reasoning and action process as encompassing the transformation of teachers' understanding of concepts. She considered this process as being close to the idea of the "didactic transposition" which she explained as the "transformation, elaboration and construction of the knowledge to be taught" (p. 14). She showed this in the context of volley ball by explaining that a serve reception could be taught either as a tactical move or a skill, but the observed action would be the same. She then defined a further term, the "didactical contract" which refers to the result of both tacit and implicit negotiations between role players in the educational environment.

Amade-Escot (2000) considered the didactic contract to be the continuation in action of the didactic transposition. There are points of major theoretical overlap between the concepts of "pedagogical reasoning and action" and "didactic contract". In both the didactics and PCK perspective transformation of content is key in distinguishing the SMK for teaching from its original content knowledge. The aim then is to understand how teachers, starting from "being able to comprehend subject matter for themselves, become able to elucidate subject matter in new ways, reorganize and partition it, clothe it in activities and emotions, in metaphors and exercises, and in examples and demonstrations so that it can be grasped by the stu-

dents" (Shulman, 1987, p. 13). The PCK construct also reflects the principle of 'fit for purpose' and adaptation and modification. It is a theoretical approach adopted largely in science education and other disciplines such as language.

In science education, Grossman and Richert (1988) acknowledged the connections of subject matter knowledge from a PCK perspective to the views of Schwab (1964). In particular they highlighted the view that SMK encompasses an understanding of the various ways a discipline can be organized or understood, as well as the knowledge of the ways by which a discipline evaluates and accepts new knowledge, which Schwab termed syntactic knowledge (Amade-Escot, 2006, p. 54). The implication of this is that teachers need to come to terms with what it means to teach their particular subject matter (p. 54).

What we see above is a demonstration of how SMK needs to be linked to actual situations where it is applied, including both cases of teaching theory and skill. While the discussion above aimed at illuminating the views from the two theoretical perspectives on subject matter knowledge from the original conceptions by Schwab (1978), there is room to look at their convergence and parallel points. Using the context of physical education, Amade-Escot (2000) saw common themes across the two theories. These include recognition of: (i) a view of subject matter knowledge as specific to situations of the domain where it is used; and, (ii) the evolution of SMK in relation to the professional knowledge of which it forms an important part (p. 22). The differences include the emphasis of PCK on the experience of the teacher, while the didactics system places its emphasis on specific competence in terms of didactic knowledge. The PCK perspective stresses the teachability of pedagogical content knowledge as an element of improvement for the teaching processes, whereas the didactic programme – without prior assumptions on this teachability – tries to identify the conditions in which it is possible to change practices.

Amade-Escot's analysis of the differences may not attract common consensus but what is of interest to the discussion in this chapter is the recognition that in both theoretical approaches the principles of 'fit for purpose' and 'adaptation and modifications' 'of subject matter knowledge in education are carried forward through forms of transformation in both perspectives. This brings us to a conviction about the changing character of delivery of SMK in different situations and disciplines according to the purpose intended. The challenge therefore to teacher education today is the practical illustration across disciplines of what it means to understand subject matter knowledge from the perspective of teaching. In the discussion below we examine the SMK preparation around the world.

SMK Preparation Around the World

In this section we examine SMK preparation in teacher education internationally. In the last 10 years there have been two surveys of teacher education across a variety of countries, one in mathematics under the auspices of a study commissioned by the

International Commission on Mathematical Instruction known as ICMI Study 12 (Even & Ball, 2009; Tatto, Lerman, & Novotna, 2010) and the other in science in a series of articles collected for a special issue of the Journal of Science Teacher education (Lederman & Lederman, 2015). From these two sources it is possible to extrapolate to other disciplines and obtain a picture of how SMK is included in teacher education programmes worldwide. In the ICMI study Tatto et al. provided an analysis of the emphasis on content for the 20 countries. They classified the content emphasis by considering a framework consisting of content knowledge, pedagogical content knowledge, and pedagogy, which corresponds to three of Shulmans' (1987) five dimensions of teachers' professional knowledge. When similar data is extracted from the articles written for the Journal of Science Teacher Education (Cofré et al., 2015; Evagorou, Dillon, Viiri, & Albe, 2015; Liu, Liu, & Wang, 2015; Ogunniyi & Rollnick, 2015; Olson, Tippett, Milford, Ohana, & Clough, 2015; Treagust, Won, Petersen, & Wynne, 2015), 22 countries are considered. Six countries are common to both surveys. So the two sources combined provide information about 36 countries on all inhabited continents. The countries vary considerably in population, level of development and size, but some trends appear to emerge.

There is a saying, "Primary teachers know how to teach children – secondary teachers know how to teach subjects". The sentiments embodied in the statement are exemplified by the world wide distinction between primary and secondary school teacher education. In most countries primary school teachers tend to teach across more disciplines so their subject matter preparation is spread across different disciplines and also receives lower emphasis on the SMK preparation in terms of both level and proportion of time allocated. Primary pre-service teachers would devote more time to teaching methods and general pedagogy courses. Where more teaching time is spent on SMK, it is likely to be spread across more than one subject area. The kind of variety found across countries can be seen in Table 11.1 which compares four European countries (adapted from Evagorou et al., 2015).

Table 11.1 shows that the emphasis on SMK in secondary teacher education programmes is highly variable, even across European countries, with Finland showing the greatest emphasis of the four countries where the basic teacher qualification is a masters level degree which can be in a pure disciplinary subject such as nuclear physics. In countries such as Australia there is a greater emphasis on pedagogical knowledge and methods. Most countries complement this with an equal emphasis on pedagogy. However, certain disciplines in the training of primary teachers are favoured over others. For example in East Asia a study of six countries revealed a strong emphasis in SMK preparation in mathematics (Li, Ma, & Pang, 2008).

As noted above, some teacher education programmes follow an initial preparation in a disciplinary degree where only the discipline is studied and SMK is thus a pre-requisite for entry into the programme, referred to as sequential programmes, while others follow a concurrent model where pedagogy and subject matter are studied side by side (Stacey, 2008). According to Stacey the United Kingdom, Netherlands, Australia, Canada, Italy, Spain and New Zealand all endorse both concurrent and sequential models (study time 3–6 years) while Germany Hungary, Sweden and Switzerland, Japan and Korea favour the concurrent model (4–5 years).

Table 11.1 A comparison of subject matter emphasis in four European countries

Country	Level	Duration of training (years)	Name and type of qualification	Balance of courses
Finland	Primary	5	Master in Education	Only didactics courses
	Secondary	5	Master in content (e.g. physics)	60 credits of pedagogy out of 300, the rest content
France	Primary	5	Master in Education	Content integrated
	Secondary	5	Master in discipline education (e.g. science) after B degree in content area	Content to bachelor level
Cyprus	Primary	4	BA in Ed	Content integrated
	Secondary	4 + 1	Content bachelor degree + 1 year pedagogical training	Content to bachelor level
England	Primary	3 or 3 + 1	BA in Ed or Content bachelor degree + 1 year pedagogical training	Content integrated or Content to bachelor level
	Secondary	3 + 1	Content bachelor degree + 1 year pedagogical training	Content to bachelor level

The location of the training also varies with Germany using a combination of training at Higher Education institutions followed by experience combined with practical seminars and state operated training schools (Kleickmann et al., 2013).

Attention should also be drawn to the huge diversity in levels of content knowledge reached by teachers in their pre-service education. At one end of the spectrum are previously colonized developing countries where the need for teachers was historically determined by the policies of the colonial powers. For example, in South Africa a large proportion of secondary school teachers will have been exposed to no more than 1 year of university study in their teaching subject (Rollnick, Mundalamo, & Booth, 2013). Similarly, in Belize, primary teachers typically are exposed to 2 years of content and pedagogy followed by 1 year of supervised student teaching (Mullens, Murnane, & Willett, 1996). In Eritrea, a 1 year primary teacher education programme has just been upgraded to 2 years (Ogunniyi & Rollnick, 2015). At the other end of the spectrum, some courses in Finland for secondary teachers may involve studying SMK up to master's degree level (Evagorou et al., 2015).

Thus in this section it can be seen that the level and proportion of time devoted to SMK varies internationally between secondary and primary teacher preparation, but there is also wide variation between and even within countries. It can also be said that the level of SMK offered is also related to the level of development of the country.

Within programmes internationally it is important to look at where in a teacher's education the learning of SMK takes place. This is addressed in the next section.

Where Does SMK Preparation for Teachers Take Place?

The traditional view about where SMK preparation for teachers happens assumes that preparation is what occurs as part of prospective teachers' general college or undergraduate education. However, to subscribe to this view would mean to ignore the many years of exposure to subject matter knowledge as a learner prior to college/university years, and the learning that happens in other contexts outside the formal classrooms. We have built on the call of Ball and McDiarmid (1990) for recognition of the places of learning SMK beyond the college, university preparation classes. We have thus identified three major places where SMK preparation of teachers happens. These are: pre-College, college and in practice.

Pre-College/University Learning

Pre-college learning refers to the learning of the SMK through school subjects over the schooling years. Teachers like every other member of the public including those destined for other professions spend 12–13 years in school exposed to learning of SMK of a range of subjects including those that they will ultimately major in and teach. We support the argument of Ball and McDiarmid (1990) that teachers learn a significant amount of their subject matter knowledge from their school years.

Expanding the concepts of syntactic and substantive knowledge (Schwab, 1978), Ball and McDiarmid (1990) suggest that teachers learn their subject matter knowledge from their school years in three dimensions. The first is subject matter substantive knowledge which refers to the subject matter specific concepts, ideas and topics. The second dimension is knowledge about the subject which refers to the understandings about the subject, knowing how knowledge in the field is generated and validated. Learners may not learn about this dimension directly, but may also develop a sense about it over time. The third dimension is dispositions toward the subject. Prospective teachers as learners develop dispositions toward subjects. They develop a natural inclination towards favouring and disfavouring particular topics and activities. They may also develop conceptions of themselves as good at particular subjects and not at others. Evidence of the influence of pre-college experience on the practices of teachers is seen in many empirical studies, for example a case of primary school student teachers who replicated their own primary school learning experiences about puberty/sexuality education and failed to operationalize the contemporary learning and teaching practices exposed to in the teacher preparation programme (Goldman & Coleman, 2013), a view endorsed in art education by Grauer (1998).

Kennedy (1999) noted that future teachers' experiences in school give them ideas about what subject matter is like and a great deal of insight into the culture of school experience including, for example, how to teach writing. She referred to the learning in these years as the apprenticeship of observation (drawing on Lortie's

(1975) observations) which comes prior to the courses taken in these subjects later in college.

The implication of this reality is that the quality of education experienced by teachers as learners during their school years has a bearing on the quality of subject matter knowledge they learnt. While this statement seems obvious, the issue becomes significant in the face of major diversity in the focus of school curriculum as experienced over the last two decades (Mitchell & Lambert, 2015). The authors link the shift in the focus on subject matter in the English education system to the economic crisis in the mid-1970s. During this period the effectiveness of schooling to serve the economy was questioned and the role of traditional subjects was challenged. The Education Reform Act of 1988, and the introduction of a national curriculum for England and Wales were important catalysts. As a result, the content of subject matter in school subjects was fixed by policy and the teacher's role in curriculum creation diminished to merely following the 'statutory orders'. This phenomenon was also documented in the case of school geography by Rawling (2001) leading to the de-professionalising of subject specialist teachers described by McCulloch, Helsby, and Knight (2000), ostensibly to follow a trend that aimed, according to the government education policy, to prepare learners for a competitive global economy.

According to Mitchell and Lambert (2015) notions of flexibility and soft, transferable skills received more emphasis. SMK, in this view, was equated with information which could be readily accessed outside school. Consequently the school's role was to facilitate learning rather than providing access to subject knowledge. According to this vision, schools of the future would blur the boundaries between subjects, implying that what was taught mattered less than how successful students were at learning. However, as Young and Muller (2010) noted, teaching of traditional academic subject knowledge continued in independent schools and was accessible to those who could afford the high fees, whilst experiments with a non-academic curriculum were carried out on those less fortunate. A similar trend is observable in a developing country such as South Africa where the majority of the teachers are emerging from a now defunct Outcome Based Education [OBE] school curriculum which underplayed subject matter knowledge (Rusznyak, 2011). The OBE system promoted the vision of teachers as facilitators where the learners' experiential learning took priority over a focus on learning the subject matter of disciplines. The result of such curricular experiments has had consequences such as the dismal performance of the country's students in science and mathematics (Spaull, 2013). The argument made here is not to lament school educational reform, but highlight the diversity of exposure to SMK that prospective teachers' experiences as learners and the possible influence of curriculum reform on the nature of subject preparation teachers experience in their schooling.

College/University Learning

There are two schools of thoughts on how subject matter knowledge is taught in undergraduate teacher education programmes. In the first, a long standing traditional view, subject matter study as offered by liberal arts courses in university programmes is thought to provide the teacher with an understanding of the content to be taught (e.g., Anderson, 1988; Travers, 1969). From this perspective, the preparation of teachers at college or undergraduate level needs to address:

> A thorough, scientific and demonstrative study of all the branches to be taught in the common schools, with directions, at every step, as to the best methods of inculcating each lesson… (in Lewis, 1929, p. 325)

According to Ball and McDiarmid (1990), this perspective promotes policies for improvement of teachers' subject matter preparation that tend to focus on which and how many subject matter courses primary and secondary teachers ought to take in order to be qualified to teach. Questions about the nature of such courses and the type of content they offer become of interest.

A second perspective promotes the process of the liberal education itself in the preparation for teaching (e.g., Buchmann, 1984; Dewey, 1964/1904). A liberal education is distinguished from the above mentioned perspective through its character to embrace cultural capital, intellectual resources and knowledge.

Critics of the liberal education perspective point out that it is "education not for any specific end but for its own sake" (Ball & McDiarmid, 1990, p. 14). Irrespective of either of these two perspectives, how student teachers learn their subject matter knowledge and what they learn in undergraduate courses remains a question for debate. Ball and McDiarmid (1990) cite numerous studies predominantly in mathematics and science which provide evidence that students destined for all professions retain little conceptual understanding of the ideas taught to them in undergraduate programmes.

Teacher development programmes have been exploring different ways of teaching student teachers their subject matter. The promotion of critical thinking skills has been used as a vehicle to learn subject specific content and skills in the case of the Enhancing Teacher-Learning Environments (ETL) Project (Anderson & Hounsell, 2007). The project looked at history and biology student teachers who were learning ways of thinking and practising characteristics of each of these subjects. These ways were not confined to forms of knowing and understanding, but could take in subject specific skills, techniques and know-how. The authors indicate the students developed understanding of the subjects as well as affective and intellectual engagement with history. Bain and Mirel (2006) make a strong argument that grounding in historical content alone is not enough for future teachers to be successful in the classroom. They need to have a strong grounding of history in the context of teaching.

In science education, a case in South Africa showed the use of the Topic Specific Pedagogical Content Knowledge (TSPCK) construct with chemistry student teachers in a topic of chemical equilibrium was found to improve their subject matter

knowledge (Mavhunga, 2014). The course focused on the development of their ability to transform content knowledge by reasoning through five components of TSPCK, namely: learners' prior knowledge; curricular saliency; what is difficult to understand; representations; and, conceptual teaching strategies. The study suggested that perhaps student teachers learn subject matter knowledge better when they are taught to think about teaching it.

Exposure of student teachers to skills and microteaching related to the subject has been reported as improving their subject matter knowledge. A study with geography student teachers in Australia (Reitano & Harte, 2014) is a point in case. The participants in the study were video recorded during a micro teaching exercise and were then given an opportunity to reflect through interviews with the researchers who reported improvement in the levels of confidence in geographical subject matter as well as in teaching the subject.

These cases (above) point to a move across teacher preparation programmes away from mere delivery of subject matter knowledge as pure subject matter as in the mainstream courses, to delivery couched more in terms of what teachers are expected to do. It could be argued that structuring learning opportunities toward content for its intended purpose, which is teaching, has the more explicit objective of understanding the content in a teaching context (Kleickmann et al., 2013).

This section has identified the genesis of teachers' subject matter knowledge in their own schooling and argues that the quality of future teachers' schooling experiences is key to their future teaching. It also makes a strong argument that preparation during college years needs to be contexutalised. The next section reviews studies on SMK in teacher education.

Review of Studies on SMK in Teacher Education

A well-known area of concern regarding SMK in teacher education is that of primary school teachers. In most education systems primary school teachers are expected to teach across a number of disciplines and hence are not typically trained in depth for a specific discipline. However, the areas of language and mathematics are considered core at this level so more attention may be focused on these. Despite this emphasis mathematics knowledge still emerges as a challenge as seen in the study of Stevens and Wenner (1996) who tested prospective primary teachers (in the USA) for science and mathematics SMK and beliefs and found that they underperformed in science SMK while their mathematics SMK was at a more acceptable level. All had studied mathematics and science at high school for at least 3 years but less than half had taken any university level courses. The test performance of all pre-service teachers was better correlated with their school knowledge than any courses taken at college. The authors suggest that the pre-service teachers needed further background in both mathematics and science that connected better with the tasks they faced in teaching primary science. Though this study is nearly 20 years old, the suggestion that the level of science knowledge determined in the study is

consistent with literature going back 25 years, suggests that not much progress has been made in advancing teacher knowledge in these two disciplines.

A second more recent USA study (Rice, 2005) looking at a sample of 414 pre-service and in-service primary school teachers found that although the teachers showed better knowledge than the average citizen in their ability to answer 13 basic science questions, they revealed a lack of understanding of basic scientific phenomena commonly found in US primary science curricula.

As mentioned above, the situation in developing countries is more challenging. A study in Belize under extreme circumstances of teacher under qualification showed that teachers' SMK was critical in terms of their student achievement particularly in their learning of advanced concepts (Mullens et al., 1996). Although this study was conducted nearly 20 years ago, a recent website ("Education In Belize," 2015) suggests that while the situation has improved, many of the essential findings of the study still hold. According to Mullens et al. 52 % of primary teachers were trained in 1991. The website ("Education In Belize," 2015) suggests that the 2010 figure is 70 %, still just over 2 in 3 teachers.

Studies on SMK in teacher education at the secondary level also point to shortcomings in teachers' SMK but of a different kind. An Israeli study on prospective mathematics teachers' conception of a function showed limited knowledge which inhibited their pedagogical thinking. It was found the teachers chose to provide students with rules to be followed rather than try to achieve understanding in their students (Even, 1993). A later study by the same author (Even & Tirosh, 1995) suggested that this deficiency in conceptual SMK was a widespread phenomenon in prospective teachers at the time of the study; a point reinforced by Bryan (1999). A study on geometry teaching in South Africa revealed similar concerns (Van der Sandt & Nieuwoudt, 2005).

The difficulties reported in the mathematics studies highlighted above suggest that there should be an expected change in pre-service teachers' subject matter structures when preparing material for teaching. Abd-El-Khalick (2006) explored the subject matter structures of preservice and experienced teachers with regard to photosynthesis and conceptions of biology and found that while their subject matter structures globally fell on a continuum from poorly articulated to well integrated, their topic specific subject matter structures were clearly differentiated between the pre-service and the practicing teachers. The experienced teachers' articulation of the topic was better conceptually integrated with the process of photosynthesis as part of larger biological systems. Further analysis showed that their subject matter structures were better aligned to the needs of their students. The authors considered this to be evidence of the experienced teachers' PCK, which suggests that enhanced PCK leads to greater sophistication in their SMK.

The studies above suggest that pre-service teachers with high level SMK may lack an appropriate level of conceptual understanding suitable for teaching. Their years of exposure to tertiary level study in their discipline have led to the compression of more elementary knowledge for use in more advanced contexts. In using their knowledge in this way they would not have thought about how they first assembled their understanding of the basic concepts and hence what needs to be put

together to enable others to understand them. Nathan and Petrosino (2003) argued that pre-service teachers with an advanced level of compressed SMK may have an educational blind spot leading to a lack of understanding of the level of support that students need in order to enable understanding of mathematics concepts in students and a mistaken perception of what mathematics tasks students may find easy or difficult while pre-service teachers with a more basic SMK had an understanding more closely matched to their students' needs. Similarly a Belgian study (Van Dooren, Verschaffel, & Onghena, 2002) found that future secondary school teachers favoured the use of algebra in both their own problem solving and the teaching of problem solving while their primary school counterparts needed to apply arithmetic methods, which were closer to the understanding of their students. In the context of English language teaching Grossman (1990) suggested that English teachers who had completed 'formal' teacher education displayed approaches to teaching literature more aligned to students' prior knowledge than those who had only received exposure to SMK; though the level of SMK in both groups was similar.

In the field of art education Grauer (1998) investigated the knowledge and beliefs of pre-service art teachers during and post teaching practicum. They found that the SMK and beliefs of the teachers formed a dynamic and evolving relationship but that they were influenced more by the school experiences than by their university education. On the other hand Kowalchuk (1999) found that pre-service art teachers' reflective statements on their practicum indicated that they were challenged by the technical aspects of their art instruction and that SMK was a primary consideration for them.

In a review of research into second language teacher education, Velez-Rendon (2002) highlighted the need for research into identifying the uniqueness of foreign languages as subject matter and its conceptualization. The review revealed that a wider range of competencies are required in contemporary language teaching beyond knowledge of grammar and pedagogy. The subject matter knowledge base is now thought to comprise three important elements – language proficiency, civilization and culture, and language analysis.

Studies Linking SMK to Quality Teaching

It seems obvious that knowledge of subject matter is a pre requisite for teaching it yet findings cited by Grossman et al. (2005) found links between the two constructs difficult to document. They cited studies which showed that teachers with an undergraduate major in their teaching subject produced higher student achievement in mathematics but not in science. However, the number of undergraduate courses studied by teachers does not necessarily provide the kind of content knowledge that leads to good teaching as exemplified by the work of Ma (1999) on expert teachers in primary school mathematics.

Kleickmann et al. (2013) conducted a large scale study into the mathematical content knowledge and mathematical knowledge for teaching of different types of

teachers in Germany at different stages of their training. The German education system is highly differentiated with students in the country separated into academic and non-academic tracks after grade 4. The teacher education for teachers teaching on both types of tracks is a two phase process involving university education of seven to nine semesters depending on the track, followed by a practical phase of 18–24 months involving 3–4 days per week in schools and time studying in teacher education institutes.

Kleickmann et al. (2013) investigated both types of knowledge for cohorts of teachers on both tracks in their first and third years and during their practical phase. They also collected data using the same instruments from experienced teachers. After controlling for differences between the cohorts, they noticed that teachers' content knowledge increased steadily during the teacher education phase with an appreciable increase between the third year and practical phase. They also noted a steep increase in PCK (which included a strong emphasis on Knowledge for teaching) over the same period. However, little change in content knowledge between the practical phase and experienced teachers was noted in the case of the academic track teachers and a decrease was recorded for the non-academic track teachers. In the case of the PCK, the academic track teachers showed a small improvement, but in the case of the non-academic track teachers there was no change. A finding of this nature places a large burden on the initial teacher education process as teachers do not appear to learn much once out in the field.

There is also ample evidence that engagement with teaching a topic has an effect on teacher SMK. Gess-Newsome et al. (2010) found that after a 2 year professional development programme using educative curriculum in biology only academic content knowledge (similar to SMK) could explain a substantial proportion of student achievement.

The studies in this section show that the link between SMK and teacher competence is complex and multi-faceted and varies according to SMK background, level taught and conceptual understanding and use of SMK. It does seem however that practice does impact teacher knowledge as well as knowledge impacting practice – which is more widely understood to be the case.

In What Form Should SMK Be Offered?

The simplest answer to this question is that teachers need to know the SMK that is in the school curriculum. However, this answer is complicated by the changeability of school curricula and the need to challenge learners beyond mere school knowledge. Beeby (1966) provided a useful categorization of four levels of development of primary schools and their teachers. The first level is referred to as Dame School (after Charles Dickens) where teachers are untrained and ill-educated. Their teaching is characterized by an emphasis on memorization and an absence of meaning. The next stage, Formalism, is one where the teachers are ill-educated but trained. Teaching in this context is highly organized, unidimensional and memorization is

again stressed. Teachers at this stage would find it difficult to manage a change of curriculum. In the third stage, Transition, teachers are better educated and trained. They still have roughly the same goals as those in the formalism stage but there is more emphasis on meaning and they are less tied to text books and syllabuses. Finally at the meaning stage, teachers are well educated and well trained. They are able to inject meaning and understanding into their teaching, cater for individual differences and use resources more fruitfully. Teachers who only know and can teach the SMK that is in the current school curriculum would thus fall into Beeby's (1966) second category, that of formalism, implying a mechanical delivery of the curriculum. As can be seen in the discussion of teacher education across the world provided above, practice on the level and type of SMK offered to pre-service teachers differs widely. The survey undertaken by Tatto et al. (2010) cited above showed that there was a greater trend to emphasize SMK and PCK in the case of secondary teachers, and express concern at the lack of this emphasis at the primary level. They acknowledged that in some cases teachers entered programmes with a high level of mathematical knowledge. However, they noted other cases where teachers departed their teacher education programmes with little or no knowledge of mathematics. Similar situations have been noted in the field of science education whereby a wide diversity of practice was noted in Europe and Africa (Evagorou et al., 2015; Ogunniyi & Rollnick, 2015).

Lack of teacher SMK can also arise from out of field teaching (Ingersoll, 1998). Working in science education, Luft, Hill, Weeks, Raven, and Nixon (2013) found that out of field teachers provided less robust answers in all areas. They also found that there was a threshold level of science knowledge that was needed to support student learning, but that the quality of the knowledge was also important. They did not elaborate on either the level or quality required but did call for more discussions about content knowledge in pre-service teaching which focused on core ideas, connections within content areas and the nuances found within content disciplines.

In mathematics education Adler and Davis (2006) studied mathematics and mathematics education courses offered across a variety of institutions and contexts in South Africa. They analysed assessment tasks given in teacher education courses where greater emphasis was placed on pure mathematics and greater emphasis on mathematical knowledge for teaching, defined by Ball et al. (2008) as requiring unpacking of knowledge calling for greater understanding and fewer mechanical procedures. Ball et al. use the term unpacking to describe the process of breaking down concepts into their simpler components so that students can see their origins. The authors found few opportunities for unpacking mathematical knowledge across the programmes studied despite them being organized for teachers and where they did identify 'unpacking' it was done by mathematical educators rather than mathematicians. They argued that more opportunities for unpacking was needed in teacher education programmes to allow for the contextualization of knowledge to take place.

Kuntze et al. (2011) examined the professional knowledge of pre-service mathematics teachers in Germany and discovered that despite good SMK preparation teachers were unable to discern big ideas behind mathematical content and to link

specific SMK to these big ideas. While Adler and Davis were studying a context where the level of SMK was a concern due to the historical context, this would not be the case of Germany, which is a country with a well-developed education system suggesting that unless special attention is paid to SMK for teaching, this kind of knowledge does not naturally emerge. Darling-Hammond (2006) reinforced this view calling for coherence within teacher education programmes. She considered that the various components such as SMK needed to be well integrated with the other courses. Amongst the features of exemplary teacher education programmes she identified:

> … a strong core curriculum taught in the context of practice and grounded in knowledge of child and adolescent development and learning, an understanding of social and cultural contexts, curriculum, assessment, and subject matter pedagogy. (p. 305)

Most importantly this coherence needs to exist between the pedagogy of the subject to be taught and its content. Despite the lack of wide-spread agreement regarding structure and content of programmes noted above, some broad principles concerning the goals of programmes that prepare secondary mathematics teachers have been extracted (Conference Board of the Mathematical Sciences (CBMS) (CBMS), 2001; Cooney & Wiegel, 2003; Stacey, 2008; Watson, 2008). Though principles have been derived in the context of mathematics, the list has been rephrased to apply across different school subjects.

- University taught content should illuminate school taught content by providing an advanced perspective on it.
- Pre-service teachers should gain knowledge of content beyond the school curriculum.
- Pre-service teachers should gain knowledge about the subject, including its history, philosophy, recent developments and popularist ideas that stimulate public engagement in the subject.
- Pre-service teachers should develop a deep understanding of the core of the school subject including the important procedures, ways of solving problems, interpreting ideas and related skills.
- Pre-service teachers should be exposed to ways of experiencing the subject that go beyond the formalism of typical undergraduate content courses, to include open-ended ways of investigating and interpreting the content.
- Pre-service teachers should develop the skills to continue their own learning of the subject and thus engage in inquiry into the subject as lifelong learners.

Thus in light of the views expressed above, the type of SMK required by teachers is different to that required by subject matter experts in other contexts. This is a view not well understood by those outside the teacher education fraternity in the broader public and even within academia more generally.

In the case of science education, Zeidler (2002) identified two distinct communities – subject matter specialists from colleges of arts and science and teacher educators with distinctly different ontological, epistemological and methodological commitments. More often than not, public understanding weighs in on the side of

subject matter specialists as understanding of teacher knowledge is limited, leading to a popular perception that SMK is best taught to teachers by subject matter specialists. Zeidler asserted that the views of these specialists leads to a divide between learning orientations – the subject matter specialists being aligned to a social behaviourist orientation espousing a teacher centred learning environment in contrast to the student centred environment arising from an experientialist orientation.

Different practices in teacher education worldwide (e.g., Cofré et al., 2015; Evagorou et al., 2015; Ogunniyi & Rollnick, 2015; Olson et al., 2015; Tatto et al., 2010) show that pre-service teachers are frequently exposed to both these communities leading to a schism between the SMK and its pedagogy. The low status of teaching in many countries leads to lower calibre applicants entering teacher education programmes (Ogunniyi & Rollnick, 2015). Hence, programmes with sequential structures where SMK is taught in a general undergraduate degree prior to teacher education are able to attract higher quality applicants and are thus perceived as providing a superior route to teaching. The difference in type of knowledge required in the programmes is highlighted by anecdotal evidence from the authors of this chapter whereby pre-service teachers registered for a post-graduate certificate in education (PGCE) at their institution are required to pass a final grade 12 examination in their subject but all do not pass at 50 % on their first attempt; this after completing an undergraduate degree in the subject.

This section has outlined important principles for the form of SMK to be offered in teacher education. In the following section we engage on the methods used in programmes.

How Should SMK Be Taught to Prospective Teachers?

The important question of how SMK should be taught arises from the arguments made above. If teachers are to have a different view of SMK to subject matter specialists and be able to contextualize their knowledge into the teaching context, attention needs to be focused on the optimum ways of teaching it in teacher education. Olson et al. (2015) argued that social learning theory indicates that teacher learning needs to be situated in contexts where it can be best developed. Darling-Hammond, Hammerness, Grossman, Rust, and Shulman (2005) argued that:

> … teacher education programs have sometimes focused on generic conceptions of knowledge and skill development, and that it now seems clear that, to be enacted, teachers' learning should be developed in ways that derive from and connect to the content and students they teach. (p. 403)

This idea of SMK as the link between teacher learning and their students not only points to the nature of SMK argued above but also to appropriate methodologies for SMK instruction in teacher education. In the context of science Cofré et al. (2015) argued that practicums and science method courses are the natural spaces to develop appropriate SMK for teaching. In many countries as described above, the structural

organization of teacher education programmes as sequential rather than concurrent (Stacey, 2008) predetermines where SMK should be taught in the case of sequential programmes but does provide room for variation in sequential programmes. In Australia for example, national professional standards on teacher education do not specify where content should be taught leaving freedom for different programmes to structure the teaching of SMK to suit their own context ranging from separating discipline units from pedagogy units or integrating them (Treagust et al., 2015).

Below we describe further findings from teacher education programmes where teacher educators are responsible for teaching content and explicit links are made between the SMK and methodology courses.

South Africa is generally considered a developing country facing a myriad of challenges in the delivery of high quality science education in an effective manner. A number of contributing factors have been identified including a prevalence of teachers who are not suitably qualified, and if qualified teach out of field (Jansen & Christie, 1999). Thus, higher education institutions carry an onerous responsibility to deliver into the system a steady stream of beginning teachers who are not only qualified but are enabled to deliver effective science lessons on arrival in class.

A number of studies show a growth in pre-service teachers' SMK through their exposure to its teaching. For example, Mavhunga and Rollnick (2013) carried out an intervention in which 16 chemistry pre-service teachers were explicitly taught the topic of chemical equilibrium through reasoning about its teaching (Shulman, 1987). In the intervention, the initial element of SMK is transformed to a version that is suitable for use in teaching. In mathematics, similar content specific components are found in the description of 'Specialized Content Knowledge' (SCK), a component of Mathematics for teaching, referred to above (Ball et al., 2008). Mavhunga and Rollnick (2013) reported a significant improvement in the understanding of content knowledge in the topic.

This case demonstrated the value of teaching prospective teachers in ways that link their understanding of content to their teaching. Pedagogical transformation proved to be a vehicle that promotes reasoning in ways that improve the quality of Topic Specific PCK. The strategy used in this intervention shows how SMK can be explicitly taught within a methods course. The topic chosen for this study was one in which the pre-service teachers had previously studied in the SMK course. Their initial scores were low on the pre-test showing that the knowledge expected to be acquired during the content course had not been retained.

The nature of the interactions during the knowledge transformation process called for deeper engagement with the SMK leading to higher conceptual engagement and higher scores on the SMK test. Detractors of this method have claimed that there is not sufficient time in a teacher education programme to engage with all important content areas in this way. Further studies were thus undertaken. In the first study (Mavhunga, 2015) a similar intervention was carried out using the topic of particle nature of matter but the pre-service teachers were given tasks related to a different topic, that of chemical equilibrium. Here the pre-service teachers showed that they were able to transfer the learnt techniques for transforming SMK to a new topic where they had adequate SMK. An improvement in SMK through profes-

sional development and practice was observed in a group of untrained graduate teachers by Pitjeng and Rollnick (2014).

In a third study (Qhobela, Ibrahim, Mavhunga, & Rollnick, 2014) the topic used for intervention (electric circuits) was found to be difficult for the pre-service teachers as they lacked the pre-requisite SMK. In spite of this they were able to successfully apply the techniques they had learnt to a different topic of choice (needed for their practicum) several weeks later. This case illustrates that actively linking the content classes to the methods classes (classes where the pedagogy of the subject is taught) provides more in depth opportunities to engage with SMK. A more radical approach would be to teach the content entirely in a teaching context. Hammerness, Darling-Hammond, and Bransford (2005) suggested that where teachers are assisted in focusing on assisting students toward deeper conceptual understandings, an outcome was stronger student achievement. They described this type of focus as treating content as context.

An example of this type of teaching was offered by Grossman et al. (2005) whereby a grade 2 child read a simple fairy tale passage aloud and stumbled on simple words, mispronouncing words consisting of vowel/consonant/vowel words followed by a silent e (VCVe words) such as "wife" and "fire". An inexperienced teacher asked to suggest a strategy to assist the student may inappropriately provide instruction or scaffolding where they have not identified the difficulty of working with VCVe words. While most teachers at this level would have the pre requisite SMK to read the passage fluently themselves only those who had engaged with strategies to transform knowledge would know such pitfalls of reading development and be able to respond appropriately.

This section has considered various options for offering SMK in teacher education programmes, from complete separation of SMK from its pedagogy to its complete integration. There is emerging evidence that deeper conceptual understanding of SMK required for teaching can emerge from programmes where there is an opportunity for pre-service teachers to engage with the use of SMK in teaching contexts.

Conclusion

In this chapter we have traced the origins of the place of SMK in teacher education from the days of teaching the knowledge to be passed on to students in apprenticeship mode to the establishment of institutions of learning (called "normal schools") where teacher education started. In the later nineteenth century teacher education was thought to consist of teaching the necessary content together with some ideas on how to control the students. These early ideas are often invoked today as a form of teacher education in situations of crisis such as after a country has been through a war. Current practice internationally with regard to SMK in teacher education varies considerably but the majority of programmes have central components which are university based. They vary from a common content base followed by a teacher

education phase where SMK is thought of as a pre-requisite for teacher education to programmes where concurrent teaching of SMK and methodology takes place. There is also diversity in programmes with regard to primary schooling and secondary schooling. As would be expected, a higher level of SMK is required for teachers teaching at the secondary school level. However, the work of Ball et al. (2008) on maths knowledge for teaching does show the potentially high level of SMK required to be truly proficient at the primary school level.

We have also explored two schools of thought with regard to the nature of SMK in teacher education. The French school under Chevallard (1991) and Brousseau (1997) has only relatively recently been accessible to the English speaking world. A concurrent theory guided by PCK has evolved in the English speaking world and the two theories have commonalities and differences. Both share the idea of "fit for purpose" but the concept of transformation in the PCK school is described in terms of adaptations and modifications in the French school. The French school looks at how the context and the practice change the SMK while PCK talks of the need to transform it for teaching.

While the idea of PCK appears easily distinguishable from SMK, the boundaries become more blurred when referring to mathematical knowledge for teaching or specialised content knowledge which Ball et al. (2008) asserted can be thought of as a branch of mathematics. So too the ideas of topic specific PCK explored in this chapter can be thought of as close to SMK. Hence it becomes difficult to decide where SMK ends and where PCK begins. A major emerging finding is that the kind of SMK needed for teaching is different to the kind of SMK taught in university courses. Referring to the principles outlined in the sections above there is a need to distinguish and articulate that knowledge.

How then should SMK be learnt in teacher education? The findings cited in this chapter suggest that SMK needs to be taught in close relationship with teaching methods for the discipline. Where the acquisition of SMK is separated in terms of the qualification offered, greater care needs to be taken in the methods courses to actively import the content and explicit engagement with the content should be an integral part of the programme.

Finally, it is worth noting that most of the literature we have encountered on SMK in teacher education has been in the field of mathematics and science. At first we thought that our inability to locate literature in other disciplines was due to our own bias but even sources like Darling-Hammond and Bransford (2005) drew primarily from mathematics education and to a lesser extent from language education. It is striking that both mathematics and science are vertical disciplines with strong grammars (Bernstein, 1996) leading to a greater concern with subject matter than in other disciplines. Nevertheless the findings in these two disciplines do uncover issues around the transformation of SMK that are of value in other disciplines and that creates an invitation to consider such transformation of SMK beyond that which is currently reported in the research literature.

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Chapter 12
Professionalising Teacher Education: Evolution of a Changing Knowledge and Policy Landscape

Diane Mayer and Jo-Anne Reid

Introduction

Teacher quality has become the focus of intense policy activity in the past two decades across North America, Australasia, the United Kingdom and other European countries, as well as across Asia, Africa and South America. This has not always been the case. Prior to the 1980s, as long as sufficient numbers of teachers with basic qualifications were available, governments, politicians, bureaucratic and media commentary in many countries paid little attention to the field.[1] However, in an increasingly global and globalising world, results of international assessment programmes like the Programme of International Student Assessment (PISA) have focused attention on the quality of the teaching profession and subsequently teacher education policy.

Links between schooling and the economy are being made with teachers seen as key players in increasing a country's global competitiveness and neoliberal policies being seen as the necessary response such that globalisation and neoliberalism have become "intimately entwined" (Furlong, 2013, p. 30; see also Rizvi & Lingard, 2010). In this context, large-scale reform agendas are justified as essential to address what is perceived as a major problem for government, that is, how to raise student achievement so that the country can meet the challenges of globalisation and be economically competitive on the world stage. The resultant global education reform movement (Sahlberg, 2007) has seen increased standardisation, a narrowing of

[1] However, some authors have considered teacher education in Canada to be a 'policy backwater' as recently as the early 2000s (see Walker & von Bergmann, 2013).

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curriculum and greater accountability, accompanied to some degree by what Hoyle, back in 1982, saw as 'the turn to the practical' (Hoyle & John, 1982). As Marilyn Cochran-Smith (2005) reminded us, teaching and teacher education are inherently and unavoidably political.

In this chapter, we first examine a recent history of teacher education policy by drawing on the work of Peter Grimmett (2009) and Marilyn Cochran-Smith (2005) to frame the discussion. Teacher education policies and related governance structures in the past half century are discussed in three phases: (i) teacher education as training under somewhat benign government control; (ii) teacher education as learning to teach under institutional governance; and more recently, (iii) teacher education as policy in a governance context of professional self-regulation and deregulation. We discuss the current policy moment for teacher education and the organisation, governance and knowledge bases informing key policy responses to the perceived 'problem' of teacher education such as alternative pathways and tighter control and regulation. We also discuss the recent (re)turn to the practical, and finally examine two ways in which a professionalised approach to teacher education has been proposed. This involves work on assessing graduates against professional standards for teaching and work aiming to provide an evidence base of the effectiveness of teacher education.

Throughout the chapter, we focus on teacher education policy in the sociocultural–political contexts of the Anglophone world, using specific examples from the geographical contexts of North America, the United Kingdom (UK), and our own context, Australia. Our selection is not intended to discount or devalue the contribution that analysis of non-Anglophone contexts would bring to this chapter, but rather to enable a specific framing for our review and analysis within the space available. At times where it is appropriate, we make brief reference to parallel situations in other countries. We also review the research which has informed the knowledge base for teacher education, specifically as it has underpinned the policy decisions and relevant debates. Our work is framed by Dye's (1994) view of policy as "anything a government chooses to do or not to do" (p. 4) however we acknowledge that multiple levels of government are usually involved in the preparation of teachers and "policies governing teacher education are not developed and enacted at a single level by a single agency, but at multiple levels and by many actors, including federal, state, and local agencies" (Cochran-Smith, Piazza, & Power, 2013, p. 8).

Teacher Education as Training

Prior to the 1980s, in policy terms, teacher education was thought of as a 'training problem' (Cochran-Smith & Fries, 2005), with regulation and governance and the related teacher education curriculum focussing on acquiring effective skills for teaching. The research on teaching, such as it was at that time, aligned with the training agenda of acquiring skills for teaching. The schooling systems (often state,

provincial, or local area governments), being the major employers of teachers, controlled the supply of new teachers by regulating intakes into teacher preparation programmes to only the number of teachers they needed. They were then able to manage the new teachers' employment, induction and career progression. Teacher educators (who were usually former teachers) taught a curriculum driven by the demands of each government system.

Research on learning to teach is a relatively recent field. Historically, knowledge for learning teaching was simply drawn from research on teaching with the view that once it was determined what 'good' and/or 'effective' teachers did then teacher training was simply ensuring that teachers were taught to do these things. Indeed the very earliest research on teaching, the so-called 'teacher characteristics' research from the late 1930s to the 1960s, focused on identifying the teacher traits, qualities and behaviours thought to facilitate learning and a positive classroom climate. This resulted in notions of the good teacher as someone who was 'motherly' and 'warm' and caring – and like the discourse of the 'charismatic teacher' (Moore, 2004), such ideas still remain very powerful in both the public imagination and the ideals of preservice teachers, largely through representations of teachers in film and literature. As Moore says, these have:

> … less to do with education and training, and more to do with the inherent or intrinsic qualities of character or personality of the teacher, typically coupled with a deeply 'caring' orientation aimed very specifically at 'making a difference' to pupils' lives. (Moore, 2004, pp. 4–5)

Not surprisingly, this early 'teacher characteristics' research resulted in no definite description of the effective teaching, especially in terms of its relationship to student learning.

Research on teaching then focused on teaching effectiveness by examining what teachers did, examining their behaviours in the classroom. This 'process-product' research examined the relationships between measures of teacher behaviour (process) and measures of student learning (product) (Brophy & Good, 1986; Dunkin & Biddle, 1974; Gage, 1963; Good & Brophy, 1973). The basic tenet of process-product research was to,

> [D]efine relationships between what teachers do in the classroom (the processes of teaching) and what happens to their students (the products of learning) … Research in this tradition assumes that greater knowledge of such relationships will lead to improved instruction: once effective instruction is described, then supposedly programs can be designed to promote these effective practices (Anderson, Evertson, & Brophy, 1979, p. 139).

The findings of this research addressed such things as: quantity and pacing of instruction; whole group versus small group instruction versus individualized instruction; giving information; questioning the students and reacting to their responses; and, handling seatwork and homework tasks.

As a result of this research, preparation for teaching was framed as training in effective skills for teaching. Teaching was seen as a craft able to be gained through learning about and then practising these discrete skills said to comprise effective teaching, providing a "scientific basis for the art of teaching" (Gage, 1978). Practice

was integral to this approach and happened first through the use of selected demonstration schools or normal schools where student teachers observed and practiced regular 'demonstration lessons', and later, when initial teacher education moved into universities and teacher training colleges, in microteaching classes as new video-taping technologies were used to capture teaching moments for close and collective interrogation post-lesson (Allen & Ryan, 1969; Turney, 1975).

It was only in the 1970s that research on teacher education began to emerge as different from, but related to, research on teaching. In the United States (US) for example, a number of education laboratories and centres were established that focussed on examining different ways of training teachers and understanding the ways in which these approaches were effective or not. As a result, a number of teacher training kits and products were developed (Gage, 1978; Turney, 1975). This work was then linked to the competency based teacher education approaches of the 1970s which were promoted in government policy across many countries.

Teacher Education as Learning to Teach

The 1980s and early 1990s saw the emergence of a new focus on preparing a professional teaching workforce. As a result, teacher education came to be understood in policy terms as a 'learning problem' (Cochran-Smith & Fries, 2005) and a matter of 'professional learning' (Grimmett, 2009).

Some of the research on teacher learning derived from cognitive psychology, with emphasis on teacher subject matter and pedagogical knowledge. Other work drew on perspectives form anthropology and sociology, with a focus on culture and its role in learning and schooling. All of these approaches presumed that teaching was a cognitive and intellectual practice that was situated, complex, and uncertain. This meant that it was important for teachers to learn how to make decisions, apply strategies differently in different situations, and reflect on their work (Cochran-Smith, Feiman-Nemser, & McIntyre, 2008, p. 1085).

Beginning in the 1970s, researchers started to acknowledge that what teachers do is directed by what they think. This resulted in the introduction of more qualitative measures in research that asked questions like: What is happening here? Why do things happen the way they do in classrooms? More naturalistic, descriptive, interpretative studies involving ethnography and case study emerged. Subsequently, research began to study teachers' thinking and by the 1980s this focus was considered the dominant field of inquiry in research on teaching (Clark, 1988).

Researchers from Israel, the UK and Europe, North America and Australia aimed to document the cognitive processes and schemata that teachers used particularly in planning and also in decision making during the interactive phase of teaching (e.g. Ben-Peretz, Bromme, & Halkes, 1986; Calderhead, 1987; Clark & Peterson, 1986; Elbaz, 1983; Marland, 1986). Another focus of research at the time sought to distinguish what it was that expert teachers knew that differentiated them from novice teachers (e.g. Carter, Sabers, Cushing, Pinnegar, & Berliner, 1987). However, over

time, teacher thinking research was criticized for being much like the earlier process-product research in that it focused on a few characteristics of teacher thinking and searched for predictors of teaching effectiveness (Carter, 1990; Shulman, 1987). For example, Shulman's still-influential study of knowledge and teaching began with the following depiction of the limitations of this sort of knowledge:

Richly developed portrayals of expertise in teaching are rare. While many characterizations of effective teachers exist, most of these dwell on the teacher's management of the classroom. We find few descriptions or analyses of teachers that give careful attention not only to the management of students in classrooms, but also to the management of ideas within classroom discourse. Both kinds of emphasis will be needed if our portrayals of good practice are to serve as sufficient guides to the design of better education (Shulman, 1987, p. 1).

In line with the professional ambition of this work to illuminate a professional knowledge base for teaching and learning teaching, terms like 'teacher training' were rejected in favour of 'teacher education', and 'learning to teach'. And over time, researchers began to pay more attention to teachers' psychological contexts – their values, beliefs, motives, goals, and perceptions of the settings in which they were working. The research focus morphed into questions about the nature of teachers' knowledge and how it was acquired, held and used. In the 1980s, a group of researchers led by Lee Shulman at Stanford University in the US established an influential body of work in this area which examined the professional knowledge base of teaching as including:

- content knowledge;
- general pedagogical knowledge;
- curriculum knowledge;
- pedagogical content knowledge;
- knowledge of learners and their characteristics;
- knowledge of educational contexts; and,
- knowledge of educational ends, purposes, and values, and their philosophical and historical grounds (Grossman, 1990, 1994; Shulman, 1987; Wilson, Shulman, & Richert, 1987).

Pedagogical content knowledge became a particular focus of research into teachers' knowledge with preservice and inservice teacher education orienting itself to this "particular form of content knowledge that embodies the aspects of content most germane to its teachability" (Shulman, 1986, p. 9). This continues to be a specific area of investigation (albeit in new and evolved ways) by researchers across the world such as for example in the US (Loewenberg Ball, Thames, & Phelps, 2008; Thames & Ball, 2010), the Netherlands (Van Driel & Berry, 2012) and Australia (Loughran, Berry, & Mulhall, 2012).

At about the same time, research on teachers' personal practical knowledge emerged, a kind of working knowledge permeated by the personal and professional experiences of teachers' lives (Brown & McIntyre, 1988; Clandinin & Connelly, 1987; Elbaz, 1983; Sanders & McCutcheon, 1985). This research focussed on the personal understandings teachers have of the practical circumstances in which they

work. The premise was that teachers' knowledge develops from classroom experience and much of it is taken for granted in practice. As such, it is not easily articulated or codified by the teacher, and it is time bound, situation specific and intensely personal. Moreover, it was (and is) depicted and studied as taking the forms of case knowledge or knowledge of significant events, practical principles, personal theories, and images.

Growing interest in, and attention to, the meaning and practice of teaching as a reflective activity (Schon, 1983; van Manen, 1991a, 1991b) resulted in 'reflective practice' becoming a major focus in teacher education programmes (e.g. Elbaz, 1987; Gore, 1987; Hatton & Smith, 1995; Martinez, 1990; Schön, 1987; Smyth, 1989; Zeichner & Liston, 1987). In the programmes, teacher education students were engaged in activities that helped them reflect on their pre-existent beliefs and the effects of their professional practice on students and their learning (e.g. Groundwater-Smith, Brennan, McFadden, & Mitchell, 2001; Tripp, 1993). Even though disciplines like psychology, philosophy, sociology, and history were introduced to support and enable this critical reflection, there was still a need for reflection to focus on teaching methods and the practicum, resulting in the theory-practice binary in teacher education that exists to this day, positioning the practical skills developed during the practicum against the theory that is developed in the campus based components of the programme.

Reflection plays a key role in two other important research traditions in teacher education, the classroom-based, practitioner research models of action research (Kemmis & McTaggart, 1988; Noffke & Brennan, 1991) and self-study (Loughran, 2005; Loughran & Russell, 2002). The idea of action research in particular, highlights the role of the teacher as researcher. Unlike more formal research approaches conducted by academics and published in scholarly journals, action research is typically conducted by the teachers or groups of teachers themselves as a means of addressing real 'problems of practice' in practice as they study the effects of planned interventions designed to improve student learning. The knowledge that teachers and preservice teachers generate through action research, and through self-study processes (Loughran, 2005), is quite different from substantive propositional knowledge that can be codified and transmitted. This knowledge can be understood in 'how to' terms, or as procedural. Both forms of knowledge are considered important for teachers, however it was argued that a third form of knowledge needed to be accounted for if teachers were to be able to continuously deal with change. This was described as 'knowing from', or 'knowing 'from within' a situation or circumstance' (Shotter, 1993, p. xiii) or what Schon (1983) called 'knowing in action'.

In this period, as research on learning to teach was developing and maturing, teacher education was increasingly self-governed by the institutions responsible for the delivery of teacher preparation programmes. Teacher educators often had programmatic control over the way they prepared teachers and to a large extent were able to influence the political agendas related to professional learning and professional practice of in-service teachers. Teacher preparation was carried out in teachers' colleges and then, over time, in universities. In Australia, for example, teachers' colleges were part of the Colleges of Advanced Education (CAEs) sector which had

been developed in the late 1960s to prepare graduates for jobs of a more vocational nature than those from universities, usually in sub-degree qualifications. Their staff were not required to undertake research and were often paid less than university academics. This binary system had been modelled on the UK system with CAEs meant to complement universities.

Apart from offering some diplomas of education for secondary teaching, universities essentially remained "disconnected from teacher education which, in turn, became firmly embedded in training colleges which ranked as second tier institutions" (Aspland, 2006, p. 146). In 1988, the Federal Government, introduced major changes in Australian higher education. The previous binary system of tertiary education was replaced by a unified national system of higher education resulting in many higher education amalgamations and the granting of university status to institutions formerly known as CAEs. In this way, teacher education moved from the CAEs into universities en mass. While this was viewed by some as having the potential to raise the status of teacher education and lift it out of its vocational framing, others have suggested that these moves were motivated more by goals related to greater efficiency and economics (Dyson, 2005).

In many other countries, teacher education was also moving into the university sector. Bates argued that the incorporation of teacher education into universities in Australia created the opportunity "for universities in difficult times to strip assets from teacher education in order to support other initiatives" (Bates, 2002, p. 217). Similar observations were made in the US (Darling-Hammond, 1997; Tom, 1997; Zeichner, 1999). Issues quickly emerged as a result of the lowly status ascribed to teacher education inside universities due to market pressures (they were seen as 'teacher factories' responding to the demands of employers), to the side effect of the 'bad company' that teacher education was seen as keeping (it was women's work, involved a mass profession drawing from the working class, and the work was with children), and due also to the kind of work that teachers and teacher educators do (an extraordinarily difficult job that looks easy) (Labaree, 2004, 2005, 2008). A significant implication for staff moving from their teaching-only positions in teacher training institutions into the university domain was the requirement for research and scholarship that was invoked as part of the reward systems in universities involving promotions and the like (Hulme & Sangster, 2013), with many taking up and attempting to raise the status of practitioner research such as the action research and self-study methodologies described above.

In the 1980s, as these changes to teacher education were being institutionalised, there were already signs of increasing concern about the quality of education and schooling, as well as teachers. In the US, as early as the 1960s, two influential critiques of teacher education (Conant, 1963; Koerner, 1963) emerged highlighting what they saw as the low intellectual and educational levels required of teacher preparation programmes. They also noted that the evidence for the value of teacher preparation was weak. By the 1980s, reports such as 'A Nation at Risk: The Imperative for Educational Reform' (Gardner et al., 1983) highlighted and added to a growing view that American schools were failing. However, it was the work of Goodlad (1990), The Holmes Group (1986) and the The Carnegie Taskforce on

Teaching as a Profession (1986) that led to increased questioning of the quality of teacher education in the US; especially its value in addressing the economic and social needs of the country.

Australia's first nation-wide review of teacher education, the National Inquiry into Teacher Education (Auchmuty, 1980) highlighted a growing concern about the quality of teacher preparation. Among other things, the report recommended 4 years of study and minimum academic standards for teacher education students with no adjustment in attempts to respond to supply and demand issues. However, the government rejected all recommendations that required more resources and, in the end, the report and its recommendation were largely overtaken by the amalgamations of universities and teachers colleges and various cost-cutting initiatives in the 1990s.

Reports like these prompted a series of government reforms at all levels and governments and the public more generally began to notice teacher education. For example, in Australia, the 1988 federal government report 'Strengthening Australia's Schools' (Department of Employment Education and Training, 1988) was significant in that it highlighted the role of schooling in economic reform and signalled a new approach to commonwealth-state relations in schooling policy making – corporate federalism (Lingard, O'Brien, & Knight, 1993). In the UK, a national curriculum was introduced in England and Wales in an attempt to align and control teachers' practice (Whitty, 1989). The establishment of the Council for the Accreditation of Teacher Education (CATE) in England in the mid-1980s to inspect teacher education programmes and report to the Secretary of State for Education, signalled "a move towards central, top-down, political control of teacher education" and indicated a lack of trust in university based teacher educators and a move to a "full blown, school-based education system in England" (Gilroy, 2014, p. 623).

Growing criticism of teacher education, concerns about globalisation and economic competiveness, as well as national solutions (Cochran-Smith, 2008) characterise the current policy moment, which we now examine in the following section.

The Current Policy Moment: Teacher Education as a Problem That Needs to Be Fixed

In the past decade, there has been growing international agreement that the quality of any nation's education system is dependent upon the quality of its teachers and ultimately the quality of their preparation. This is not only agreed by organisations like the OECD (Organisation for Economic Co-operation and Development (OECD), 2007, 2005; Schleicher, 2011) and consulting companies (Barber & Mourshed, 2007), but also by an increasing number of researchers and educational leaders (Darling-Hammond, Barnett, & Thoreson, 2001; Darling-Hammond, Holtzman, Gatlin, & Heilig, 2005; Hattie, 2009). Governments throughout the world are attending to PISA results and applying scrutiny to teacher education (e.g. Cofre et al., 2015; Conway, 2013). This is resulting in changing statutory requirements for initial teacher education reflecting varying assumptions about teaching

and learning to teach, as well as desired regulation and governance procedures to enact policies and practices based on these assumptions.

These changing statutory requirements have often been informed by a flurry of reviews of teacher education prompted by populist and alarmist 'teacher education is failing us' claims particularly as they relate to perceptions of global competitiveness. In Australia, for example, in the last decade alone there have been no fewer than 40 reports on various aspects of teacher education and since the late 1970s there have been more than 100 reviews (e.g. Caldwell & Sutton, 2010; Committee for the Review of Teaching and Teacher Education, 2003; Ebbeck, 1990; Education & Training Committee, 2005; House of Representatives Standing Committee on Education & Vocational Training, 2007; Ramsey, 2000). In the most recent review, the Teacher Education Ministerial Advisory Group (TEMAG) concluded that while there are examples of excellent teacher education practice in Australia, significant improvement to the content and delivery of teacher education programmes is needed (Teacher Education Ministerial Advisory Group, 2014). The Australian Government's response to this report assures swift and decisive action to assure:

- stronger quality assurance of teacher education courses;
- rigorous selection for entry to teacher education courses;
- improved and structured practical experience for teacher education students;
- robust assessment of graduates to ensure classroom readiness; and,
- national research and workforce planning capabilities.

In the US, critics of teacher education have for some time claimed that "teacher education is broken and needs to be fixed" (Cochran-Smith et al., 2013, p. 7) beginning with the reports highlighted in the previous section. The 2004 report from The Teaching Commission a group of prominent leaders from business, government, and education highlighted the link to global economic competitiveness:

> The United States enters the 21st century as an undisputed world leader. Despite difficult challenges at home and abroad, we still have the world's strongest economy, and American business continues to inspire growth and development across the globe. But our nation is at a crossroads. We will not continue to lead if we persist in viewing teaching … as a second–rate occupation. (The Teaching Commission, 2004, pp. 9–10)

Government reports began to question the value of teacher education offered in colleges and schools of education. In 2003, for example, the US Secretary of Education's Annual Report suggested controversially that colleges and schools of education simply get in the way of good people becoming teachers and argued for ways to reduce the barriers to becoming a teacher among otherwise highly qualified individuals (US Department of Education, 2003). However, some within the academy have also been influential in setting the scene for government questioning the value of teacher education. For example, Arthur Levine, former president of Columbia University's Teachers College and long-time critic of teacher preparation in the US, suggested that "teacher education is the Dodge City of the education world. Like the fabled Wild West town, it is unruly and disordered" (Levine, 2006, p. 109). Criticisms have continued. In 2009, the Secretary of Education, Arne

Duncan, highlighted what he saw as the mediocre job schools of education were doing to prepare graduates to teach effectively (Duncan, 2009, October 22). The current US Department of Education's plan for teacher education accountability (US Department of Education, 2011, September) has moved the focus to outcomes and includes measures for judging the effectiveness of teacher education programmes by the achievement of the students that the graduates teach, the job placement and retention rates of preparation programmes, and satisfaction surveys of graduates and their principals. This has paved the way for advocacy groups like the National Council on Teacher Quality (NCTQ), which has no official standing as a regulator or accreditor of teacher education programmes, to become a powerful influence on policies via its national evaluations of teacher preparation which have so far focussed on reading, mathematics, assessment and student teaching, and its recent work with the US News & World Report to rank US schools of education based on evaluations of input measures of programmes (Greenberg, Walsh, & McKee, 2015). These reviews have generally concluded that a majority of teacher education programmes are inadequate in preparing the country's teachers. It is argued that this is not surprising given the motives for this work (Cochran-Smith et al., 2013; Fuller, 2014; Zeichner, 2011) and in an analysis of the 2013 report Fuller concluded that it,

> [H]as a number of serious flaws that include narrow focus on inputs, lack of a strong research base, missing standards, omitted research, incorrect application of research findings, poor methodology, exclusion of alternative certification programs, failure to conduct member checks, and failure to use existing evidence to validate the report's rankings. (Fuller, 2014, p. 63)

In England, the case for teacher education reform began under the Thatcher and Major administrations (Furlong, Barton, Miles, Whiting, & Whitty, 2000). In 2010, British Government Secretary of State for Education, Michael Gove, announced his intention to move preservice teacher education out of higher education and back into schools because of his belief that "Teaching is a craft and it is best learnt as an apprentice, observing a master craftsman or woman. Watching others, and being rigorously observed yourself as you develop, is the best route to acquiring mastery in the classroom" (Department of Education (Df,E), 2010). Murray and Passy (2014) suggested that English teacher education has been remarkably compliant to government dictates even to the specific teaching methodologies to be used. In Ireland, Conway (2013) reports that PISA scores "heralded a crisis of confidence in educational standards" and policy responses "characterized by standardisation, narrowed curriculum focus, and stricter accountability" (p. 51). However, a particularly powerful notion has been seen in many countries with the construction of a 'new professionalism' whereby teacher professionalism is reconstructed in policy terms so that notions of professionalism are more closely aligned with governments' reform agendas. In England for example, Furlong suggests that this "involves challenges to notions of individual accountability and ways of having teachers accept a more externally managed vision of their own accountability" (Furlong, 2013, p. 34) accompanied by decentralisation and devolution of funding and some

decision making to schools but high levels of accountability managed by the state (see also Whitty, 2014).

Moreover, this new professionalism is accompanied by neoconservative notions of knowledge, where the purpose of schooling is seen as the transmission and maintenance of agreed "cultural heritage" (Furlong, 2013, p. 41). In this context, teacher education is judged by how well it delivers "teachers willing and able to embrace this centrally defined, target-driven culture" (p. 40) and in this way, governments control the content of teacher education curriculum.

As we have noted, many of these reform agendas designed to address 'the problem of teacher education' have been driven by federal polices (providing a 'national solution' (Cochran-Smith, 2008) that seeks to efface local and contextual differences). While these are evident in the Anglophone countries we are focussing on here, national consistency in relation to regulation, teacher standards and accreditation of teacher education programmes is also evident in the South American countries of Argentina and Colombia (Cofre et al., 2015), in Singapore (Tatto, 2013), and increasingly so in Chile (Cofre et al., 2015; Tatto, 2013).

Notable exceptions to this approach can be found in Canada and Scotland. In Canada (Walker & von Bergmann, 2013), it is reported that "teacher education varies widely, reflecting the vast geography of Canada and the significant linguistic, cultural, and regional diversity across the country" (Howe, 2014, p. 588). Similarly,

> Scottish Education resisted and rejected policies emanating from an 'English' ideology, capitalized on respect for and influence of the GTCS, and successfully moved teacher education's base from autonomous colleges to high-status universities. At the core of teacher education in Scotland is the continuing desire for partnership-working amongst key stakeholders: local and national government, GTCS, schools, teacher education institutions, teaching unions, parents and pupils. (Gray & Weir, 2014, p. 569)

The result is a high degree of public and political trust in teacher education (Menter & Hulme, 2011). The most recent review of teacher education in Scotland (Donaldson, 2010) was entrusted to professional educators and was accepted in full by the government, and Scotland's General Teaching Council does "not allow those holding teacher qualifications earned on at least four of the school-based routes in England to be recognised and thus employed as teachers in Scotland" (Gilroy, 2014, p. 629). However, in many countries, teacher education is being positioned as a national 'policy problem' (Cochran-Smith & Fries, 2005) usually accompanied by an increasingly complex 'apparatus of certification and regulation' (Connell, 2009) that allows governments to point to their actions in responding to these apparent 'problems'.

> When teacher education is defined as a policy problem, the goal is to determine which of the broad parameters that can be controlled by policy-makers (e.g. teacher testing, subject matter requirements, alternate entry pathways) is most likely to enhance teacher quality. (Cochran-Smith, 2008, p. 273).

In this context, it is often argued that the most appropriate policies and practices for teacher education should be decided according to empirical evidence about their value-addedness in relation to student achievement (Kennedy, Ahn, & Choi, 2008).

In the US, this has developed into widespread value-added modelling approaches even though there are critiques suggesting that "because of the effects of countless exogenous variables on student classroom achievement, value-added assessments do not now and may never be stable enough from class to class or year to year to be used in evaluating teachers" (Berliner, 2013, p. 1; see also Ludlow et al., 2010; McCaffrey, Lockwood, Koretz, & Hamilton, 2004).

Positioning teacher education as a 'policy problem' promotes the view that teacher education can be 'fixed' through government intervention. As noted in the beginning of this chapter, concern about a nation's competitiveness as measured by international rankings like PISA has become a central concern for many governments around the world. Countries are looking to more successful others for education reform agendas in the pursuit of higher rankings, such that decontextualized policy borrowing is rife (Philips & Ochs, 2004). As a result, the approaches to fixing the problems of teacher education look remarkably similar across Anglophone countries, often characterised by rampant 'reform mania' and 'federal invasion' (Bullough, 2014). The policy debates have become increasingly polarized, posing the deregulation and marketization of teacher preparation against a defence of professionalism grounded in the academy (Mayer, Luke, & Luke, 2008). Those promoting deregulation argue there is little evidence of the value added by teacher education as it is currently practiced and argue for alternative pathways into teaching and support for new providers outside the academy. On the other hand, those calling for increased professionalism promote policies and practices involving professional self-regulation and semi-autonomy, arguing that the most important factor in student learning is the teacher and that therefore time and money should be put into professionalising the teaching workforce with high level qualifications and ongoing professional learning (For example, Darling-Hammond, 2000a, 2000b; Furlong et al., 2000).

In short, there are two major themes currently underpinning teacher education policy: standards and standardisation, accompanied by increasing involvement of national or federal governments as well as national professional bodies (for example: the National Council for the Accreditation of Teacher Education (NCATE) and more recently the Council for the Accreditation of Educator Preparation (CAEP) in the US, the Australian Institute for Teaching and School Leadership (AITSL) in Australia, the Teaching Training Authority (TTA) and more recently the National College for Teaching and Leadership (NCTL) in England). Standardised regulation aims to provide governments with the confidence that teachers are being prepared to provide an apparently effective education in the terms of policy goals. However, and seemingly at odds with increased standardisation, is a simultaneous notion of competitive diversification (choice) informing teacher education policy so that alternative routes into teaching are encouraged and supported – often with the premise that these pathways will attract more academically able students into teaching. Here the focus is on attracting potential teachers who already possess the subject content knowledge that schools need, and the assumption is made that other knowledge for teaching, such as curriculum and pedagogy, can be picked up on the job (for example, School Direct in England).

In the following sections, we examine these positionings and the reform agendas framing the policy discussions.

Alternative Pathways into Teaching

In the early 2000s in the US, a wave of conservative criticism of teachers and their work and of teacher education questioned the value of traditional teacher preparation (Finn & Kanstoroom, 2000; The Abell Foundation, 2001). This was in the context of the Bush administration's No Child Left Behind (NCLB) legislation which provided the context for challenging the value of teacher preparation by suggesting that subject matter knowledge and verbal ability were the fundamental determinants of high quality teaching. It was argued that subject matter knowledge is best acquired outside schools of education, while many other things could be learned 'on the job' (US Department of Education, 2003, 2004). This set the context for the growth of alternate pathways into teaching like Teach for America and the generously funded American Board for the Certification of Teacher Excellence which provided an option for prospective teachers to bypass traditional teacher education *en route* to certification by paying to take an online examination to be 'certified' as a teacher (Bullough, 2014). In 2004, the US government was quite clear about its intent,

> [T]he Department is committed to continuing to forge strong partnerships with states, institutions and national organizations, such as the American Board for the Certification of Teacher Excellence, the National Center for Alternative Certification, Teach for America and the New Teacher Project, to help to continue building momentum for change. (US Department of Education, 2004, p. 13)

Alternative routes like Teach for America continued to grow in the US despite the absence of conclusive evidence that demonstrates increased effectiveness over traditionally certified teachers (Decker, Mayer, & Glazerman, 2004; Glazerman, Mayer, & Decker, 2006; Xu, Hannaway, & Taylor, 2009). In a study comparing the academic achievements of students taught by Teach for America teachers to the academic achievements of students taught by regularly certified primary school teachers, students of Teach for America teachers did not perform significantly different from students of other under-certified teachers, and students of certified teachers out-performed students of teachers who were under-certified (Laczko-Kerr & Berliner, 2002). There are longer term problems with a programme that is designed as a form of altruistic 'national service' rather than a long term career aspiration and Teach for America acknowledges that retention rates are low (Vasquez Heilig & Jez, 2014). The storyline remains attractive to government, though, as it fits with their espoused need for inspirational teachers free from the shackles of formal qualifications.

In the UK, similar policies (Teach First and the School Direct programme discussed below) have enabled employers in England and Wales to employ teachers to learn 'on the job', without the constraints of having to recruit only qualified teach-

ers. In Australia, the $550 million federal government funded *Smarter Schools – Improving Teacher Quality National Partnership* (TQNP) programme 2009–2013 provided the context for the establishment and implementation of Teach for Australia and Teach Next borrowed from the global Teach for All scheme aimed at recruiting high flyers into the profession for part of their working lives.

While in most countries, programmes like Teach First and Teach Next attract only small cohorts, they have been symbolically significant in destabilising other models of initial teacher education. In England, for example, while less than 8 % of the allocation of initial teacher education numbers for the 2014–2015 academic year will be totally school based routes, it must be noted that the School Direct programme has forced the closure of some university courses in England (British Educational Research Association (BERA), 2014). However:

> What remains clear is, despite much political rhetoric to the contrary since the 1980s, the reality on the ground is that the dominant form of initial teacher education provision in England remains located in higher education institutions. (Gilroy, 2014, p. 630)

The recent Carter Review in England reinforced the importance of university study in teacher education, and stressed the importance of school-university partnerships in the development of teacher professional knowledge and evidence informed practice (Carter, 2015). Similarly, in the US, it is estimated that about three-quarters of all teachers still enter the profession through college and university programmes (National Research Council, 2010; Zeichner, 2014). However, there is continuing concern about the school settings that many of the un- and underprepared teachers teach in (e.g. Darling-Hammond, 2004a; Zeichner, 2009, 2014). Some countries like Ireland and Finland have not been impacted by moves to alternative pathways mostly because of the high demand for teacher education places (Conway, Murphy, Rath, & Hall, 2009; Evagorou, Dillon, Viiri, & Albe, 2015).

Tighter Regulation and Standards

Increasingly, the construction of standards for both students and teachers, accompanied by notions of control through various policy and implementation procedures, has been seen by governments as offering quality assurance. A standard set by a central agency or bureaucracy, to which others must aspire, is seen as the accountability mechanism for ensuring a good return on investment. Even though the development of professional standards for teaching may, as Connell (2009) suggests, "help protect education against abuses of the 'charismatic' image of the good teacher, where politicians in search of publicity throw untrained youngsters into very difficult teaching situations on the Hollywood principle that natural talent will triumph in the last reel" (p. 220), some argue that the current statements of professional standards portray teaching and teachers' work as little more than a technical

activity. In this way, they don't look much different from the competency statements of the 1960s and 1970s. The push for the installation and promulgation of teacher standards has been a worldwide phenomenon and "the thrust of central policy-making has resulted in the reduced professional autonomy of teachers through prescription, target-setting and evaluation techniques that strip away the subtleties and complexities of the teaching role" (Storey, 2006, p. 218).

It is true that governments usually drive standards and regulation agendas. They "hold the purse strings" and have a "responsibility to maintain an appropriate level of competence in the teaching profession" (Bates, 2004). As Australian policy both borrows from and lags behind that of other western nations, it has become a useful exemplar to illustrate the development of these ideas. The Australian Institute for Teaching and School Leadership (AITSL), for example was established by government in 2010 to oversee the development of national professional standards for teachers and principals, national regulation of teacher education accreditation, teacher registration, and national professional development for teachers and school leaders. This followed several decades of agency development, policy critique and refinement internationally, and a similar period of support for an Australia-wide accreditation of programmes for the professional preparation of teachers (Adey, 1998; Ingvarson, Elliot, Kleinhenz, & McKenzie, 2006; Ramsey, 2000) and a national standards framework for beginning teaching and the teaching profession (Australian College of Educators, 2003; Ingvarson, 2002a; Preston & Kennedy, 1995). The first tranche of standards development was dominated by the large state government school systems, and influenced by competency-based conceptions of standards characterised by long lists of duties, opaque language, generic skills, decontextualized performances, an expanded range of duties and weak assessments (Louden, 2000; Louden & Wallace, 1993). During the 1990s, a lot of work was done across Australia in developing professional standards for teaching but this was done in states working independently of each other, and they were often unrelated and used in differing ways (e.g. Australian Science Teachers Association, 2002; 2006; Mayer, Mitchell, Macdonald, & Bell, 2005; Ministerial Council on Education Employment Training and Youth Affairs, 2003; Standards for Teachers of English Language & Literacy in Australia (STELLA), 2002). So, while statements of professional standards are usually intended to create a shared and public 'language of practice' that describe how the specialised knowledge of teaching is used in practice and also be a vehicle for assessing and judging professional activity (Yinger & Hendricks-Lee, 2000), the standards landscape in many countries like Australia has been somewhat fragmented and uncoordinated. Many constituencies within the profession have attempted to articulate effective professional knowledge and practice at various junctures along the professional learning continuum and related career transition points, and to control and regulate their slice of the profession.

(Re)turn to the Practical: A Theory of Practice for Teacher Education

A traditional model of teacher education is fairly standard across many countries, for example,

- a four (3, 1, …) year course structure centred on sequenced subjects devoted to 'foundations', teaching and school subject content, curriculum and teaching methods and some mix of practice teaching;
- formal, bureaucratic relationships between employers (schools) and teachers, typically tempered and mediated by one or more university staff who develop collegial ties with school personnel; … (Smith & Weaver, 1998, p. 32)

This is reflected in South America (Cofre et al., 2015), Europe (Evagorou et al., 2015), China (Liu, Liu, & Wang, 2015) as well as the Anglophone countries being focussed on in this chapter. However, teacher preparation in Finland is 5 years leading to a Masters degree and involves a significant inquiry component (Conway et al., 2009; Evagorou et al., 2015; Tatto, 2013). In Africa, post-independence education systems are heavily influenced by their country's colonial history, the most noticeable feature being the lingua franca adopted. This and the growing school-age population mean the demand for teachers is high. In many African countries, "pre-service elementary teacher education takes place at different institutions to middle and high school teachers. In most cases, elementary teachers are trained in institutions known as colleges of education which are not regarded as tertiary institutions. Academic requirements to enter these institutions are lower than that of universities" (Ogunniyi & Rollnick, 2015, p. 71). They earn diplomas while high school teachers usually earn 4 year degrees. However, in South Africa, "since 2007, all teacher education has been carried out at Universities either through a 4-year Bachelor of Education qualification or a 3-year bachelor's degree and postgraduate certificate. There is no difference in the level of qualification between teachers at different levels" (Ogunniyi & Rollnick, 2015, p. 71).

Even though classroom experiences in schools (variously called the practicum, professional experience, practice teaching, and student teaching) have "formed a key component of what was intended to be an integrated package that balanced theory and practice" (Vick, 2006, p. 194), a theory-practice divide has been of interest to both policy makers and researchers alike with reviews of teacher education regularly highlighting the importance of practice in school settings (often accompanied by calls for less theory), and indeed more time actually practicing teaching in schools. Often this is in the form of recommendations to increase the numbers of days in schools with the assumption that,

> More days in schools … would produce better teachers—it was simple. There was nothing at all significant in such numbers, and there has never been research to indicate how many days 'practice' is optimum for student teachers: there was only a belief in a bureaucratic office that 120 is better than 80, and twice as good as 60. (Reid, 2011a, p. 384)

The perceptions of problems with the practicum or professional experience or student teaching are ongoing. Le Cornu and Ewing (2008), Vick (2006) and Clarke, Triggs, and Nielsen (2014) have all traced the idea of school-based teaching practice in initial teacher education, where student teachers have opportunity to put the newly-acquired knowledge from their university studies into practice with guidance, supervision and evaluation of their capacity for successful classroom teaching from more experienced colleagues. However, the relationship between university 'supervisors' and school-based 'associates' or 'cooperating' teachers is produced as unequal even in that terminology.

The movement of teacher education into the university sector saw the expertise of practising teachers displaced, so that they were *only* 'associates' to the real teacher educators in the universities, simply 'cooperating' with the external agenda rather than co-producing forms of school-based teacher education that could connect school and university agendas. Similarly, although changes in relationships and terminology that have seen school-based partners in initial teacher education named as 'mentor' teachers (Le Cornu & Ewing, 2008) position them as experienced, supportive and agentic, it still does not designate them as equal to university teacher educators.

One response to this has been the recent moves back to a version of the 'apprenticeship' model of teacher education, most notably in England, where a variety of School-Centred Initial Teacher Training (SCITT) programmes mean that new teachers can apply to schools and be selected to learn on the job, with universities taking a much smaller role in initial teacher education that is 'school-led', but still earns a 1-year Post-Graduate Certificate in Education (PGCE). *School Direct* courses are similar 1-year programmes designed by groups of schools – with a university or a SCITT – based on the skills they see as needed for in a newly qualified teacher. Other programmes such as *Troops to Teachers* for ex-Service personnel, *Researchers in Schools* for academics who wish to become qualified to teach all, or the *Teach First* programme all follow similar models.

While such structural separation of education theory and knowledge from practical experience may address short term employer goals of 'teacher readiness', it does not provide a strong support for the continued educational development of teachers.

> What is needed is an integrated theory: one that acknowledges all of the sources of knowledge that contribute to practice and then examines how these interact to create particular teaching practices. (Kennedy, 2002, p. 369)

Research exploring ways in which such an integrated theory for teacher education might be developed has expanded in recent years (Ball & Forzani, 2009; British Educational Research Association (BERA), 2014; Darling-Hammond & Baratz-Snowden, 2007; Furlong, 2013; Grossman & McDonald, 2008; Reid, 2011a). It reflects a growing awareness of the need to rethink what is meant by the often taken-for-granted term 'practice', thereby participating in what has been described as the 'practice turn' in contemporary scholarship (Schatzki, Knorr-Cetina, & von Savigny, 2001). Much more than simply a 'turn to the practical' as a way to recover

lost benefits of both the 'apprenticeship' and 'training' models in initial teacher education, a theoretical attention to practice suggests a larger radical re-assessment of the role and significance of practice theory and philosophy (Schatzki, 2002). Practice is understood as the organisation of complexly interrelated activities, directed at achieving particular purposes. In such a view, teacher education is conceived as a practice aimed at producing novice teachers, appropriately trained and newly graduated, who are ready to take on the professional work of teaching in school settings, and who, though continued attention to practice, will become increasingly expert as they transition into the profession.

Like those in many other professional practice fields, a growing number of teacher education theorists are engaging with the promise that practice theory as a conceptual framework for teacher education provides an opportunity to reconnect with the practice field of teaching as the object of study for teacher education (Reid, 2011b). Building on the work of Shulman, for instance, US researchers have proposed a two-fold focus for teacher education reform.

> A stronger connection to research on teaching could inform the content of teacher education—what gets taught and how—while a stronger relationship to research on organizations and policy implementation could focus attention on the organizational contexts in which the work takes shape. (Grossman & McDonald, 2008, p. 185)

Such a practice theoretical framework for 'teaching teaching' does not turn back to one preferred model, as has been the case with the recent SCITT 'apprenticeship' approaches that have taken hold in England, where the disconnection and compartmentalization of curriculum and pedagogy across university and school teacher education settings remain problematic (Furlong, 2013). Instead, it proposes rethinking teacher education so that it can work effectively to address what Grossman and McDonald (Grossman & McDonald, 2008, p. 192) described as "the organizational complexity of teacher education", involving attention to the different pedagogical approaches research has shown as useful in each model. This means taking full account of:

> the importance of viewing teaching and learning as embedded in multiple contexts, such as the school, the district, the state, and national policies on teaching and learning. (Grossman & McDonald, 2008, p. 191)

This requires a curriculum shift, in effect, from the current convention of foregrounding 'knowledge' in initial teacher education to foregrounding the complex integrative capacity of 'practice'. In the US this has led to the reconceptualization and redesign of some initial teacher education curriculum around attention to 'core practices' (Grossman, 2011), or 'high leverage' practices (Ball & Forzani, 2009) that are systematically studied, analysed and practised by student teachers as realisations of educational theories and system regulation or policies. This includes forging connections across the curricular divide between foundations and methods

in course structures as well as between university-based coursework and school-based professional experience.

The current turn to practice is therefore much more than moving a course to a school setting, which is how many policy enactments seem to frame it. It requires a careful attention to developing deep knowledge of students and of the social and cultural contexts of teachers' work as well as the relational skills for working in complex institutional settings (Zeichner, 2012). It calls for a rethinking of the epistemology of teacher preparation and the development of new forms of shared responsibility for preparing teachers among colleges and universities, schools, and local communities (Zeichner, Payne, & Brayko, 2015).

Constructing a Professionalization Agenda

In addition to building a new theory of practice for teacher education, many within the academy and the teaching profession have responded to what they see as the increasing de-professionalization of teaching and teacher education. They look to other professions, argue for more 'professional accountability', and propose a self-regulated teaching profession that would take collective responsibility for ensuring that all those permitted to teach are well prepared, have and use all available knowledge to inform professional practice and maintain a primary commitment to clients (i.e., students and the public) (Burbules & Densmore, 1991; Darling-Hammond, 1989, 1990; MacBeath, 2012; Ramsey, 2000). Comparisons are made with other professions that 'self-regulate'. Sometimes this is in terms of status (e.g. Hargreaves et al., 2006) or salaries with links to professional certification (e.g. Ingvarson, 2002b). Shulman (1998a, 1998b) has argued that a profession comprises a community that is committed to ensuring that its members individually and collectively develop the capacity to learn from experience, so they can serve the needs of their profession. He argued that that there are six commonplaces associated with a profession – service, theory, practice, judgement, experience, and professional communities of practice.

A professional accountability model represents a 'policy bargain' the profession makes with society, whereby greater (self) regulation of teachers is guaranteed in exchange for deregulation of teaching (Darling-Hammond, 1989, 2004b; Mayer, 2005). In this framing, teacher education accountability is located at the point of graduation from a teacher preparation programme and focuses on the quality of beginning teachers. Engagement with professional standards for graduating teachers and reliable ways of evaluating the capacities of beginning teachers through the provision of evidence of their professional knowledge and practice are the core features of such a self-regulation agenda.

Notwithstanding the critiques of professional standards and the related regulatory mechanisms outlined above, Linda Darling Hammond and her colleagues have argued for some time that framing teachers' work in terms of what they should

know and be able to do is a valid way of capturing the complexity of teachers' work (e.g. Darling-Hammond & Bransford, 2005). The challenge is to ensure that any statements of professional standards for teaching reflect teaching as deliberative intellectual and integrative practice, as social, collaborative and collegial work, and as emotional labour (Isenbarger & Zembylas, 2006). As Connell (2009) pointed out, the lists of current standards do not appear to come from any systematic view of Education as a field of knowledge, nor a reflection of "teaching's daily reality [as] an improvised assemblage of a very wide range of activities" (p. 219).

Many statements of professional standards seem to simply reflect the collective wisdom of whoever is invited to develop and then comment on them at a particular point in time. There is sometimes reference to research on effective teaching, but rarely are the standards subjected to rigorous research interrogation over time. Moreover, a market-oriented problematisation of teacher education which defines 'effective' as what the school systems need or want at this particular point in time means that "What was 'working' yesterday is the guiding principle for what 'shall be working' tomorrow, and hence, the past practice of teaching orients and determines the future generation of teachers" (Simons & Kelchtermans, 2008, p. 289). Those in the academy argue that this needs to be challenged. Moreover, rather than getting caught up with the notion of teacher as an entrepreneurial individual constantly rising to 'the challenge' (Connell, 2009), it is argued that professional standards for teaching must be based on a close examination of the work of teachers, their professional judgments, and the practice of teaching in relation to student learning (Darling-Hammond, 2013).

In the US recent reform has focused on high-leverage teaching practices and routines that are believed to support high-quality student learning. These are intended to be more focused and fine grained than the list of competencies and general standards used in the past (Zeichner, 2012) and support teaching professionalism (Ball & Forzani, 2009) especially if they include attention to teachers' adaptive expertise (Hammerness, Darling-Hammond, & Bransford, 2005). As such they inform the curriculum of teacher education programmes to prepare teacher candidates to know and do these things.

Evaluating Teaching

While professional standards for teaching are now embedded into many regulatory systems, entry into the profession is often regulated by authorities still using programme design or input models to make decisions about teacher credentialing and readiness to teach. Authentic assessments of the actual professional practice of graduating teachers in the workplace, incorporating multiple measures, and focussing on judging the impact of teachers on student learning, are not always used as a means to assess graduate readiness to teach (Mayer, Pecheone, & Merino, 2012). Portfolio assessments (both *structured* or *unstructured)* are sometimes used in

teacher preparation programmes usually as a capstone assessment (St. Maurice & Shaw, 2004).

As Zeichner suggested that,

> [o]nce the activities of teachers are identified, the curriculum of teacher education programs should focus on preparing teacher candidates to know and do these things. Teachers should be evaluated on how well they know and do them rather than on the completion of certain required courses. (Zeichner, 2012, p. 377)

This means providing opportunities for preservice teachers, at point of graduation, to provide evidence of their effectiveness as beginning teachers. By assuring accountability at point of graduation, teacher educators will be able to make decisions about the most appropriate teacher education curriculum to achieve their goals and not have 'yesterday's' structures, content, and processes dictated in policy regulations. Currently, the means used to judge graduates as meeting the standards are not always reliable, e.g., tick a box approaches to a list of competencies; proxies like passing university assignments; and the subjective comments of supervising teachers. Indeed, some of the ways in which judgments are made about graduate teacher capability and the value of teacher education are "not particularly helpful and can be harmful" (Darling-Hammond, 2013, p. 148).

One example of a structured portfolio that has been used for high stakes credentialing decisions in the US is the Performance Assessment for California Teachers (PACT). PACT represents a multiple measures assessment used for initial teacher registration in California. It is designed to collect evidence of preservice teachers' content and pedagogical knowledge as well as their higher-order thinking skills (Pecheone & Chung, 2006). It assesses "the planning, instruction, assessment, and reflection skills of student teachers against professional standards of practice" (Darling-Hammond, 2006, p. 121). The tasks "are designed to measure and promote candidates' abilities to integrate their knowledge of content, students and instructional context in making instructional decisions and to stimulate teacher reflection on practice" (Pecheone & Chung, 2006, p. 24). This has developed into the Teacher Performance Assessment (TPA) now being used across many states in the US. However, while the original intention of this was for teacher educators to control the accountability agenda, it has been argued that moving this to scale and including Pearson Education Inc. has compromised this agenda (e.g. Cochran-Smith et al., 2013).

In Australia, Deakin University drew on the PACT work to design, implement and evaluate what is now known as the Authentic Teacher Assessment (ATA) (Allard, Mayer, & Moss, 2014; Dixon, Mayer, Gallant, & Allard, 2011). In the ATA, preservice teachers demonstrate their professional decision making and impact on student learning over an extended period of time in schools involving a series of lessons working towards a particular objective or set of objectives. Like PACT, the ATA requires candidates to submit a structured portfolio including teaching plans, teaching artefacts, student work samples, video clips of teaching, and personal reflections as well as commentaries in relation to decisions they make about planning, teaching, and assessment over time.

In these ways, 'readiness to teach' is demonstrated by doing the actual work of teachers over time in the workplace, and is backed-up with evidence. Darling-Hammond argues that "[t]he greatest benefits will be secured where multiple measures of learning are combined with evidence of practice" (Darling-Hammond, 2013, p. 149). An effective teacher evaluation system should be "based on professional teaching standards [and] include multifaceted evidence of teacher practice, student learning, and professional contributions that are considered in an integrated way" (Darling-Hammond, 2013, p. 153).

However, even comprehensive capstone assessment incorporating multiple measures, like PACT and ATA do not and cannot capture all dimensions of teachers' work. Essentially, they only capture teachers' individual activity in the classroom as they work to enhance the learning of their students. But all teachers work as part of a larger system and workforce. As Connell (2009) reminded us, "whether an individual teacher appears to be performing well depends a great deal on what other people are doing … It is often the group of teachers, and the institution they work in, that are effective or not effective" (p. 222). Thus, the challenge is to capture the collaborative and collegial dimensions of teachers' work in any system of teacher evaluation (Darling-Hammond, 2013).

Researching the Effectiveness of Teacher Education

Internationally, fuelled by the 'problem of teacher education' as discussed above, successive inquiries have recommended large-scale investigations to provide evidence about the effectiveness or value of teacher education. Nearly 30 years ago, Zeichner (1987) noted the need for research that would establish the particular contribution of initial teacher education to teacher quality, as distinct from other influences, as well as for research that could identify whether particular approaches promoted particular capacities in teachers. More recent reviews have regularly concluded that research in the field of teacher education is under-developed, under-theorised, fragmentary and parochial, with little longitudinal, cumulative or meta-analytic work that could be used to produce oversight and clear direction for policy and practice (British Educational Research Association (BERA), 2014; Cochran-Smith & Zeichner, 2005; Menter, Hulme, Elliot, & Lewin, 2010; Murray, Nuttall, & Mitchell, 2008; Sleeter, 2014). However, major grants are rare in the field of teacher education and findings from the smaller, often unconnected studies that characterise the field do not produce the convergent findings policy makers are seeking:

> The scope and scale of the research can be attributed to a variety of factors, including the relative newness of teacher education research as a legitimate field of empirical investigation, the relatively small-scale funding that teacher education research is able to attract, and a recognition within the field of the importance of investigating aspects of one's own practice in order to both understand and improve teacher education pedagogy. (Murray et al., 2008, p. 235)

The prevailing view is that this body of work has not and does not systematically build a knowledge base for teacher education. There are some US studies that have headed further towards these ends, claiming evidence to show that teacher education does make a difference:

> … teachers who have had more preparation for teaching are more confident and successful with students than those who have had little or none. Recent evidence also indicates that reforms of teacher education creating more tightly integrated programs with extended clinical preparation interwoven with coursework on learning and teaching produce teachers who are both more effective and more likely to enter and stay in teaching. (Darling-Hammond, 2000a, p. 166)

Although these findings have influenced the design and structure of programmes around the world, the results have not served to answer or halt criticism of initial teacher education (Boyd, Grossman, Lankford, Loeb, & Wyckoff, 2009; Boyd et al., 2006; British Educational Research Association (BERA), 2014). In this absence, attention turns to the quality of the entrants into teacher education and control of the content of the teacher education curriculum as proxies for ensuring quality teachers for the profession.

After a 4-year review of preservice teacher education research in the US by the American Educational Research Association's Panel on Research and Teacher Education, Zeichner concluded:

> The main issue in our view is to develop a research program in teacher education that can address the variety of questions that investigators seek about teacher education and its connections to the various kinds of outcomes important to society. (Zeichner, 2005, p. 738)

The panel pointed out that there was little evidence of a shared research programme linking teacher education with professional learning and impact on student learning outcomes. Without a substantive research base to support decisions around the best curriculum, pedagogy, theory and practice for teacher education, it is difficult for the field to defend itself against criticism. As Grossman (2008) has noted, a significant problem for teacher education relates to the fact that "as researchers and practitioners in the field of teacher education, we seem ill prepared to respond to critics who question the value of professional education for teachers with evidence of our effectiveness" (p. 13). Grossman goes on to claim that "the ability of a profession to sustain its jurisdiction lies partly in the power and prestige of its academic knowledge" (pp. 53–4), highlighting the fact that, in the US as in the rest of the world, research in teacher education currently lacks both. As she argues:

> To respond effectively to critics, university-based teacher educators must be able to prove credible evidence of the effectiveness of their practice in preparing teachers. (Grossman, 2008, p. 14)

The recent British review of research and the teaching profession (British Educational Research Association (BERA), 2014) stresses the "urgent need" (p. 37) for broad-based nation-wide research that will monitor the effects of the different teacher education policy reforms currently being implemented across the UK on student learning outcomes, teachers' learning and the improvement of schools.

Some researchers have explored questions of effectiveness by following teacher education graduates into the classroom to examine what they are doing and what the students are learning. The Teacher Pathways Project in New York City in the US, for example, (Centre for Education Policy and Analysis, 2012) is investigating different pathways into teaching, the characteristics of those programmes and the impact of those characteristics on a range of things, including student achievement in reading and mathematics (Boyd et al., 2006, 2009). Work in the Australian context (Louden, Heldsinger, House, Humphry, & Darryl Fitzgerald, 2010) has identified only that it is important to recruit well-qualified entrants to the teaching profession. In the Netherlands, Brouwer and Korthagen (2005) conducted a 4.5 year longitudinal study using quantitative survey data as well as in-depth qualitative data designed to evaluate effects of a programme intended to improve the integration of theoretical and practical learning. In the UK, the 6-year longitudinal *Becoming a Teacher* (BaT) study (Hobson et al., 2009), set out to explore beginner teachers' experiences of initial teacher training (ITT), induction and early professional development in England, including: (i) the reasons that some did not complete their ITT, others completed but did not take up a teaching post, and others took up a teaching post but subsequently left the profession; and, (ii) the extent to which beginning teachers' experiences of ITT, induction and early career progression, and their retention or attrition, were subject to variation relating to the ITT route that they followed. And while not explicitly focussing on the effect of initial teacher education, the 'Variations in Teachers' Work, Lives and Effectiveness' (VITAE) project (Day, Stobart, Sammons, & Kington, 2006), focused on identifying variations in different aspects of teachers' lives and work and examining possible connections between these and their effects on pupils as perceived by the teachers themselves and as measured by value-added national test scores (Day, Kingston, Stobart, & Sammons, 2006; Day, Stobart et al., 2006). What most of these studies highlight is the complexity of studying the effectiveness of teacher education, which is contrary to the linear, cause-and-effect framing of teacher education and beginning teacher effectiveness usually being sought by policy makers.

More recently, Sleeter's analysis of almost 200 articles published in 2012 in leading international teacher education journals "did not see evidence of an emerging, shared research program designed to inform policy" (Sleeter, 2014, p. 151). As she concluded:

> The problem … is that the weight of the research, being fragmented, often narrowly focussed, and usually not directly connected to a shared research agenda on teacher education, does not position teacher educators strongly to craft an evidence-based narrative about teacher education that might counter policies and reports like the NCTQ's.[2] (Sleeter, 2014, p. 152)

She suggests that teacher education organisations should collaborate and develop a research agenda that links teacher education with its impact on teachers and on students, focus more on preparation for and rewarding of research that contributes

[2] A 2013 Report from the National Council on Teacher Quality concluding that preservice teacher education is mired in mediocrity and does not improve student learning.

to building a knowledge base, and emphasise collaboration amongst researchers. Similarly, the Report of the *BERA-RSA Inquiry into the Role of Research in Teacher Education* highlights the "need for more research that looks systematically at the effectiveness of different types of initial teacher education" (British Educational Research Association (BERA), 2014, p. 37).

The BERA-RSA Report also notes that self-improving education systems are ones in which teachers are research literate and have opportunities for engagement in research and inquiry. This requires teacher researchers and the research community to work in partnership (Donaldson, 2010), and work to demonstrate the value of situated and contextualised inquiry into teaching and learning. While large-scale empirical studies employing mixed-methods approaches will go a long way to helping teacher education respond to critics with evidence of effectiveness, there are other measures teacher educator researchers can take with the case study and ethnographic work that typifies a lot of teacher education research. As Zeichner (2005) argued, the challenge may instead be met by systematically connecting with other studies that have asked similar questions and conducting research which builds on its own findings.

Conclusion

In this chapter we have mapped the history, issues and research developments shaping policy and knowledge in teacher education using examples from Anglophone countries as reflective of directions set in the international context. In examining the historical positioning and governance structures of teacher education, we identified three overlapping phases of policy and knowledge structures that have shaped teacher education: a phase of teacher education as training under government control; a phase where teacher education was governed by single purpose institutions; and, a phase where teacher education policy is now reactive to concerns about that country's global economic competiveness. Teacher education is now positioned as 'a policy problem' with governments increasingly regulating requirements for the preparation of teachers and work in the teaching profession that are informed more by political and economic imperatives than they are by a research-informed knowledge base about learning teaching and (school) student learning. Current policy debates around teacher education governance present increasingly polarized agendas positioning the deregulation of university-based teacher preparation on the one hand against a defence of professionalism grounded in the academy on the other.

As part of professionalising teacher education, we argue that teacher educator practitioners and researchers are engaging with the questions being asked about what graduating and beginning teachers should know and be able to do, and how this can be demonstrated. Perhaps more importantly, we have examined how teacher educators are attempting to speak back with research-informed knowledge to the questions being asked about the value of teacher education and its impact on teacher learning for student learning. This work must continue and expand if it is to inform

and be informed by policy. It will involve both a return to theorisations of practice and the need for contextualised research to provide a shared conceptual basis for the ongoing development and renewal of policy and knowledge in teacher education.

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Chapter 13
Learning from Research on Beginning Teachers

Beatrice Avalos

Introduction

The transition from teacher education into classroom teaching has been the subject of intense study in the last 25 years and an object of policy concerns, despite alerts on the particular situation of beginning teachers being raised in earlier times (Fuller & Bown, 1975; Huberman, 1989; Lacey, 1977; Lortie, 1975; Veenman, 1984; Waller, 1932). Evidence of the "reality shock" produced by having to face diverse and difficult situations in schools and classrooms, has been reviewed and conceptualised as problems or as concerns (Conway & Clark, 2003; Veenman, 1984; Watzke, 2007). Equally how teachers learn to consolidate professional practice and the factors that contribute to this learning, either by self-discovery or assistance from others, have been part of copious literature related to the process of beginning to teach, as evident in recent year reviews (Cherubini, 2009; Cooper & Stewart, 2009; Dempsey, Arthur-Kelly & Carty, 2009; Ingersoll & Strong, 2011; Orland-Barak, 2014; Schaeffer, Long & Clandinin, 2012; Silva, Rebelo, Mendes, & Candeias, 2011; Tynjälä & Heikkinnen, 2011).

In terms of international policy the situation and needs of beginning teachers were highlighted by the Organization for Economic Co-operation and Development (OECD) in its influential *Teachers Matter* policy document (OECD, 2005) which recommended the need for induction in this phase of a teacher's career. Although acknowledging the support that a number of educational systems were offering to their new teachers, the document noted that out of 24 countries surveyed, eight did not consider induction and another six left it to the initiative of each school. More

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recently the 2008 *Teaching and Learning International Survey* (TALIS) reported that, in countries such as Italy, Spain, Portugal, Ireland and Brazil, 20–60 % of new teachers had "appraisal and feedback from any source" (Jensen, Sandoval-Hernández, Knoll, & González, 2012, Figure 2.1, p. 43). The same results of low participation of new teachers in induction programmes are reported in the recent version of TALIS (OECD 2014).

Despite what seems still to be an insufficient recognition in country policies of the particular characteristics of entry into the teaching profession and the need for support, the existing body of research and experiences offers insight into how new teachers handle the demands of classroom teaching and school responsibilities, the role and forms of induction that may or not be appropriate to their needs, the interaction between what teachers learn in their teacher education programmes and what their schools and school systems expect when they begin to teach, the role of intellectual, emotional and social factors in this process, and the particularity of situations which may lead to "survival", "enduring commitment", or "walking out". This chapter seeks to review some of this research over the last 15 years with the following two main purposes:

1. Examine the available literature from 2001 onwards using a conceptual organizing framework derived from research and experience and anchored on the complexities in beginning teachers' practice.
2. Shed light on the diversity of teaching and systemic conditions that impinge on professional learning, and on the processes, both individual and collective, through which teachers become self-sufficient and competent.

The review is organised in the following sections: Conceptual organising framework and review procedures including a schematic description of sources, three main analytic-thematic sections and a concluding analysis about beginning teacher professional learning and the implications this has for teacher education and educational policy.

Conceptual Organising Framework and Review Procedures

Every new teacher contributes with specific personality traits, funds of knowledge, dispositions, beliefs and skills, which are partly the result of teacher education experiences and partly their somewhat tentative, but personal definitions of professional self or identity. What a teacher encounters when she or he begins to teach is a set of tasks to be performed, groups of students with varying characteristics and possibilities and particular school environments. Their work involves interacting with instruments expressed in curriculum documents and learning targets as well as participating in school communities and handling different patterns of interaction with colleagues, parents and authorities. The beginning teacher has prior knowledge of some of these conditions and demands, which were acquired during teacher education field experiences, but the range and combination of possibilities and restrictions actually encountered in the first formal employment setting, is certainly new. Added to these elements of interaction, are contractual conditions which for

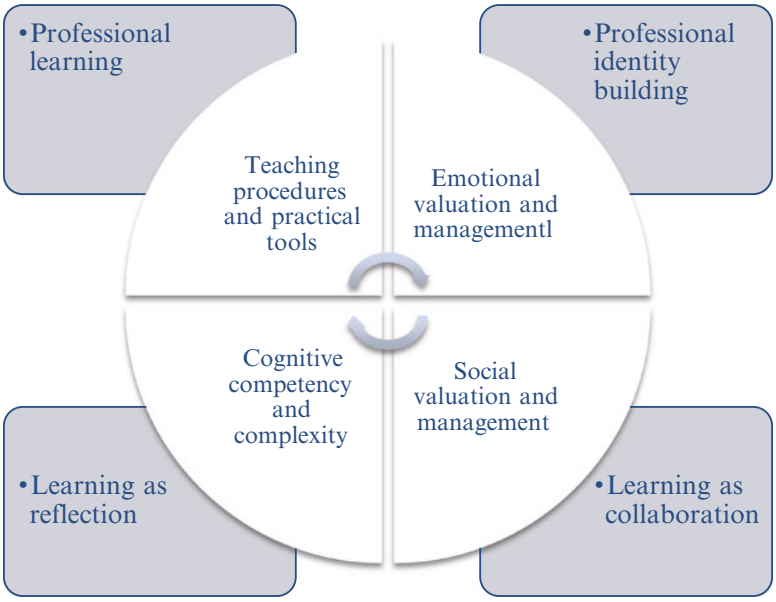

Fig. 13.1 Beginning teachers, professional learning and identity building (Source: Personal elaboration)

some new teachers may mean a full time job in a school of their choice, a full time job in the only school that offered work or part time teaching in more than one school.

The diversity of conditions, personal and external, and the demands of the job form a mesh, which is uniquely experienced or perceived by the teacher, although not necessarily fully reflected upon and understood. Whatever the form of each situation, every new teacher must engage in those activities demanded by his or her specific field of teaching and become part of the school context where this occurs, using cognitive capacities and practical tools, being emotionally involved and committed to the growth of others, and seeing him or herself as the bearer of a social mission (Dewey, 1990; Freire, 2000). The interplay of all these factors contributes to changing definitions of professional identity and self-efficacy perceptions along the life career and leads to the progressive consolidation of forms of teaching and of educating pupils considered to produce desirable learning results (Huberman, 1989). Understanding this process means recognising that the quality of teaching and learning is a social product that emerges and grows from collaborative work with colleagues within and across school contexts and is nourished by systematic reflection. Figure 13.1 attempts to illustrate the various components of what is an integrated process of learning development throughout a teacher's career, but which has its own particularities in the beginning stages of teaching.

The concepts and relationships illustrated in Fig. 13.1 will be used, for the purposes of this chapter, to organise and discuss the vast amount of research on beginning teachers produced in the past 15 years. These concepts respond to the author's views

of teacher development in terms of broad processes (identity building and learning) and more specific thematic elements having to do with teaching actions, emotions, social capacities and knowledge processing, all of which appear in the teacher related literature and specifically, as will be shown, in beginning teacher research.

Review Sources

The key criteria for the selection of sources was that they be published reports or reviews of research on beginning teachers, including reflective analysis or essays based on research, representing as much as possible different geographical areas. The period covered was 2001–2015. The main search instrument was the Scopus abstract and citation data-base which has gradually incorporated journals from different countries: Also consulted was the Scientific Electronic Library Online (SciELO), which contains journals from Latin America, Spain, Portugal and South Africa and has recently been incorporated into the Scopus data base. "Beginning teachers" was used as a key word for the search as it was broad enough to yield the maximum number of relevant references. Over the period there was an interesting growth in the number of research articles on beginning teachers, particularly from 2009 onwards as shown in Fig. 13.2.

Altogether, there were 463 articles identified of which 47.5 % were published in USA sources and/or by USA authors and 15.5 % in Australia or by Australian authors. There was a growing number of articles over the period from European

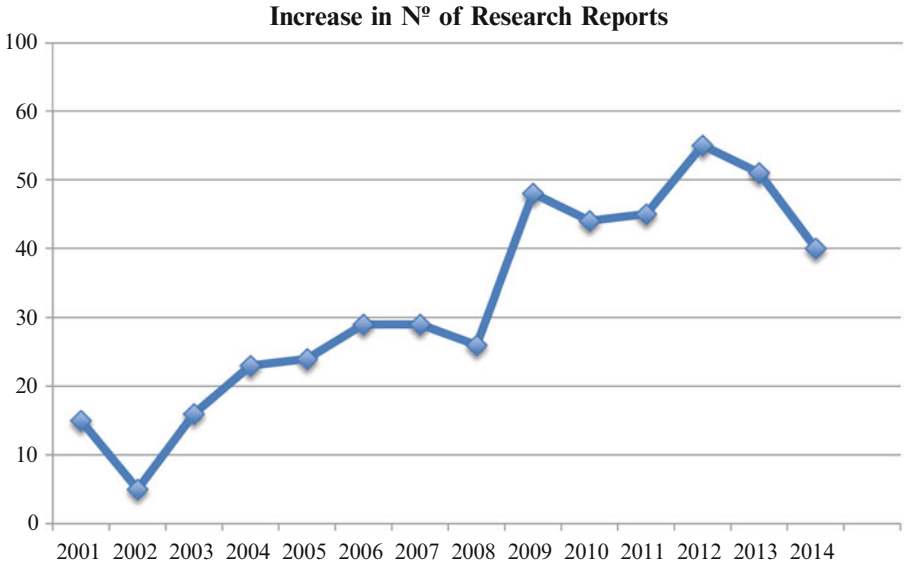

Fig. 13.2 Research on beginning teachers 2001–2014 (Number of published articles. Source: Scopus database)

Table 13.1 Main emphasis of examined research articles

Thematic area	N° of studies	%
1. Attrition/retention (factors affecting, resilience)	22	7.3
2. Beginning teacher assessment (instruments, processes)	4	1.3
3. Beliefs, attitudes, tensions, challenges, concerns	20	6.6
4. Classroom management experiences	5	1.7
5. Contextual factors (school micro-cultures/principals and macro policies)	15	5.0
6. Emotional factors, commitment, motivation	6	2.0
7. Induction (programme description, processes and effects)	73	24.3
8. Interpersonal competence (collaboration)	8	2.6
9. Mentoring (relationships, mentor qualities, problems)	20	6.6
10. Particular populations and teaching situations (racial, male teachers, multi-ethnicity, special needs, children under care, out-of-field and alternatively certified teachers)	15	5.0
11. Professional identity development	8	2.7
12. Professional learning (reflection, cognitive skills, leadership development)	29	9.6
13. Self-efficacy development	10	3.3
14. Subject-matter teaching/learning (cognitive, affective, social, practical aspects)	49	16.3
15. Technology and professional development	7	2.3
16. Teacher education effects	10	3.3
Total	301	100

countries (22 %) covering towards the end of the period 10–12 countries a year, a change from very small numbers at the beginning. From the rest of the world there were 23 articles from Canada, 12 articles from Latin America (Argentina, Brazil, Chile and México), 9 from New Zealand and scattered numbers from Singapore, Malaysia, Israel, Hong Kong, Japan, Shanghai, Taiwan, as well as Ghana, Nigeria and South Africa from Africa.

While the articles examined centred on a wide variety of specific issues and processes, it was possible to detect on the basis of the abstract descriptions 16 main thematic approaches covered in just over 300 articles, which are presented in Table 13.1.

As observed in Table 13.1, a third of the research articles published in the period focused on induction and mentoring (30.9 %) followed by those covering specific subject teaching and related capacities (mostly science, mathematics and language). However, there were another 54 research articles that centred on various combinations of these themes. For example, while a focus on induction and mentoring was a logical combination, these themes also included reference to technology (as in cases of online mentoring), effect of school micro-cultures and the obvious references to theoretical aspects of professional learning. Technology was also associated in several articles to professional learning themes, to identity and to its uses in interpersonal or collegial interactions. In analysing causes or factors involved

in rates of new teacher attrition, several research articles linked these to emotional factors, identity conflicts, effects of external policies and school micro-cultures. The studies on "particular populations and teaching situations" provide an interesting focus on teachers who have to teach "out of their field" subjects, were prepared in diverse forms of "alternative certification" programmes, "males" teaching small children, teachers who only find casual employment. They also include teaching particular populations in terms of racial composition or children in foster care.

In terms of the preferred research approaches as gleaned from 278 abstracts that provided such information 65 % were clearly qualitative studies (case studies, action research, focus groups) using a diversity of data collection instruments such as narratives and stories, interviews and observation, electronic journal analysis and various reflection means such as metaphors. Another 22 % could be classified as predominantly quantitative (surveys, cohorts, panel, experimental). Finally, 13 % of the abstracts reviewed declared the use of mixed-methods approaches.

Many of the qualitative approach abstracts examined reported the use of Case Study designs (58) involving one or more individuals (usually not more than five in this category). There were also 33 studies focusing on what are known as trajectory, follow-up or longitudinal approaches involving the study of a case(s) during at least a year, but also from teacher education into 1 or 2 years of teaching. Finally, there were 11 reported studies that involved the analysis of existing databases in order to examine trajectories and cohorts, often with a focus on retention/attrition levels.

For the purposes of this review, however, not all the research areas noted in Table 13.1 were examined in their own right. For example, many of the articles on mentoring and induction were specific to its processes and would need a longer review to be handled properly, as also studies that looked at rates of attrition among beginning teachers and its causes. This is not to say that studies that referred to these themes as part of broader beginning teacher processes were excluded.

Subject-Matter Teaching, Cognitive Processing and Concerns for Relevance and Student Learning

In what follows, and in line with the concepts presented in Fig. 13.1, three thematic areas related to beginning teacher professional learning and identity building and to the specific tasks of teaching and student learning and the cognitive, emotional and social aspects involved are discussed on the basis of selected research articles: (a) subject-matter teaching, cognitive processing and concerns for relevance and student learning; (b) teaching and school communities: social and emotional tensions and development; and (c) reconfiguration of professional learning from teacher education into classroom teaching. For each theme, besides an overview of the relevant themes and issues in the studies, a group is selected for closer discussion for reasons that will be explained in the introduction to the section.

Once the new teacher has been given responsibility for one or more classes performing its main tasks involves concurrent actions accompanied by thinking about,

Table 13.2 Main curricular subjects covered by research in the period 2001–2015

	N°	%
Art	3	2.4
Language (mother tongue)	18	14.5
Language (foreign or second language)	11	8.9
Mathematics	18	14.5
Mathematics & science	3	2.4
Music	6	4.8
Physical education	4	3.2
Science	47	37.9
Social studies (history, geography, social justice)	5	4.0
Special education	9	7.3
Total	124	100

Source: Scopus abstracts, 2001–2015

seeing and interpreting the subject matter in relation to what is appropriate for pupils and their learning. While there will be a curriculum frame or a specific syllabus to consider, and ways of teaching such a curriculum of which some were learnt and practised during teacher education, every teacher needs to explore what is best to use in the particular situation, trying out diverse forms and being alert to pupils' signals and responses (Wang & Paine, 2003). A generalist primary teacher experiences different degrees of competence and confidence in teaching the range of subjects required and the classes or age groups under his or her responsibility (Smith, 2007). The doubts and uncertainties of a specialist teacher may have to do with the nature of the curriculum frame that must be enacted and with how his or her specialised knowledge base fits in with its demands and those of the school system (Lovett & Dave, 2009; Serra, Krichesky, & Merodo,2009). Uncertainties may include being able to reach students who have difficulty in understanding and challenging those who are capable of deeper learning or who simply do not care about the content being taught (Choy, Chong, Wong, & Wong, 2011).

To a large extent the processes related to subject matter teaching have been conceptualised as "subject content knowledge" (SCK) and "pedagogic content knowledge" (PCK), and have been linked to beliefs about the subject, its teaching and about those who learn its contents. Out of the total 301 pieces of research over the review period, 124 specifically dealt with main subject area demands and the ways in which beginning teachers face them (see Table 13.2).

As Table 13.2 illustrates, science is by far the area most studied in terms of how beginning teachers perform or manage their teaching responsibilities, followed by mathematics and language (Turner, 2012; Hough, 2007; Justi & van Driel, 2006; Farrell, 2006; Roehrig & Luft, 2004; Luft, Roehrig & Patterson, 2003; Mulholland & Wallace, 2003; Mullholland & Wallace, 2001; Ensor, 2001). This emphasis may be a consequence of the emphasis given to these subjects in policies as well as in national and international assessment systems.

The approaches and findings of a group of these studies are discussed below under the following themes: (a) beginning teacher relationships with the curriculum; (b) connecting subject-knowledge to student understanding; and (c) cognitive processing and thinking about subject teaching. Two or three articles were selected to illustrate each theme on the basis of their specific focus, conceptual originality and complexity as well as representing some geographical diversity.

Teaching to or with the Curriculum

There are different ways in which teachers interact with the curriculum, depending on whether they have to work with mandated curriculum or interpret less structured curriculum frames. But, in essence, they must take the curriculum and convert it into teaching plans and activities in line with their knowledge and beliefs about what are its key elements, about what are their students' needs and taking into account their own subject matter confidence level. The links between curriculum interpretation and students' perceived needs are mediated by forms of instruction, which are subject-specific but also coloured by more directive or constructivist forms of teaching. In what follows, three research pieces carried out in different geographical contexts and curricular policy structures serve to illustrate the relationship of teachers with curriculum frames, both in their mode of interpreting them as well as in their teaching approaches.

The first of the studies by Valencia, Place, and Martin (2006) in the United States illustrates the effect of different curricular policy contexts over teachers who also are different in their way of interpreting demands, levels of subject confidence and teaching approaches. The case study reported followed four language arts teachers from teacher education through their first 3 years of teaching in schools and centred on the teaching of primary level reading. The teachers were studied in their schools and classrooms through various means: observations; individual and group interviews with the teachers and with school and district personnel; as well as document analysis. The curriculum conditions under which they worked varied from tightly-prescribed mandated curriculum to "build your own" curriculum approaches, from having to teach on the basis of highly structured scripts and assessment forms to having a wide variety of sources from which to decide on teaching activities such as readers, anthology and teacher developed materials. Each teacher taught a different grade from 1 to 4 to student populations that were different from school to school in terms of racial composition (20–75 % blacks), socio-economic level and proportion of those reading at or above the grade level (39–78 %). The teacher with the greatest degree of curricular prescription also taught the students with lower reading achievement and who were mostly black. All teachers shared the purpose of carrying out a complete reading programme and were concerned primarily with how to teach it and meet their students' needs.

Given the differences in curricular prescriptions, not surprisingly, the four teachers studied by Valencia et al. (2006) were also diverse in their teaching of reading

approaches. Those who had less freedom to alter materials relied greatly on them and tended to follow the indicated procedures. They also showed a limited range of teaching repertoire. But it was not simply the degree of prescription of the curriculum in use that marked the differences among the teachers studied. The teacher's pedagogical orientation, subject knowledge competency and understanding of the reading materials and their uses (partly carried over from their teacher education) also impacted on the degrees of confidence and freedom they felt to experiment with different approaches.

Teachers in contexts with a greater degree of curricular freedom were able to work towards developing a deeper understanding of their own reading instruction practices, while teachers with a lesser degree of curricular freedom remained more superficial in their approach and more procedural. Their pedagogic orientations were also influential in how they dealt with the curriculum, but did not shift much in kind over time as a result of their experiences, showing "shifts in degree rather than kind". Among its important conclusions, the authors contend that in whatever way, more or less mandated curriculum materials do influence beginning teachers' practice (Valencia et al., 2006).

Almost the reverse of the Valencia et al. (2006) study is an in-depth case study in the very different context of China (Wang & Payne, 2003). The policy setting of the study had two major elements: a "contrived curriculum" on the one hand and the practice of teacher investigative groups involving collaborative planning and reflection, coupled with the public delivery of a lesson. The "contrived curriculum" issued by the Chinese educational authorities consists of a teaching and learning framework, a textbook and a teachers' manual which teachers in China must use.

Although the study was based on interviews with 26 beginning teachers on the links between the contrived curriculum, learning in research groups and their teaching capacity as demonstrated through the public lecture delivery, the article reviewed centred on one teacher's public lesson delivery of a particular mathematical concept and examined how the prescriptive nature of the curriculum was enacted in that particular lesson.

The conclusion, after analysis, was that although the teacher maintained her focus on the curriculum documents, she did not follow its suggestions exactly nor use the provided example as indicated. She also engaged her students in practice questions and activities that were other than those suggested. The authors attributed these variations to the teacher's confidence in her subject knowledge and pedagogy increased as a result of the weekly lesson preparation and teacher research group meetings in which she and other teachers participated. As described by Wang and Payne (2003) these activities are similar to the well-known "lesson study" practice of the Japanese education system (Cf. Lewis, Perry & Murata, 2006), which also involves collaborative preparation and feedback after observation of lessons taught by participants.

The authors noted the need to moderate conclusions about there being a necessary lessening of professionalism resulting from having to teach a structured mandated curriculum (as shown in Valencia et al., 2006). In this case the entire policy context -the contrived curriculum and collaboration/feedback opportunities – allowed room

for degrees of freedom in deciding about curriculum and teaching practices that rested on the teachers' self-confidence as far as subject matter and pedagogy was concerned. In this respect, Wang and Paine (2003) called for more research on how contrived curriculum is implemented in different situations and its effect on the quality of subject teaching.

A third case of interaction between centrally mandated curriculum and beginning teacher practices is illustrated in a study of Turkish teachers (Haser, 2010). The main thrust of this study, however, is not so much on the centralised nature of the curriculum but on the lack of teacher support materials and especially of support via some form of mentorship for beginning teachers.

Haser (2010) interviewed middle-school mathematics teachers in their first and fourth/fifth year of teaching, noting changes in their practices mostly due to growth in experience. Similar to Valencia et al.'s (2006) study the Turkish teachers began to teach in different types of schools, although most were rural and had more difficult to teach student populations (as perceived by the teachers in the studies). In their eyes, the curriculum had not been fixed with "these kinds of students' in mind" and the teachers found it difficult to teach through the curriculum. They tended to attribute their teaching problems to their students' perceived levels of prior knowledge and to the students' former mathematics teachers. The number of national examinations (6th, 7th and 8th grade) also exacerbated the pressures to which these teachers needed to respond.

The difficulties persisted 4 years after although moderated by a more settled perception that "not all groups can achieve at all levels" (p. 298). Interestingly, in their interviews the teachers did not refer to possible personal knowledge difficulties in teaching certain mathematical concepts although conversely they attributed greater ownership to those concepts about which they felt more confident. Haser's (2010) analysis attributed the practices and views expressed by the teachers to a mix of prescription in the national curriculum (same content and results expected of all students), the mixed quality in prior knowledge levels of their students and lack of collegial or mentorship support. But Haser also suggested possible inadequacies in teacher preparation in terms of learning to deal with differences in students' prior knowledge and with their cultural differences (rurality in this case), but also in the quality of mathematics content knowledge preparation.

Seen together, the three studies above highlight the differences in how teachers engage in their classroom activities in systems with greater or lesser "mandated" curricular frames. Both the studies of Valencia et al. (2006) and Haser (2010), in different national contexts, highlight the restrictive nature of highly prescribed curricula over how teachers work with materials and their degree of confidence in being able to innovate to suit students' learning needs.

In Haser's (2010) study the restriction also extended to the lack of appropriate teaching materials making teaching even more difficult, especially in its relation to difficult to teach school populations such as rural settings. Curriculum restriction is also the case in the third study (Wang & Payne, 2003) but a different factor intervenes which moderates its effect and which is provided by the practice of collaboration in preparing and implementing a "public lesson" in that it increases

the possibility of adjusting the curriculum or deviating from its prescriptions in order to suit learning needs. Simply put, these studies highlight that contrived curriculum has a restricting effect over teaching quality among beginning teachers but that this may be moderated if there are opportunities for collaboration and feedback and if the new teacher has been well prepared in both content and pedagogical knowledge.

Relating Subject Knowledge to Student Understanding

The process of teaching for understanding – a repeated concern of new teachers – may be examined from different standpoints associated with nature and conceptions of the subject as well as from approaches derived from learning theory and specific evidence about how to teach it. The cases of science and foreign language teaching are used here to illustrate the teaching implications derived from approaches closer to "inquiry" (science) and approaches closer to "performance" (foreign languages). The two selected studies were carried out with teachers in the United States.

Roehrig and Luft (2004) examined how 14 secondary science teachers understood and enacted the teaching of inquiry based science lessons in the context of an induction seminar in which they had been participants. Inquiry based lessons were defined in the words of the National Science Education Standards of the USA as "the diverse ways in which scientists study the natural world and propose explanations based on evidence derived from their work" (Roehrig & Luft, p. 3). For the purposes of the study attention was focused on the constraints experienced in the teaching of inquiry based science of the 14 teachers who were in their first, second or third year of teaching, considering what they knew, believed and practised in relation to this approach. To this end they used beginning and end-of-the-year interviews on teaching and teacher beliefs as well as open-ended questionnaires for views about the nature of science. The teachers' practice was also observed.

The key findings of the study allowed teachers to be described according to three different teaching orientations: "inquiry"; "process-oriented"; and, "traditional". In relation to inquiry teaching there was no specific set of factors that influenced primarily whether teachers would use this approach, although there were interactions and combinations of situations that influenced the possibility of its use. For example, students' ability and school context could deter the implementation of science inquiry instruction despite the teacher's convictions and knowledge about the approach. Also, while lack of adequate content knowledge might have been a factor in not using the inquiry science approach, in others this might have resulted from a lack of suitable pedagogy. Thus, although there was indication of that which was basically needed to teach in line with scientific-inquiry such as solid content knowledge, student-centred teaching beliefs and a "contemporary" view of science, the authors concluded that none of these on their own were a solid contributing factor. All three components interacted with other factors derived from general teaching orientations and prior teacher preparation in science knowledge or pedagogy.

From the perspective of foreign language teaching, Watzke (2007) reported on a study that followed a group of teachers in their first 2 years of practice who taught Spanish, French and German. The focus of the study was on changes in pedagogical content knowledge (Shulman, 1987) overtime and on the development of teacher crucial concerns related to student learning and personal wellbeing. To this end, the research sought to identify core categories related to knowledge, instruction and learning expressed by beginning foreign language teachers, and how these changed over the first 2 years of teaching, as reflected in electronic journal entries of the participant teachers, interviews and focus groups. After careful qualitative analysis of the data, Watzke (2007) was able to conceptualise four categories considered to be crucial to the participants' teaching: *prior knowledge as framing instructional decisions*, *attitudes towards teacher control in the classroom*, *instructional goals for daily lessons* and *considerations for responding to student affect (p. 69)*, all of which were consistent across the different teaching contexts. However, in the analysis of how these categories played in the classroom teaching of foreign languages and over time, Watzke (2007) observed a clear process of moving from the situation of being still "learners" to one of being more confidently "teachers".

Through Waztke's (2007) study, progress was noted as evident in the initial use of more traditional forms of teaching followed by a sort of gradual recalling or re-experimenting with the student-centred learning to which participants were exposed during teacher education and which was in line with the communicative approach to foreign language teaching. This was evident in the observable increase in language teaching with an emphasis on task performance and communication as well as student-centred activities in which the teachers progressively engaged. It was also accompanied by a gradual control over classroom management and handling of its diverse emotional implications. Watzke suggested that in order to better understand how beginning foreign language teachers moved to the full use of a communicative approach in language teaching, the issue to be examined was "not where teachers are, but where they are going" (p. 74).

The two studies (noted above) centred on quite different subjects (science and language arts) point to the interaction of factors that impact on the degree to which teachers enact a subject's particular teaching approach, be it inquiry-based or performative: knowledge-base, attitude and responsiveness to students as well as a suitable pedagogy. Added to this the studies highlight the interaction between teacher education knowledge and growing experience, which as indicated by Watzke's (2007) study, may not necessarily be linear.

Thinking About Subject Teaching and Cognitive Processing Uncertainties

The thinking behind how teachers plan and enact the teaching of their subject in the light of their students' needs has for a long time been a subject of research (Clarke & Peterson, 1986). More recently teachers' thinking has been examined through case studies that follow teachers from teacher education to their first years of teaching (Dumitriu, Timofti & Dumitriu, 2011, Haggarty & Postlethwaite, 2012). Such research is able to be illustrated through three examples from different geographical locations. Two looked at teacher thinking in relation to the subjects of English (Ellis, 2009) and science (So & Watkins, 2005) and the third was centred generically on the complexity of thinking expressed in the ability to deal with uncertain situations in teaching (Bullough, Young, Hall, Draper, & Smith, 2008).

Ellis (2009) studied three English graduates during their teacher education year in England in their Post-graduate Certificate of Education (PGCE), and through their first year of teaching, with the purpose of examining how, over time, these teachers processed their knowledge and understanding of English as a teaching subject. Besides interviews, Ellis used narratives about their teaching experiences and drawings that depicted their understanding of the content areas in English as a teaching subject and of the relationships between them. His interest lay in unveiling the teachers' conception of English as a teaching subject and changes over time, including the concept of themselves as teachers. He was also interested in their pedagogic orientations, that is, in how they envisioned their teaching approaches either as being more directive or more constructivist – assuming that they would be reflected in the teaching methods used with different groups of students.

Among Ellis (2009) central conclusions about the teachers studied was that they had personal stance regarding the teaching of the subject. Their conceptions of English as a curricular subject were personal in the sense of being influenced by their background or history as in former school experiences, and by their views on their selves as educators. This epistemological stance was changed or modified over time in the light of the evolving nature of their teaching experiences. Changes were observed in how teachers reflected through the drawings their understandings of the interrelationships among content areas, and in how they were different in each case, indicating also a different epistemological stance. Thus, on the one hand, one teacher developed a more socially critical stance that impacted her thinking about that which matters or is important in the teaching of English. On the other hand, the second teacher's stance about English teaching was closer to views expressed in the English National Curriculum standards. Interestingly, the third teacher's views illustrated a move towards affirming the communicative approach in language and literature teaching. The same was not the case, however, about whether their pedagogical orientation supported "objectivist" or "constructivist" teaching approaches. There seemed to be no clear demarcation between holding these positions, and instead there was increasing evidence of tensions between them.

Finally, looking into the role played by teacher education and as to how the participants' growing experience impacted their thinking of English as a teaching

subject, Ellis (2009) concluded that both teacher education and experience interacted with each other in a non-linear fashion. By this he meant that skills acquired in teacher education may not be specifically observable in classroom teaching as they may have been modified or replaced by the new teacher learning resulting from having to handle unexpected or diverse contextual situations.

Also focused on the transition from a 2-year teacher education programme to first year classroom teaching, So and Watkins (2005) studied changes in the thinking about science teaching, of 26 primary teachers in Hong Kong, within a constructivist frame of reference. This study utilised as research tools interviews, observations, concept maps and post-observation reflective notes written by the teachers while they were in teacher education. While most of the analysis was qualitative, the authors also used statistical techniques to transform the data into quantifiable indicators in order to examine the fluctuations over time in the teachers' thinking.

From the early interviews So and Watkins (2005) detected four types of epistemological positions about teaching or stances (see Ellis, 2009 above), which they described as "learner-centred constructivist, experimental-inductive, teacher exposition and teacher transmission". These positions were not found to be pure in that they appeared in pairs with one being predominant and the other taking a secondary position. In the course of the period studied from teacher education into their first year of teaching all teachers moved towards a more constructivist or learner-centred position, either predominant or secondary. As far as complexity in thinking, there was no clear evidence of linear development as the concept maps the teachers drew during their teacher education programmes showed more complexity in thinking for planning than was the case when they were actually teaching in their first year. This could have been due to pressures on time resulting from the many new demands in their school contexts and the lack of specific help to cope (So & Watkins, 2005). Importantly, their teaching practices which during their pre-service phase had moved to becoming largely learner-centred, continued to improve over time and approximate that which the authors described as constructivist teaching. Beginning teachers who had used these practices well during teacher education continued to do so in their first year of teaching.

The study also examined reflective practices. Reflective practices were conceptualised as mostly centred on "confronting" or diagnosing their teaching and its needs or mostly centred on "re-constructing", that is, modifying such practices. In that respect the authors observed that the reflective practices in which the teachers engaged did not change substantially from teacher education to classroom teaching. For the most part they remained at the confrontation or diagnostic phase. Only a few teachers engaged in "reconstructing" reflection.

Looking at the evidence provided by all the data sources, So and Watkins (2005) finally examined the degree of coherence in the teachers' way of thinking about science teaching over the study period. On the whole, teachers exhibited coherence between their views about teaching and constructivist practices, but noted a slight drop in coherence as they began teaching. Taken together, So and Watkins observed

that the evolution of thinking on the part of teachers was not linear in every respect, especially in thinking complexity and reflective orientation.

The lack of clear evidence of a linear development from lesser to better was also found in a longitudinal study in England of primary science teachers moving from teacher education into schools (Smith, 2007). Although teachers in this study widened their scientific knowledge during their first year of teaching there was no real increase in the depth of their subject knowledge and practices. Smith considered that the result could well have been connected to identity conflicts related to the generalist focus of primary teachers' work and having to cover the teaching of several subjects, all of which may not leave room for deeper subject-related thinking and practice.

To some extent inconsistencies found between learning approaches at pre-service preparation level and approaches and practices when beginning to teach can be traced to the sheer number of new obligations faced by teachers as well as to the unclear, or not obviously resolvable, issues that arise in their practice. In order to explain the thinking of beginning teachers in dealing with uncertainties, Bullough et al. (2008) explored the concept of "cognitive complexity" using a reasoning test about current issues developed by Kitchener, King and DeLuca, 2006 (in Bullough et al., 2008).

Bullough et al.'s (2008) study involved nine teachers who graduated from one teacher education institution and to whom the test was administered. On the basis of the test results, the researchers distributed the teachers across two groups depending on how predominantly formal or predominantly reflective their reasoning was about situations not susceptible to being fully or completely defined or resolved with certainty.

After the participants began teaching in schools, the two groups of teachers were asked to send an e-mail every 2–3 weeks describing high and low moments in their teaching. Based on their reasoning for selecting the low and high moments as well as on reports of interviews with their assigned mentors, Bullough et al. (2008) were able to detect differences in how the two groups described their high and low moments of teaching.

The teachers with higher cognitive complexity capacities, tended to be more reflective and concerned about the different patterns of learning observed in their classrooms rather than about "learning in general". They noted aspects of the curriculum that needed improvement and rather than blame students tended to look to their own role in situations that interfered with learning, i.e., they accepted personal responsibility for dealing with identified learning issues and problems. In contrast, those teachers with lower cognitive complexity tended to explain or attribute the noted problems to factors outside of the learning processes such as relationships with parents or the degree to which they were fitting in and doing what was expected from them. They also sought much more help from their mentors in trying to handle the issues (Bullough et al., 2008).

These two groups differed in the use of tools to handle their teaching issues, in the degree to which they examined their use and results and in the degree of self-assessment and flexibility of planning. Despite these findings, the authors did not

suggest that there was a kind of determinism that caused teachers to be higher or lower in their thinking complexity, but more so highlighted instead the need for teacher education and mentoring to engage in more proactive development of higher and more complex reflective activities among future and beginning teachers.

The non-linear character of cognitive development and teaching practices seems to be a linking thread in the three studies (reviewed above), an observation that derives from the longitudinal character of all of them. Although, the key concepts in each study are different, in Ellis (2009) study the focus was on the personal and epistemological stance regarding the teaching of English as a subject and how it developed differently in each case as a result of experience. This development was not equally observable in relation to the teachers' pedagogic orientation, and showed a non-linear interaction between teacher education and experience in relation to their conception about English teaching. So and Watkins (2005) found that although their participating teachers developed some coherence between their views about teaching and the constructivist science teaching orientation of their teacher education preparation, the coherence diminished slightly as they began to teach as did their thinking complexity and reflective orientation. Bullough et al.'s (2008) study, in turn, provided some evidence of why there may be a lack of continued and growing effect of capacities acquired in teacher education once teachers begin to teach. Overall, the degree of cognitive complexity used to manage teaching situations that are not clearly definable, is shown to be an important factor and teachable during initial teacher education as well as developed through appropriate mentorship experiences.

All in all, these studies highlight a differential mode of moving from teacher education into schools illustrated by how the knowledge and pedagogical stances of teachers interact with their new experiences, which to be maintained or enhanced, require a more sophisticated capacity of reflective analysis.

Teacher and School Communities Social and Emotional Tensions and Development

Studies that have inquired into teachers' motivations for selecting the profession have consistently reported that one of the key factors is a desire to contribute to society, not just through the education of young people but also through the personal position as an actor for social change (Watt et al., 2012). In this respect, it is not uncommon for future teachers to select teacher education as an option prompted by previous experience of a social nature such as activities that involve children or young people or contributing in general to social welfare. However, the social side of teaching is more than just an ideal that orients teachers' lives. It is embedded in the nature of work, which is anchored in turn on social interaction with students, with other teachers and with parents. The way in which these social relations are experienced or lived by teachers carries emotional connotations involving feelings

of affection or rejection, enthusiasm or depression, commitment despite difficulties and constraints or laissez-faire feelings and detachment (Gallant, 2013; Intrator, 2006; Ria, Saury, Thereau, & Durand, 2003).

The social situations which beginning teachers encounter in their first employment(s) have often been described as a key factor as to whether or not they will pursue their profession with growing engagement despite its complexities, or whether they will move along half-heartedly until they decide that it is not for them and therefore leave (Jones & Youngs, 2012).

The encounter with the social environment of the school, including the broader policy environment in which it is located, has been the subject of research in many national contexts (Hargreaves et al., 2007; Liu & Ramsey, 2008; McKenzie, Kos et al., 2008). The research illustrates the variety of forms that these encounters take, which may involve compliance or resistance to school accepted practices or to external policies, but also engagement in innovative approaches to teacher collaboration. In other words, these encounters may act as positive or negative experiences that affect how a new teacher settles into a school environment, but also may contribute to his or her continued professional learning.

The fact that the educational results of a particular group of students are seldom the result of the individual work of one teacher, but rather of the community of those who form part of an educational institution points also to the importance of teacher collaboration and their co-construction of improved educational processes. The extent to which such collaboration forms part of the continued professional development of a beginning teacher is also a matter of importance. The next sections examine some of the research that covers both how teachers encounter and negotiate the social environment of places in which they work (classrooms, schools), its effect on their self-efficacy and wellbeing, as well as forms of working together and how these assist (or not) in beginning teacher professional learning.

The Work Environment

The combined effect of different dimensions of a school's organisation and culture over how new teachers handle the web of relationships and demands of their school environment has been a subject of study since at least the late 1960s (Blumer, 1969 in Cherubini, 2009; Hargreaves, 1993; Lacey, 1995; Kardos, 2003, 2005; Huntley, 2008), and followed more recently with research on the transition from teacher education into the school workplace (Tynjälä & Heikkinen, 2011).

In various studies schools have been described in terms of their "micro-politics" (Ball, 1987; Kardos, 2005) or the power interplay that occurs among the key actors of school life such as principals and teachers and their relationship with the outside demands of the school systems. These processes in turn are examined from the standpoint of how they are lived by new teachers and the degree to which they develop "micro-political literacy" or the understanding needed to deal with them (Kelchtermans & Ballet, 2002a, 2002b; Curry, Jaxon, Russell, Callahan, & Bicais,

2008). Equally, the "spaces" of school life such as the staffrooms where teachers spend much of their non-teaching time are also an object of research (Christensen, 2013; Lisahunter, Tinning, Flanagan,, & Macdonald 2011), as also the conflicts generated by the socio-cultural characteristics of students versus those of teachers (Consuegra, Engels & Struyve, 2014).

The organisational structure and the relationships in the school environment delimit the extent to which new teachers are able to respond to both to the institutional and education system's expectations and policies and see themselves as actors with a say in what takes place. From this stand point they interpret intellectually and emotionally the quality and effectiveness of their work and react in diverse ways to how the schools function.

The three pieces of research that are synthesised below were selected because they serve to illustrate in three different national settings and through different lenses and research approaches, how new teachers interact with their school orientation and culture. Thus the studies examine the effect of the school's goal orientation on new teachers' perceptions of capacity and their feelings of inadequacy (Devos, Dupriez, & Paquay, 2012), the manner in which new teachers prepared in a reform-oriented teacher education programme interact with their school cultures (McGinnis, Parker & Graeber, 2004) and the enhancement of micro-political literacy in different school cultures as result of participating in collaborative inquiry groups (Curry et al., 2008).

Devos et al. (2012) report on two investigations conducted in a Belgian (Flemish speaking) school setting. The studies used multiple regression analysis to examine questionnaire responses by 110 teachers with 1 year of experience (first study) and 185 with 3 years (second study), all at primary or middle schools. The focus of both studies was on how teachers perceived the school cultures and the mentorship opportunities provided to deal with them. The key constructs underlying both studies referred to the school's goal orientation as an indicator of culture and the perceived teacher self-efficacy and feelings of depression as indicators of teacher reaction to the specificities of their school's culture.

Following achievement-goal theory (Kapplan et al., 2002; Marsh et al., 2003, cited in Devos et al., 2012) the school's goal orientation, or expectations about that which is considered as work "well done", was conceptualised as having either a "mastery" or "performance-goal" structure. The "mastery" approach highlighted the individual's push to increase or move beyond past performance while the "performance-goal" orientation emphasised overt demonstration of competency or avoidance of incompetency.

Seen from the perspective of a school's goal orientation the mastery approach would support freedom to experiment and assess its results in terms of broad educational goals, while the performance approach would expect the school to meet external expectations as demanded by the school's system of standards. The concept of self-efficacy developed by Bandura (1997) and for beginning teachers by Hoy and Spero (2005) is used to indicate a sense of being "able to" on the part of teachers. Conversely, negative emotions represented as "feelings of depression"

produced by social and environmental constraints were taken to be predictors of dissatisfaction with the school's goal orientation or culture.

The first study reported by Devos et al. (2012) was based on a questionnaire that included school culture variables such as the principal's practices, frequency of teacher collaboration, mastery or performance goal structure, as well as indications of difficulties, feelings of depression and perceptions of self-efficacy of the beginning teachers questioned. The key finding was that the goal structure of the school (mastery or performance-oriented) was a statistically significant predictor of teacher perceptions of self-efficacy and of feelings of depression. In schools with a mastery-oriented culture new teachers expressed more positive self-efficacy perceptions while feelings of depression prevailed among teachers in schools with a performance-oriented culture.

The second study looked at beginning teachers' mentoring opportunities and follow-up meetings with the school principal and how these related to perceived self-efficacy and feelings of depression. In this study, both the reflective and feedback dimensions of mentoring and the quality of follow-up meetings with the principal were significantly related to positive perceptions of self-efficacy of the new teachers surveyed. In turn, these processes were unrelated to feelings of depression. The authors of the study provided an interesting discussion about the implications of these results for further research and policy and noted that, of itself, mentoring quality or induction did not necessarily predict new teacher wellbeing and self-efficacy perceptions unless it occurred in a school which had a mastery orientation goal.

Using a socio-cultural perspective, McGinnis et al. (2004) examined the relationship between the specific orientation of a mathematics and science teacher programme in the United States defined as "inquiry-oriented and standards-guided" and the capacity of its teacher graduates to enact that orientation in their practices and in interaction with different school cultures. The thrust of the programme was to prepare teachers who felt confident about their subject knowledge, could use technology, make connections between the disciplines and challenge students from diverse backgrounds. The research was centred around two main questions related to the enacting and reflective capacity of the teachers and to the "affordances" or "constraints" experienced in using the reform-based instruction in which they had been prepared.

The researchers followed five teachers over 2 years who were located in different types of schools and taught primary or middle-level science and mathematics. They interviewed the participants four times each year, held focus groups twice a year, analysed video-taped lessons by the teacher participants and their students' reflections as well carried out informal classroom observations. These rich sources of data benefitted also from data collection during their undergraduate teacher preparation. To analyse the data the researchers used the "inner" perspective of the teachers' own accounts and reflections and the "outer" perspective of the researchers provided by the analysis of all the sources of data represented in vignettes for each teacher.

The findings were extensive as it involved noting differences among teachers and schools. However, on the whole the study offered exemplars as to how each teacher enacted their teaching, what their preferred approaches were, and what they used from their initial teacher preparation learning to achieve expected results. The report also provided evidence of perceived affordances and constraints on the part of the teachers. The affordances reported were different for each teacher, but not so the constraints – although variable depending on the school culture. The summary of such constraints (below) in the words of McGinnis et al. (2004) illustrate common experiences of new teachers in many contexts and with different intensity ranging from availability of resources, and influence of their teacher colleagues to the clash between having or wanting to do "different" while having to respond to external factors such as prescribed curriculum and testing:

> The number of mathematics objectives to meet; the shortage and availability of computer equipment, the diverse level of student abilities; the science kits' prescribed curriculum and schedule; the prescribed science and mathematics curricula; the districts ongoing student testing of instructional outcomes; the frequent instructional interruptions; the number and extent of standardized student testing; the more experienced teachers' expectation that the beginning teacher would become less active and less innovative with time; and the suspicion of parents to new assessment ideas. (McGinnis et al., 2004, p. 735)

Some of the above constraints correspond to the categories described by Kelchtermans and Ballet (2002b) as forming part of the school micro-culture: material, organizational functioning, socio-professional relationships, cultural ideological orientations and self-interest.

Handling and interpreting the micro-political manifestations in school cultures constitutes an important portion of new teachers' social learning. Although defined as micro-political literacy (Kelchtermans & Ballet, 2002b), this naturally occurring process is not always reflected upon without the mediation of an intentional effort to produce such reflection. Along these lines, Curry et al. (2008) described an induction programme in the United States that allowed new teachers to become aware of situations conflicting with their personal professional interests and to develop capacity (micro-political literacy) to deal with them. On the basis of five school-based inquiry projects and intra-group discussions of 25 teachers, the researchers were able to highlight micro-political issues and how the groups discussed and dealt with them. The data sources for the research were based on the inquiry projects of five teachers and included qualitative analysis of their group meeting transcripts, complemented with individual and focus group interviews as well as documents collected during the time of the study.

The interactions and mutual assistance in interpreting the situations either by validating, or challenging interpretations, appeared to prove in itself the value of the induction project. Beyond that they served to detect characteristics of an "emergent micro-political awareness and literacy" expressed in the shift from participants as individuals to understand themselves as affected by institutional situations such as norms, traditions and power relationships. This led the teachers to propose and carry out change actions in their schools such as designing and conducting a teacher survey on homework practices related to learning and assessment. In other words,

the inquiry projects, the collaborative analysis and personal reflection of these teachers (micro-political literacy) helped them to move away from mere diagnosis and passive resistance to more active ways of changing in line with their professional commitment. The fact that all but one of the focal teachers had a particular social justice orientation embodied as a result of their teacher education programme, made them more alert to socio-critical issues in their schools and more prone to change situations rather than "learn to live with them".

In line with the concepts illustrated in Fig. 13.1, the studies reviewed above centre on the social and emotional aspects of teaching through the lenses of the school institutions (orientation and culture) and how to deal with conflicting situations arising from these (micro-culture literacy). Devos et al. (2012) provided interesting evidence about how a more rigid (performance-based) school orientation affects new teachers' wellbeing in the form of feelings of depression, while a school that allowed or pushed for innovation enhanced new teacher self-efficacy.

Equally, the report of constraints experienced by new teachers prepared to be self-confident and to work with difficult populations (Mc Ginnis et al., 2004) highlighted the links to the sort of performance-based school climate described in the study by Devos et al. (2012). Dealing with such situations requires preparation in how to manage such a school climate, something highlighted by Curry et al.'s (2008) account of the positive effects of an induction programme on the development of "microliteracy" and responses to various and conflicting situations linked to school cultures.

Collaborative Learning and Its Impact on the Practice of Teaching

The benefits of collaborative teacher interactions have a long history of research and advocacy as powerful instruments to exchange experiences and learn from such exchanges. Spontaneous forms of collaboration among teachers in schools or structured ones in school departments have long been part of school cultures as illustrated for example in Talavera's (1994) fascinating ethnography of a Mexican primary school over an 18 month period. In her study Talavera found numerous informal and formal ways in which beginning teachers adapt and learn in a highly interactive teacher context, seeking and finding assistance from teachers who spontaneously take on mentorship roles, borrowing and lending books to supplement the official texts, which are distributed in the Mexican school system, and discussing among themselves how to face the demands of being responsible for a school class for the first time.

McNally, Blake, and Reid (2009) in a similar ethnography of informal learning by new teachers in Scottish schools noted the importance of learning about the relational and emotional handling of teaching demands. Similarly, in the absence of any formal kind of mentoring Chilean teachers with less than 3 years of practice recalled the help received from colleagues in their school or in the rural micro-centres that

gather teachers from multi-grade schools for a monthly exchange of experiences and professional learning (Avalos & Aylwin, 2006).

More recently the impact of work on communities of practice (Lave & Wenger, 1991; Wenger 1998) and other research on learning communities (Vescio, Ross & Adams, 2008) have prompted the examination of diverse forms of induced beginning teacher collaboration – as reported in the above cited research by Curry et al. (2008). Among such studies are those that look at particular collaborative activities, including the "book club" described and researched by Kooy (2006) which involves new teachers reading, discussing and drawing implications for their practice from fictional books on education and teaching.

Other forms of collaboration using technology involve the sharing of electronic journals and teacher online communication continued from pre-service to beginning to teach (Goos & Bennison, 2008). Not all these forms, however, lend themselves to teacher reflection, analysis, new knowledge and changes in practice (Moore & Chae, 2007). Killeavy and Moloney (2010) reported, for example, that Irish beginning teachers who engaged in blog-sharing were inclined to superficial accounting of events in teaching rather than reflective analysis.

Windschitl, Thompson, and Braaten (2011) described a more contrived experience of inducing new science teachers into thinking about their practice through analysis and collective discussion of their students' work. This experience, framed within socio-cultural activity theory, assumes that teachers need adequate tools to analyse students' work, a shared language and the holding of a reasonable conception of "good teaching". These elements together constitute what the authors characterised as "ambitious pedagogy" and comprise the capacity to "understand important ideas, participate in the discourses of the discipline and solve students' problems" (Windschitl et al., 2011, p. 1315).

The experience described by Windschitl et al. (2011) involved working in a group with 11 science teachers, before and after they completed their teacher education at one institution in the United States, in the form of a collaborative "critical friends group". The purpose of the group was to elicit teachers' engagement in professional discussion around work produced by their students, previously collected and analysed on the basis of specified guidelines and rubrics. The group meetings followed a specific protocol, beginning with each participant's presentation of the analysis of their students' work, followed by the group engaging in clarification, probing and discussion connected with the presenter's analysis, reaching conclusions and offering suggestions about how to deal with situations requiring improvement, ensuing reflection on the part of the presenter and final debriefing by the group facilitator.

The critical thinking group meetings took place during the practicum experiences of the future teachers and later during their first year of teaching and its effects over time were documented and comparatively examined through analysis of the group-meeting videos, teacher interviews, classroom observation and field-notes. The group meetings and the possession of relevant tools of analysis proved efficacious in that it was possible to document positive changes in practice occurring over time in the degree of professionalism with which teachers analysed their

student's work, particularly in relation to one of the categories of the pedagogic model used: "pressing students for evidence-based explanations".

The process also laid bare the important mediating role played by the pedagogic standpoint that each participant brought to the process regarding the greater or lesser complexity of the teaching-learning process. Thus teachers holding to an "acquisition model of teaching" tended to explain the results of their students' work as problems related to students' background and capacity, while other teachers holding to a more problematic and complex notion of teaching tended to puzzle about why and what might have been their own or their students' interpretations that led to such conclusions: "I didn't push students to a higher level of thinking" (Windschitl et al. 2011, p. 1323). This awareness of the role that is played by the nature of the teaching and learning process (pedagogy) suggests the need to work early on during teacher education on future teacher beliefs and conceptions of teaching.

Re-configuration of Professional Identity and Practice from Teacher Education into Classroom Teaching

The preceding sections have carried a selection of themes that are part of that which is studied about beginning teachers and their professional development. In the first section the centre of attention was on the content of teaching and on how teachers enact what they have learnt about a specific field of knowledge bearing in mind, or being affected by, the possibilities offered in an existing curriculum frame as well as by its limitations. This enactment was illustrated through means of a limited number of subject areas, mostly science, mathematics and language, partly because as indicated earlier in the chapter, these tend to be subjects considered key in light of existing national and international testing (i.e., TIMSS and PISA).

As has long been acknowledged enacting the curriculum or seeking to stimulate, widen or transform student learning in a subject area requires thinking skills related to knowledge of students and understanding of subject concepts and abilities as required in music, arts or physical education. In turn, the process of teaching is influenced by beliefs (Nespor, 1987; Pajares, 1992) that are partly acquired through earlier school experience (Lortie, 2002), teacher education and sustained by personal inclinations.

The preceding sections offered examples of research dealing with thinking in teacher preparation and the enactment and managing of complexity through cognitive capacity development. The social nature of teaching and teachers as relational professionals in turn was discussed from the perspective of literature dealing with schools, which, like other organisations, are characterised by their particular cultures and the power relations operating within them.

The extent to which such school cultures afford opportunity for new teachers to find a stimulating environment in line with their still developing capacities and

pedagogic orientations was illustrated through studies looking at the "settling-in" experience, the contextual conditions for self-efficacy development, organizational and relational tensions and constraints leading to frustration or depression, all factors studied also in research that identifies conditions that emotionally impact on teachers and influence their attrition rates (Skaalvik & Skaalvik, 2011). The previous section also looked at the positive side of teacher relational capacities embodied in their spontaneous learning together or in different forms of collaborative work – some of which are promoted by teacher education institutions as well as schools.

In what follows, the centre of attention is on what might be termed the current discussion and understanding of teachers' professional learning and its support forms in different contexts: vision and conceptions of teaching and professional identity and its tensions, socio-political conflicts, and the support structures for beginning teacher learning, all of which help to bring together the various interacting elements illustrated in Fig. 13.1.

Vision and Conceptions of Teaching: Constructing a Professional Self Mediated by Tensions

The decision to prepare as a teacher is not always informed by a full view of the profession as such in the prospective teacher's country and social context. Deciding on a concurrent programme of teacher education immediately after completing secondary schooling implies that other tertiary or university alternatives have been left aside (voluntarily or involuntarily); depending on the available options not considered or for which the person was not eligible. For some teacher education candidates, the decision may represent the only or a secondary choice if they were educated in systems of unequal quality observed in higher or middle-income economies such as Chile or South Africa. On the contrary other candidates may choose to become a teacher with a good understanding of the implications of such a choice and a clear desire to become an educator, a decision facilitated perhaps by already being a graduate entering a post-graduate teacher education programme.

Both types of teacher candidates may attend a teacher education programme for periods ranging between 12 and 24 months for a post-graduate course and 4–5 years for a concurrent course, during which time presumably they will have built the knowledge base and engaged in the practical learning needed to begin to teach. Presumably, also they will have reconstructed their original selves and developed a burgeoning teacher identity. The point is that there can be different motivations and different trajectories for becoming a teacher but that in the end these converge in having to engage and share in similar tasks and responsibilities.

Yet, how similar are these tasks and responsibilities and what is the common thread that links them? In the light of much of the research examined for this chapter, which is largely centred on individual teacher accounts of their trajectories and early teaching experiences, there are many differences between one teacher and

another but also many similarities. The differences are not just due to subject speciality, grade level, school types and contexts, but also to conceptions and approaches related to pupils, to other teachers, to subject-matter teaching, to the facing of conflicts even if they were graduates from a same teacher education programme.

The similarities in turn have to do with the communicative nature of teaching whether within a direct or a constructivist approach, the need to "seduce" students to learn whether softly or harshly, degrees of awareness of external constraints or supports that assist in the process of teaching, and the sense that teaching while possibly technical in its operation requires a vision to sustain improvement over time that exceeds the narrow forms of compliance with teaching objectives. These similarities and differences found in the approaches and practice of teachers extend to the profession as a whole and underlie the construction of the widely researched concept of professional identity.

Professional identity is described from different perspectives depending on the conceptual framework used (sociological or psychological). Teacher professional identity and task definition is dynamic and changes over time (Beijaard, Meijer & Verloop, 2004), but is not necessarily available for communication to others unless there is a motive to reflect and do so. The key elements that build into a teacher's identity are found in personal biography, teacher education specialisation and experiences, the human and educational interactions in classrooms and schools, and more broadly in relation to the socio-political contexts in which teachers work. Teachers illustrate a particular configuration of their identity marked by what they teach, whom they teach (age group, type of school) and how prepared or competent they feel in relation to their required task. These conditions, which also include teaching as valued by society (status, prestige) encompass views about education and the teaching/learning process as well as pupils' response to their acts of teaching (Windschitl et al., 2011; McElhone, Hebard, Scott, & Juel, 2009). They are very much in flux in the beginning stages of teaching. Not only is a teacher's perceived identity subject to re-construction over time, but it is also lived through tensions expressed in different forms that connect with their teaching experience and their schools as well as with the education system (Pillen, Beijaard & den Brok, 2013, Toren & Iliyan, 2008).

Part of a teacher's professional identity is provided by the broader vision of teaching that is held as important. Eliciting such vision and describing the conditions under which it can be enacted was the subject of McElhone et al.'s (2009) study on the transition of primary literacy teachers from teacher education into a diversity of schools from New York City to New Mexico towns in the United States, through interviews and filmed lessons. In comparing patterns in the visions elicited during these two phases of the teachers' experiences, the researchers found a common feature in the importance given to types of student talk and collaboration ("productive buzz") and to producing "colourful" classroom climates. But they also noted the effect of the literacy subject itself on the enactment of these visions. This meant, that those teachers whose school context did not sustain their vision of teaching were able to hold on to it if they were equally strong in their literacy teaching approach. On the other hand, teachers weaker in the literacy teaching approach

became discouraged or unsure about enacting their broader vision in their everyday teaching and tended to be drawn into the more day-to-day concerns of teaching (McElhone et al., 2009).

The influence of different types of induction activities in sustaining teachers' evolving professional self-conceptions as they relate to identity construction was the subject of a case study by Cooper and Stewart (2009) in Australia. The study was grounded in three concepts of capital as applied to teachers: professional capital or acquired knowledge and skills; cultural capital afforded by tools and technologies and social capital expressed as participation in networks; rituals; and, conventions. Data was collected by means of survey, interviews and observations. Using direct quotations from interviews with four teachers who were in their second year of teaching, the researchers were able to assess the degree to which these teachers grew or not, particularly in professional and social capital.

Access to quality induction experiences (not the case for all the teachers) was a factor in how teachers managed their teaching demands and felt confident and stimulated by what they were doing. Particularly important was the participation in networks of collaboration which some of the induction schemes facilitated. Also highlighted were the micro-political issues in the teacher's context, as well as the fading role of prior teacher education influences over the beginning teacher professional identity definitions as they encountered situations for which such experience had no relevance.

Professional identity conceptions are very much linked to the school level or subjects for which teachers are trained. This does not necessarily hold true for a primary generalist teacher whose main source of identity is the age group taught rather than a specific subject. In this respect, Smith (2007) studied the professional identity tensions connected with the teaching of science as experienced by primary generalist teachers in England. According to the report these teachers functioned with different identity concepts: some clearly operating within a "generalist" identity definition, others moving towards a greater identification with the teaching of science and a third group who saw themselves primarily as teachers of small children rather than of middle school students. Based on these findings, Smith argued that primary teachers' preparation and the support provided during their early teaching experiences should work towards assisting them to integrate role definitions of a generalist cum subject-oriented perspective within their primary teacher identities.

Similarly, from the perspective of reconciling a "geography teaching self" within the self of a primary generalist teacher, Martin (2008) suggested that teacher education programmes make use of the "geographical" self in which everybody shares. This "self" is constituted in Martin's words by the everyday geographical knowledge that we all have – our ethnogeography – also experienced by future teachers, beginning teachers as well as by their pupils. Because it belongs to the every-day world, drawing on this kind of experiential knowledge in the preparation of generalist teachers could facilitate the construction of a subject focus within a primary teacher identity in all those thematic areas about which there is such an experiential base.

Other identity tensions appearing in the research literature are those related to gender in the case of male teachers who work with young children (Hansen & Mullholland, 2005) and more specific ones involving generalist and special education teachers who work alongside each other in primary classrooms (Youngs, Jones & Low, 2011). The latter tensions are possibly resolved or eased by clearer and overt valuation of inclusion in schools and classrooms on the part of the school authorities and teachers.

The studies referred to above highlight not just the importance of identity construction in new teachers but also how in this construction there are always tensions: between visions of teaching and the degree of subject knowledge (professional capital) to enact them, between visions of teaching and ability to be part of the school culture and community, between male and female constructs of teaching or between generalist or specialist, rural or urban teacher identities. The resolution of these tensions, in the light of the studies reviewed, may to a degree, be possible through attention being provided to them in teacher education processes and practices, through collaborative induction experiences and through a policy-climate that favours inclusion and respects difference.

Socio-political Issues Surrounding Beginning Teachers' Practice

In line with prior identity definitions and with their own education and social experiences, beginning teachers are not simple inexperienced practitioners when they begin to teach. They come with visions of teaching, personal stances about the curriculum and greater or lesser degrees of confidence in their teaching and managerial capacity (self-efficacy) all of which interact with the systemic policy environment and the particular cultures of their schools. Part of the research literature on beginning teachers explores some of the conflict areas experienced by teachers in that respect; not so much with the purpose of resolving them but of laying them bare especially in relation to decisions about remaining or abandoning the teaching profession. These issues vary depending on national policy contexts or the relationships between local systems of education and schools (Grossman & Thompson, 2004) as well as reflecting conflicts within the school environment in which the teacher begins to teach (Craig, 2013) or between the orientation of teacher education programmes and the responsiveness of the school environment to such orientations (Curry et al., 2008).

In facing their new schools and classrooms beginning teachers are confronted with external frames that encircle their daily activities which in countries such as Chile, Singapore, England, the United States and others are marked by strong accountability policies, competition among schools, and frequent external standardised examinations. While the entire thrust of these policy instruments may not be fully comprehensible to new teachers their impact on the organisational demands

of the school, such as pressures to succeed in competitive examinations, of necessity constrains their resolve to innovate and pushes them to conform to existing forms and practices.

Loh and Hu (2014) offer a worrying example of how the Singaporean education system built on neo-liberal principles and institutions broke the original idealism and resolve of a beginning primary teacher to enact the constructivist teaching she embraced during her teacher preparation. The study was based on interviews that started before her final teaching practice and continued during her first year of teaching in which a key piece of information was the narration of stories and incidents referred to her teaching experience. Although the researchers did not set out to examine the effects of the educational policy environment over the teacher's practice, it became progressively evident throughout the interviews.

Besides the hardships involved in having to teach a full schedule (contrary to regulations that it be 80 % of contract time), the teacher involved in Loh and Hu's (2014) study faced a host of activities related to school competitions internal and external, which took a big chunk of her time. She was considered "outspoken" for raising concerns about the evaluative climate of the school management and was not able to get the support of other teachers. Faced with a competitive environment and its demands, the teacher found it increasingly difficult to enact her preferred ways of teaching and gave up trying. As observed by the researchers in the course of the year: "her beliefs and practices had metamorphosed from a passionate pursuit of meaningful engagement to an overwhelming reliance on transmissive drill and practice" (Lo & Hu, 2014, p. 19).

Although not entirely similar the social justice orientation of new teachers derived from personal convictions and influenced by teacher education programmes can also be a source of conflict in schools where testing and results are paramount in their goals (Curry et al., 2008). Even if such stressful conditions are not the case, enacting forms of teaching based on principles of social justice are difficult and how teachers may progress in that direction is not always felt; especially when unable to voice uncertainties. The authors recommend that teacher educators in programmes oriented to social justice alert future teachers to the inevitable struggles surrounding the teaching for social justice, scaffold opportunities for them to reflect and assist teachers in the enactment of curriculum that incorporates social justice elements (Agarwal, Epstein, Oppenheim, Oyler, & Sony, 2010).

Support Structures

The need for mentorship and support of beginning teachers has been widely recognised, and yet as indicated earlier in the chapter, these structures are not necessarily appropriately available for teachers in various countries. Support forms range from spontaneous assistance offered by a beginning teacher's colleagues in a school situation to formal systems of induction. A comparative review of different arrangements for induction in Shanghai, Switzerland, France and New Zealand (Britton,

Paine, Pimm, & Raizen, 2003) showed induction as centred on subject teaching, understanding of pupil needs, assessment, reflective practices as well as understanding the school organisation and of the self as a teacher. Howe's (2006) review covering the same countries as Britton et al.'s (2003) with the addition of Australia, Canada and Germany highlighted different induction structures ranging from being part of initial teacher education in the form of internships as in the case of Germany, being linked to Professional Development Schools as in several locations in the United States to loose arrangements for mentorship during the beginning years of teaching, and possibly reduced teaching load.

The less structured forms may simply consist of information meetings or the assignment of an experienced teacher as mentor to the new teacher. Around 45 % of beginning teachers who responded to the OECD TALIS survey (Jensen et al. 2012) covering 23 countries worked in schools where formal mentoring for new teachers existed, but only 38 % indicated that the programmes were actually restricted to those teaching for the first time. The TALIS survey also found that 54 % of the new teachers in schools with induction programmes and mentoring only received appraisal or feedback once a year or less.

Despite the complications produced by the diversity of induction opportunities in different countries, over the last decade there have been a number of reviews and studies on the effects of induction and mentoring in contexts where such practices are well established. Searching for studies documenting the effects of mentoring Totterdell et al. (2008) could only find a limited number, mainly in the United States, Great Britain and Australia that showed positive effects on professional learning, performance and retention. These positive effects depended on there being regular meetings between mentors and new teachers, adequate time for such meetings, and a match between both in terms of subject speciality and age/grade taught. Wang, Odell, and Schwille (2008), covering research on induction in similar countries plus China, concluded that the different components of induction programmes (mentorship, workshops, classroom observation) had a combined effect on how teachers think about teaching and their practices, but not through their single elements. On the role of mentors, Wang's review detected positive effects if their belief patterns were similar to those of the new teachers and if mentors and new teachers were matched as far as possible in subject specialisation. Equally important in the studies reviewed by Wang et al. (2008) was that induction effects are mediated by the social and organizational contexts of the schools in which teachers work.

While the research done prior to 2008 should, in Wang's (2008) view, be taken with caution in terms of policy implications, a more recent body of research on induction and mentoring has extended its coverage to other geographical locations and topics. For example, research by Main (2009) examined the role of induction within the Maori culture context in New Zealand and research in Brazil moved from describing beginning teacher problems to evaluating the effects of an on-line mentoring programme conducted by educators from a Brazilian university (De Reali, Tancredi, & Mizulami, 2010). The Brazilian scheme was described in terms of three phases, which were part of the format of the mentoring scheme, but which also

included the lived narrative descriptions the participants transit through in the stages of "initiation", "targeted learning" and "disengagement or closure".

Tynjälä and Hekkinen (2011) in reviewing teacher learning in the workplace, referred to the peer group mentoring model developed and implemented in Finland. Based on the notion of professional autonomy as "collective meaning making and will formation" (Tynjälä & Hekkinen, 2011, p. 24), the model involved 4–6 new teachers meeting infomally 6–8 times a year for an hour and a half to 3 h to exchange experiences, discuss issues and learn from each other. An experienced teacher facilitated the meetings and though it may involve structured elements, it was basically informal with no assessment involved.

Despite the growing importance given to induction and support for new teachers in policy analysis (OECD, 2005, UNESCO/OREALC, 2013) as well as the practice of countries such as those mentioned above, the experience of many new teachers continues to be described as problematic and their support left to informal practices in their schools as well as their own efforts in looking for help. This is particularly evident in relatively recent literature on teachers in Spain (Eirin Nemiña, García Ruso & Montero Mesa, 2009) Argentina (Serra et al., 2009), Chile (Avalos & Aylwin, 2006; Flores, 2014), Mexico (Martínez, 2014; Tijerina & Martínez Sánchez, 2006) and Nigeria (Koko, 2007), but also in relation to teaching specializations such as early childhood teaching in countries with well-established induction and mentoring practices such as the United States (Mahmood, 2013).

Conclusion

It was not an easy task to write a chapter on beginning teachers in the second decade of the twenty-first century that would avoid rephrasing much of that which was copiously studied at least two decades ago. Therefore, it seemed important to search among the many research pieces developed in the last 15 years for studies that offered new insights into the process of beginning to teach, while at the same time reflecting the diversity of contexts and policy environments around the world where teaching takes place. It was also useful, in terms of organising the research reviewed, to hang on to the schematic illustration (see Fig. 13.1) of the components of a teacher or educator's self and the actions or constructions that enable or give form to teaching and its quality.

The core components of Fig. 13.1 comprise the knowledge, procedures and competences that teachers gain through education and practice, the set of emotions, both positive and negative, that accompany teaching and are key to the job, the quality of teaching understood as constructed with others (teachers, pupils, friends, family, policy-makers) and critical reflective dispositions fuelled by continuing to learn. Although teacher education experiences should help future teachers develop these capacities and grow beyond what they originally brought with them, essentially they are only put to the test when they begin to teach. The process is not, or

need not, be a solitary task for new teachers driven by a missionary sense of commitment to the education of others. It can, and should, be enhanced, improved and corrected as it unfolds, which is possible through support in such things as peer mentoring (e.g., the model offered by Tynjälä and Hekkinen, 2011) based on rigorous research about teaching and its conditions.

Throughout this chapter different pieces of research on beginning teachers were examined and discussed. These were studies that suggested new or different ways of understanding the beginning-to-teach phase of a teacher's career such as thinking about teaching and reflecting on its results, learning and sharing with others or facing the contradictions of sites and situations in relation to acquired and believed-in knowledge and practices. Many of the studies reviewed had different conceptual anchors that helped to make sense of the resulting interpretations and conclusions, such as socio-cultural and symbolic interaction theories, the notion of capital as applied to the professional, cultural and social learning of teachers or goal achievement theory in relation to schools and their target definitions.

The studies reviewed offer several messages for teacher educators and policy makers to seriously consider. Among the central messages is that the influence of teacher education over what transpires in beginning to teach is not linear but rather that it "comes and goes" (So & Watkins, 2005; Watzke, 2007). That some expected capacities to face the uncertainties of teaching must be fostered during initial teacher education (Bullough et al., 2008), and that it is not sufficient to infuse a sense of working for social justice if at the same time future teachers are not helped to enact appropriate curricular activities or learn about conditions in schools and school systems that work against those ideals (Agarwal et al., 2010; Loh & Hu, 2014). In turn, policy makers and school authorities must understand the contradiction between pushing for high quality teacher education that prepares teachers to enact challenging forms of teaching and being responsive to pupils' needs, while further narrowing accountability structures based on standardised testing (Cherubini, 2009; Curry et al., 2008; Loh & Hu, 2014).

A final addendum to this chapter has to do with the research process in the studies reviewed and a note about themes that were not included. Many of the studies looked at the trajectories followed by teachers through teacher education and used multiple ways of learning about their experiences, difficulties, processes, challenges and successes. Also most of the studies reviewed were careful in the reporting of how the qualitative data had been analysed and converted into meaningful categories to develop understanding of the given situation. There were fewer identified large-scale studies using quantitative or mixed methods approaches, although a number of the research articles dealt with select cases that were embedded in bigger studies. Some important areas were not covered in this review such as working conditions affecting the high rates of attrition among beginning teachers in many countries, as well as much of the specific research on mentoring processes and their effects. However, these are raised in other chapters of the Handbook and offer good insights into the issues.

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Chapter 14
Teacher Education as a Moral Endeavor

Cees A. Klaassen, Richard D. Osguthorpe, and Matthew N. Sanger

Introduction

In this chapter we will address the moral aspects of teaching and schooling, with an eye toward highlighting elements that are apt for consideration and reflection in the context of teacher education. In the first section, we provide a review of the recent literature explicitly addressing teacher education as a moral endeavor. We do that by providing a simple framework for this domain of inquiry, followed by a brief look at a series of approaches to engaging in the work of preparing candidates and teachers for the moral work of teaching. These descriptions are followed by a short discussion on the question of choosing an integrated or hybrid approach, and consideration of that which is still missing in the moral domain in teacher education.

The second section offers a review of possible connections between teacher education and what we already know about the moral work of teaching. The section offers a review of different perspectives on moral education and what has been achieved in this field in the last decennia. Then we turn to the social context in which the moral work of teaching is embedded. We discuss a series of social processes that influence the moral work of teaching and have made the moral work of teaching more complex than ever. Finally, the remaining parts of this section illustrate three important aspects of the moral work and dimensions of teaching, with special attention to the exemplary role of the teacher, the hidden curriculum, and the

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school as a moral organization. These three aspects should have a more articulated and elaborated place in the curriculum of teacher education.

Teaching Morally and Teaching Morality

In this first section we turn our focus to the recent literature explicitly addressing teacher education as a moral endeavor. We begin by providing a simple framework for this domain of inquiry that will be followed by a brief look at a series of approaches to engaging in the work of preparing candidates and teachers for the moral work of teaching. Importantly, this review is intended to be illustrative rather than exhaustive, with an effort to maintain an international view, while acknowledging significant limitations on this front. Further, we attempt to pay special attention to work that studies or speaks directly to the practice of teacher education, noting that that literature is rather limited. In fact, we feel a limited treatment of this topic is in some sense appropriate, given our ongoing documentation and analysis of what we call the 'moral vacuum' in teacher education research, policy, and practice (Sanger & Osguthorpe, 2013a). That is, while this chapter will clearly establish that teaching and schooling (and by implication teacher education) are unavoidably moral endeavors, the research literature, educational policy, and teacher education practice, commonly lack the explicit moral language and intentional moral purpose that is reflective of the moral nature of teaching and schooling.

Previously, Osguthorpe and Sanger have argued that we might fruitfully analyze the moral work of teaching by distinguishing two overlapping notions: teaching morally and teaching morality (Fenstermacher, Osguthorpe, & Sanger, 2009; Sanger & Osguthorpe, 2013a, 2013b, 2013c; see also Campbell, 2003, 2003a). The basic idea is that there are two meaningfully different senses in which we might engage in the moral work of teaching – one that is focused on conducting one's practice in a morally sound manner, and the other that is focused on having a positive influence on the moral functioning and development of one's students. Among the areas of overlap between these two senses of engaging in the moral work of teaching, is the teacher serving as a model of moral conduct and being.

In the case of modeling good conduct or moral capacities, one might be considered as teaching morally and teaching morality. Despite this point of overlap, we find the distinction to have value because of how it captures important differences in this complex domain, the questions it directs us to ask, and the resources it directs us to draw upon in developing our understanding and practice – all of which have implications for teacher education:

> [To teach morally] practitioners would need to know what is good, right, caring, and virtuous and be able to enact those things in their practice (roughly: to know the good and to practice it). [To teach morality] teachers would need to know what contributes most effectively to their students' moral development, and be able to incorporate those things into their teaching practice (to know what contributes to the development of good people, and to provide it).

> The first sense raises practical and philosophical issues in normative ethics. The second sense raises psychological and pedagogical issues that have practical implications that extend beyond teachers being good. (Sanger, 2008, p. 176)

Preparing Teachers to Teach Morally

Drawing upon our distinction above, we can see that the literature on preparing teachers for the moral work of teaching is susceptible to a similar analysis. Many scholars of teacher education, particularly those coming from the social foundations of education, discuss teacher education in terms that focus on "helping teacher education students develop ways of thinking ethically, making judgments, and acting in classroom situations that are thought to be full of ambiguity and dilemmas" (Richardson, 2013, p. 186). Be it supporting the cause of social justice, or being more responsive to students' individual needs, the focus in this group of writing tends towards candidate's developing an ethic to guide their professional practice as a whole, in order to realize the values embedded in that ethic.

Such works that focus on teaching morally include Campbell's well-developed conception of the ethical teacher and how that conception connects to teacher education practice (2003, 2003a; see also 1997, 2008, 2011). In her view, teacher education is rife with opportunities to help teacher candidates develop ethical knowledge and better understand the ethical considerations of both the practice and the person. She emphasizes the need for teacher educators to delve deeply into these considerations at the course level, developing moral and ethical knowledge in teacher candidates that will enable them to make sense of the ethical dilemmas they encounter in their field experiences and make decisions that align with a justifiable ethical position. Her research concludes that for many teacher candidates, these considerations are connected to the role of the teacher as social justice advocate and that they are heavily influenced by poor exemplars of practice.

In similar fashion, many scholars argue for teacher education programmes that are grounded in social justice and teacher advocacy borne of that sense of justice and responsibility (see Boylan & Woolsey, 2015; Cochran-Smith, 2009; McDonald & Zeichner, 2009; Zeichner, 2009). Stengel (2013) makes a case for developing moral language in teacher candidates in educational foundations coursework that enables them to examine their practice in relation to pedagogical responsibility. She identifies opportunities in the curriculum to attend meaningfully to this aspect of practice, resulting in the development of teacher candidates' practical judgment (for an example in developing such moral language base on an ethic of humility, see Blumenfeld-Jones, 2013).

Another dimension of preparing teacher candidates to teach morally is the literature on teacher dispositions. Although the concept is defined and operationalized in multiple and occasionally problematic ways (see Murray, 2007; Nelsen, 2015; Sockett, 2012; Splitter, 2010; Zenkert, 2013), it is generally accepted in the field of teacher education that the preparation of teachers requires something more than the

acquisition of content knowledge and methodological skill, including dispositional attributes or traits of character. The general assumption is that these moral dispositions of the teacher infuse every aspect of teaching practice, and, as such, should be meaningfully developed in teacher preparation programmes. In the U.S. this general acceptance has been driven by teacher education accreditation agencies and formalized in myriad ways by all accredited programmes. The related scholarship ranges from the philosophical (Sockett, 2012; see also Dottin, 2009; Nelsen, 2015; Osguthorpe, 2008, 2013) to elaborate descriptions of teacher education practice (see Murrell, Diez, Feiman-Nemser, & Schussler, 2010) and specific case study analyses (Schussler & Knarr, 2013).

The practical examples provide insight into the ways that specific programmes orient their students to an ethical stance of social justice (Fallona & Canniff, 2013) and self-awareness (Schussler, Stooksberry, & Bercaw, 2010), as well as develop dispositions such as fairness, integrity, commitment, and communication (Johnson, Vare, & Evers, 2013), while also suggesting that a theory of dispositional development and attention to morality and ethics is lacking in teacher education (Murrell et al., 2010). In some countries outside the U.S., there is less attention to dispositions of teacher candidates and more specific focus on holistic teacher education (Korthagen, 2004), teaching ethics to teacher candidates and preparing moral educators, as well as providing specific content instruction in morality – one of ten content areas for teachers in Korea (Kim, 2015).

Preparing Teachers to Teach Morality

Next, another group of teacher education scholars, particularly those coming from the psychological foundations of education, tend to "focus on the knowledge of theories and research concerning student learning and moral development, as well as strategies for teaching moral and character education" (Richardson, 2013, p. 186). These works focusing on teaching morality include a range of scholarship that covers a variety of approaches to moral education and development. Such work primarily takes an approach to moral education, character education, prosocial development and so on, and then makes a case for incorporating that approach into the knowledge and skills addressed in teacher preparation. Many of the possible variations on these approaches have been recently documented by Shields and his colleagues (2013), and a few of these are worth noting here.

Drawing on the work of the Child Development Project, Watson and her colleagues (2013) described ways to incorporate the project's recommendations into teacher education, highlighting opportunities for fostering prosocial development and creating caring classroom communities (Watson, Benson, Daly, & Pelton, 2013). Lapsley, Holter, and Narvaez (2013) connect what is known about effective character education to the practice of teacher education, describing a programme for teacher education that is very intentional in its approach to preparing candidates for such moral work; and Nucci (2008, 2013) details specific research-based

interventions in teacher education that draw on social cognitive domain theory as a basis for preparing candidates as moral educators. These descriptions of practice aimed at preparing moral educators are often viewed as the missing link (Nucci, 2013; see also Schwartz, 2008) in efforts to provide character education in schools. That is, there are countless moral, character, and values education programmes in schools worldwide, but those programmes are only as good as the preparation of teachers who implement them.

Hybrid or Integrated Approaches

While all of the above approaches have some implications for both teaching morally and teaching morality, their respective foci are clear enough to warrant their categorization. However, one can also find scholarship on preparing teachers for the moral work of teaching that do not fit neatly into the categories above, substantively and explicitly addressing both teaching morally and teaching morality.

For example, Fallona and Caniff (2013) detail their attempts to make the moral work of teaching explicit in their teacher education programme by "infusing the moral" into the entire curriculum. They also describe how their purposeful work to develop a moral stance is aimed at helping teacher candidates to both teach in moral ways and also be moral exemplars to their future students. Thus, their reasons for attending to the moral work of teaching is to prepare teacher candidates with an approach to teaching morally and an approach to teaching morality (see also Johnson et al., 2013).

Similarly, many of the programmatic descriptions in the literature that focus on developing moral dispositions in teacher candidates suggest that reasons for doing so include teacher candidates acting as role models in their future classrooms (Schussler et al., 2010). These explicitly hybrid approaches to preparing teacher candidates for the moral work of teaching belie the many others that likely address both, but do so less explicitly in their programmatic assumptions related to the moral work of teaching and teacher education (Osguthorpe & Sanger, 2014).

Limitations and What We Are Likely Missing

In addition to the limitations illustrated in our brief examination of issues relevant to teacher education as a moral endeavor, a further major limitation of this review is due to language. There is increasing evidence of an international moral vacuum in teacher education (see Thornberg, 2008), but despite the significant broadening of vision that our lead author brings from western Europe to our U.S.-centered viewpoint, we believe it is worth taking some time to reflect further on what we might be missing, pointing to some areas that readers might find worthy of further exploration on their own.

To begin, in addition to a lack of easy access to many scholarly foreign language publications, it is worth noting that academia doesn't always neatly or accurately reflect that state of knowledge, let alone extant values, policies, or practices that shape teaching, schooling, and teacher education. What we have in mind here are governmental reports and policies that may substantively address moral education and the preparation of teachers for the moral work of teaching. To take just one example (which is discussed in the academic literature), Scotland's government has designated "religious and moral education" as one of eight areas in its national "Curriculum for Excellence," which include grade level standards which are to be assessed (Education Scotland, 2012).

Similarly, we wonder aloud not only what extant governmental policies exist across the globe, but what educational programmes and practices exist outside our comfortable purview that speak to teacher education as a moral endeavor. Here we might point to the curriculum in Ethics Education that exist in a number of South Korean teacher education programmes as an example. From our limited inquiries, it appears that just as there are programmes familiar to many western colleges and universities that prepare math educators, literacy instructors, social studies educators, and the like, ethics educators are prepared in teacher education programmes in some South Korean institutions. However, we have not been able to locate and access a literature that addresses these programmes and teaching and schooling practices they support.

We will not extend our pondering of what we don't know about things relevant to teacher education as a moral endeavor any further (as that topic is quite vast). We encourage readers to remain open and curious as to what insights, policies, and practices exist that might enrich our understanding of teacher education as a moral endeavor. Included in that list are a number of related developments in education that have strong implications for the intentional and explicit study and practice of preparing teachers for the moral nature of their work, such as advancements in our understanding of fostering social and emotional learning (Doikou & Diamandidou, 2011; Jones, Bouffard, & Weissbourd, 2013; Weissberg & Cascarino, 2013), and civic engagement (Althof & Berkowitz, 2006), as well as survey research that describes the self-efficacy of teacher candidates for the moral work of teaching (see Milson & Mehlig, 2002) and the need to address it before entering the profession (Revell & Arthur, 2007).

In light of the studies exploring the moral reasoning of teacher candidates there is also a longstanding push for preparing teacher candidates to understand the ethics of the profession (Strike & Ternasky, 1993; see also Giovacco-Johnson, 2011; Warnick & Silverman, 2011) and to make sense of the moral value inherent in approaches to using technology, advancing diversity, and attending to accountability and performativity (Biesta, 2015; Sanger, 2012).

Connecting What We Already Know

Given all of these possible ways to enrich our understanding of the moral work of teaching and teacher education, it is important to note that the moral vacuum in teacher education is not due to a dearth of knowledge regarding the moral domain. On the contrary, we simply need to "[connect] what we know about moral value, moral psychology, and their places in the context of teaching and schooling to the education of preservice teachers in meaningful ways, while also providing a basis for teacher educator preparation" (Sanger & Osguthorpe, 2011, p. 575). Thus in what follows, we highlight some of the places in and perspectives on the moral work of teaching that are ripe for more explicit connection. We begin with perspectives on moral values in teacher education, and then we examine the moral work of teaching in the context of present social processes, the teacher as moral exemplar, the hidden curriculum, and the school as a moral community.

Different Perspectives on Teaching Morality

For student teachers as reflective practitioners it is important to think about the way moral values influence their daily practices, their opinions, discourses and concrete behavior. Values are embedded in latent as well as overt processes and activities in school and classroom. With respect to explicit values education, profound knowledge is necessary regarding the various mechanisms, goals and methods that are available to facilitate moral education in schools. In the research literature concerned with moral education, different approaches of how to work with values emerge. We will now review some of the most important of these. Our format of perspectives can be seen as complementary to the list of perspectives that Veugelers (2010) has described in a chapter on moral values in teacher education. Veugelers does not use the 'traditional' or often quoted term 'models' to describe these approaches of moral education but uses the term 'perspectives' because he wants to articulate that the various approaches differ in philosophical background, pedagogical goals and suggested methodology. We think that this is quite right. Veugelers describes five perspectives of handling moral values in teacher education: value transfer; reflective practitioner; moral sensitivity; and, participation and dialogue and moral politics.

In the following list of explicit value approaches in teacher education we will discuss an additional and different series of perspectives and present the following format: the transfer perspective; clarification perspective; discourse perspective; development perspective; sensibility perspective; and, the character education perspective.

The Transfer Perspective

According to this approach values education is only successful when the student has adapted the values of the specific philosophical, ideological, pedagogical, moral or political theories and religious and cultural behavior patterns of the school in question. The key to value transfer is not only the acquisition of information, but also the internalization of values. In the public debate on the role of education, people often speak of the 'transfer' of values without stopping to think about what is meant by the term 'transfer'. 'Transfer' is often taken to mean the direct passing on to students of a collection of values and norms which are considered so important, from a religious or philosophical perspective or because of the identity of the school, that pupils also have to feel an emotional commitment to them.

In public opinion and in some critical educational studies the perspective of 'transfer' is sometimes associated with the notion of indoctrination. This is unfortunate because indoctrination is a deliberate process whereby someone is bombarded, over a long period of time using particular methods in a systematic and coercive way, with specific beliefs so that he comes to accept a way of thinking and thereby loses his own faculty for critical thought. Criteria in the complex but relevant debate about indoctrination are content, intention or end product. This debate has by no means reached a conclusion (cf. Snook, 1972a, 1972b; Spiecker & Straughan, 1991; Sher & Bennett, 1982).

In a more differentiated concept of transfer it is useful to make a distinction between the transfer of values in the first phase of life, childhood, and the later phases. Through primary socialization in the first phase of life, the child is introduced into the community. Transfer of values is unavoidable and essential in this phase. In the first instance, the new citizens have to learn to feel at home in the primary culture in which they find themselves. This micro culture presents itself as a culture of certainty to the young child (Berger & Berger, 1972). Later the child can allow himself to have critical doubts and get to know other values and views. Against the background of the greater openness with which the child is confronted on passing from the micro world to the larger social universe, the encouragement of reflection and independent moral judgment comes into its own in later phases of socialization. The transfer method is an appropriate and necessary method of primary socialization, it only becomes a problem when it is still being used in later phases of socialization and critical reflection and autonomous judgment is denied.

The Clarification Perspective

The value 'clarification' approach was developed as a reaction to the value 'transfer' method which can be perceived as a denial of freedom when applied to older students, because it is trying to teach those older pupils values which they have hardly reflected and not chosen themselves. In this model, values education is conceptualized as guidance of the process of students becoming aware of their own

values and opinions along with the values and opinions of others. The value-clarification model was developed in the United States (Raths, Harmin, & Simon, 1978). It can take different forms, most of which contain the following stages:

1. making one's own values and feelings explicit;
2. making the values and feelings of others explicit;
3. relating one's own values and feelings to those of others;
4. discussion with a view to achieving a measure of consensus in the group.

There are no ancient values or fixed standards in this method and it does not use a hierarchy of moral standards. This method starts from the idea that people are continually searching for their own principles. All values, whether moral, ethical or political, are based on the personal and social experiences of people. Certain things are felt to be right, desirable, good or worthwhile and they become our values. This method can be seen as a useful step in the process of developing (moral) awareness of values. The value-clarification method is suitable for learning about other values and fits in well with the transfer from conventional to post-conventional moral judgment. It may contribute to a reflective view on one's own identity. In this approach the confrontation with a multiplicity of values is viewed as a prerequisite for the development of personal autonomy after the learning of such values as respect and tolerance. However, the method also has some important shortcomings.

One relevant focus for criticism is the importance attached to group consensus. After values and feelings have been made explicit, one tries to get the students to arrive at a degree of consensus through discussion. This means in fact that no thought is given to the ethical validity of a viewpoint which has been expressed. Students are encouraged to arrive at a group consensus but does this mean that the number of people is the deciding factor or the ethical quality of the values and norms? Furthermore, this method makes no distinction between moral issues and issues which are not of a moral nature. They are treated the same. A last point that should be mentioned is the absence of "why" questions, for the most part, which could elicit a justification for behavior based e.g. on moral duty. It seems likely that the largely non-moral nature of this method accounts for the research finding that it has only a limited influence on the moral lives of the students studied (cf. for example Mosher, 1980 and also Lockwood, 1978).

The Discourse Perspective

The 'value communication' perspective is especially relevant for teachers, teacher candidates, and teacher educators because of the combination of the cognitive and moral goals of education (cf. Oser, 1986, 1994). Within this perspective, mostly inspired by the discourse theory of Jürgen Habermas (1979), values education is first and foremost directed at the development of personal autonomy and includes a rational discussion of moral responsibilities and obligations. According to Habermas, communicating about values also presupposes that people have learned

to critically examine the reliability and consistency of an argument. It also implies knowledge of various values and conceptions endorsed by the different groups in a society. When communicating about moral values and dilemmas, students can detect how values are interwoven in their belief systems, and they can eventually adjust them under the influence of the process of reflective communicative action. Another educational goal in this respect can be trying to reach a shared meaning in the group. When this does not work, discussion can be undertaken. An 'Habermasian' prerequisite for such discussion however, is an ideal conversational climate in which power relations do not play a role and rational arguments are of overriding importance. This method uses free and open discussion to try to reach a reasoned and balanced evaluation of moral values. The discussion comes down in the end to the question of which values should be taken as a guide to action in a concrete situation. The emphasis in the communication process is on living the interests and viewpoints of the other people involved in the moral dilemma. Through the emphasis on role-taking an attempt is made to arrive at an intersubjective judgment as far as possible. The method used is to teach the participants in the discussion to keep switching between the 'I', 'you' and 'they' perspectives. The participants have to learn to put themselves in the place of the other participants with whom they are engaged in discussion and also to consider the viewpoint, interests, values and norms of relevant outsiders who are not present. This method provides systematic practice in learning to put oneself in someone else's place and it encourages 'learning to think' just as much as value development. The beliefs, feelings and thoughts raised have to be able to stand up to the forum of rationality. Critics of this model have expressed doubts about the criterion of rationality and argued for other sources of knowledge than understanding, such as (more) empathy, aesthetic experience, emotions, intuition, literature and meditation.

The Development Perspective

This approach is based on the multi-faceted theory and research of Kohlberg (1981a) and addresses the course of moral development and the structure of moral judgments. According to Kohlberg, the structure of moral reasoning develops in a logical order. A diversity of arguments come to the fore in moral discussions and these arguments can be classified in a certain way so as to gain insight into the development of a person's moral judgment. Knowledge of this progressing classification of stages in moral development is important for teachers and teacher candidates when it comes to stimulating the moral development of students. Kohlberg distinguished three levels, within each of which two sublevels can be designated. He calls the middle level of development the 'conventional level'. 'Conventional' alludes to the support for and adjustment to the rules and expectations generally accepted in society. A student turns to conventions within the groups of which he is a member when forming his own judgments. What he thinks of as good or bad depends on what others think, especially authority figures. Before children reach this level they are in

what is known as the 'pre-conventional level'. The child knows the rules within his own group (e.g., the family), but whether he thinks a particular act is good or bad depends mainly on its consequences in terms of reward or punishment, or it is decided on the basis of what benefit it would bring to the child. At the 'post-conventional' level there is much more autonomy in the forming of judgments. What someone at this level considers to be right or just depends on his conscience and on universal ethical principles. Kohlberg argues, it is the viewpoint of an individual who holds the same moral convictions and uses the same moral yardsticks as prevail in a fair or just society. In this Kohlbergian perspective the school should stimulate the moral development of students by confronting them with moral dilemmas.

From this perspective it is not so much important 'what' students think as 'how' they think. In the value development perspective it is anticipated that the discussion of moral dilemmas and the cognitive processes involved will further pupils' upward progression through the stages. Research carried out into this method has shown that its effects are fairly limited and are most successful in the lowest stage of moral development (cf. for example Mosher, 1980). For educating prospective teachers in teacher education it is important to realize everyone does not reach the post-conventional stage, many people are assigned to the conventional or pre-conventional level.

Another point deserving attention in teacher education are the various publications of Carol Gilligan in which she makes clear that Kohlberg's development theory cannot boast universal validity because his research was based on a sample made up of only men and boys. This means that moral principles which are typical of women were not able to emerge. It is not surprising, therefore, that women score lower on Kohlberg's stages than men. This is due to the fact that the higher stages were constructed using traditional 'male' qualities – namely an emphasis on justice and rights (based on individual autonomy) – and not qualities like responsibility, affectivity and personal relationships (connectedness) (see also Nunner-Winkler, 1989). She argues in her publications that adolescent girls mainly base their moral judgments on 'empathy' rather than formal considerations. This is different from boys. Women have a different way of looking at moral problems, because they use different categories (cf. also the caring and feminist perspective of Nel Noddings). With respect to the development perspective it is necessary to point to several other theoretical approaches in the sphere of moral development.

The Character Education Perspective

This school of thought on moral education emphasizes the cultivation of morality and encouragement of virtue (Berkowitz & Bier, 2005; Lickona, 1991). In discussions on the role of education, the character or virtue approach is usually advanced as an alternative to the cognitive-structural approach of Kohlberg et al. which is thought to be over preponderant. The main focus is not on discussing moral

dilemmas or autonomous critical reflection or moral judgment, but on teaching, transferring and developing good qualities or virtues. Virtues are usually conceived as 'character traits' that support good behavior, such as humanity, helpfulness, sincerity, truthfulness, sense of duty, responsibility and so on. The hearth of this moral education approach is the affective side of morality. This means that the motives, emotions and attitudes of the person are considered to be very important. There are several methodical characteristics in this approach. In daily practice in the school students are regularly confronted with lists of 'fixed' virtues that are not regarded as 'situated', but are seen as issues ready to be adapted by the recipients. An appreciated method is the narrative one: telling stories about the good moral life. And of course there is the modeling function of teachers. Teachers must be a good example at all times. Another characteristic of this approach is that schools try to make use of art, music, history and literature to acquaint children and students with the qualities and moral behavior of good people.

The Moral Sensitivity Perspective

In his list of perspectives, Veugelers also addresses the well-known paradigm of 'the reflective practitioner' that has had considerable influence on the thinking about teacher education. As a follow up to this didactic perspective he points to the 'sensitivity' to feel and be aware of when moral values are at stake. In other words: how can (prospective) teachers detect the 'golden moments' for moral education? Referring to research by Campbell (2003a, 2003b) and Tirri (1999), Veugelers (2010) indicates that knowledge about moral values and moral dilemmas is not enough. It is necessary to be able to detect when values are at stake and how a teacher (educator) could possibly handle them (see also Klaassen, 2002). In this respect it is important to realize that special attitudinal demands are placed on teachers, for example on the teacher's ability to empathize. The teacher also has to be prepared and inclined to really allow the students the scope to exchange perspectives in moral discussions. Not only must the teachers be able to manage the techniques of the teaching profession, such as leading a discussion on moral dilemmas, they also need to be able to bring the value issues into their teaching in an educationally responsible and responsive way. To put it another way, they have to know how to forge the iron when it is hot. That is to say whenever a moral dilemma comes up in a real (not artificial) setting in the class, school or wider community, they have to have the ability to uncover, elicit and discuss the dilemma in its real social context.

Teacher educators must teach their students to have an eye for the meaning making processes of their students in the classrooms. Veugelers rightly points to the necessity that prospective teachers as well as their students should learn to speak in moral language to enhance the development of moral sensitivity or sensibility. The issue of moral sensibility was also part of a doctoral project conceptualized and formulated by Klaassen and elaborated by Maas about teachers' (re)actions in morally critically situations and the significance of teacher cognitions (considerations),

emotions and behavior (actions) in this respect. How teachers feel, think and act when they are confronted with situations in which students do or say something that impinges on certain moral values, was examined in both a quantitative and a qualitative way. Morally critical situations are important to consider for they can serve an important pedagogical goal. Because of the students' involvement in the situation, seemingly abstract values can suddenly become real and meaningful to students. 234 teachers in the fourth year of secondary general education in the Netherlands (students about 16 years old) filled in a questionnaire about their emotions, considerations and actions in six morally critical situations, and about their perceptions with regard to the role of the school and the teacher when it comes to the moral development of students (Maas, Klaassen, & Denessen, 2006). The results revealed that teachers considered all situations an opportunity for teaching their students something about values. How much importance teachers attached to this opportunity was partially related to the importance they attached to their own moral values and to their perceptions of their task and the goals of the school. Furthermore, a series of repeated measures ANOVAs revealed a main effect for situations on all emotions, considerations and actions. Most notably, how much anger and indignation teachers felt, and how many of the teachers reprimanded their students and reported the situation within the school, depended for a large part on the specific situation.

In three situations students expressed their opinions about a social question (e.g., about refugees or about Bin Laden). Here teachers were less inclined to take punitive measures and more oriented to a class discussion. When the welfare of students was at stake and students targeted other students, teachers would feel more angry and be outraged and feel inclined to take punitive measures. The qualitative part of this research was an interview study with 11 teachers which focused mainly, and more deeply, on the actions and considerations in situations in which students targeted other students or the teacher. The results of this part are directed at questions that touch them personally in these kind of situations and their opinions about the moral role of the teacher. For prospective teachers this kind of research may hopefully be fruitful in forming a multidimensional image of a professional self.

The Moral Work in the Present Social Context

There are many reasons to pay attention to moral and ethical aspects in teacher education. Besides the relevant issues 'inherent' to the moral work described in this chapter there are also important 'social processes' that ask for more attention to the moral development of youngsters in present society and for a more prominent position of the moral dimension and ethical questions in the educational curriculum. This has important consequences for teacher education because a number of societal and social processes influence the normative aspects of the daily practice of teachers in school and classroom. Teacher candidates should have a sophisticated knowledge and a reflected attitude about the social, moral and ethical conditions that make their

work more complex. A certain portion of `a sociological imagination' is therefore inevitable. In many countries in the world, people live nowadays in a society that is characterized by uncertainty, continual change, conflict and pluralism as a result of social and societal processes like individualization (including emancipation), secularization, globalization (including migration) and post-modern thinking.

The *individualization* that is steadily proceeding refers to the social relationships between people that are changing as a result of their increasing independence in a wide variety of fields (Elias, 1991). The importance of institutions such as the family, social class, religion, politics, specific role patterns and the local community is also gradually dwindling. People are withdrawing from other people in their way of life and their personal decision-making, and the government and other social bodies within the society are going along with this. An increasing degree of autonomy can be detected in families, relations, and other forms of social assistance. The erosion of traditional institutions and frameworks as a consequence of the modernization of society is accompanied by an increased variety of values and value systems (Beck,1992). In such a way it also becomes difficult for individuals to fall back on one fixed value-system and this will have consequences for the form and content of (moral) and (teacher) education.

The value differentiation is increased by the social process of *secularization*. In the second half of the last century many countries have become highly secularized. According to research the percentages of non-religious people have increased and the significance of religion in everyday life has declined considerably. Of course this has led to increased pluralism and fragmentation in all kind of institutions, not only in politics but also in the educational sphere and for instance in teacher education that originally often was closely connected with faith. Familiar social relations, customs and value systems have changed in these institutions.

In other societies or countries the significance of religion seems to be different and more prominent. This may lead to a further international fragmentation and increased conflict in the present 'fluid' society (Bauman, 2005). Teacher education curricula and moral education in general must take into account these societal, social and individual changes by paying more reflective collegial attention to these 'hidden' existential questions that (teacher) students have to cope with in the classroom because of conflicting traditions provided by a variety of new social contexts and social media. In present society students must construct their own world by positioning themselves somewhere in the multiform universe of opinions, moral standpoints, ethical principles and other values and behaviours.

Globalization refers to various change processes by which human beings and populations that formerly were geographically separated have more frequent and intensive contacts with each other. In many places migration has led to further erosion of traditional value systems and to new forms of all kinds of cultural diffusion. Globalization is a worldwide and multidimensional process with economic, political, ecological and cultural facets (Ritzer, 2007). The worldwide exchange of information and communication by way of global networks and social media has reshaped the cultural landscape and has remarkable consequences for social relationships, social consciousness and personality development. As a result of increased globalization and cultural pluralization, citizens now have a wider choice

of norms, values, ideas, and behavioral patterns. As a consequence of expanding globalization the moral work in education has become more complex. In a globalized social context and in an ethnically diverse society, student teachers should learn to reflect upon that diversity and the ethical questions and moral issues that go with this. Nowadays teacher education asks for stimulating intercultural sensitivity and knowledge of the diversity of behavior patterns and (moral) perspectives or ethical questions and of different ways of guiding discussions and handling intercultural problems in the classroom. A special point of attention is that teacher students learn the various ways their students try to combine or mix global and local elements in their consciousness and communities.

As a result of the spread of influences of *post-modern thinking* supposedly universal moral principles have been openly criticized and traditional political ideologies are no longer taken for granted. The accepted verities that underlay the long-cherished belief in progress, instrumental rationality, and universal truth are also being called into question (Bauman, 1992). Post-modern thinking poses radical and critical questions with regard to our usual ways of reasoning, cultural legitimatizations and cultural models that are characteristic of the social condition we call 'modernity' (Habermas, 1987; Hall et al., 1993; Turner, 1991).

Post-modern thinking is not bound to the conceptualization of progress and history as linear processes. Rather, discontinuity, differentiation and disintegration are emphasized. Instead of the modern emphasis on totality and rationality, specific events and local history now receive a great deal of attention. The pluriformity, contingency and ambivalence of post-modern society is explicitly recognized.

As a consequence of all these social processes mentioned above, values are conceived as a contested ground in plural societies all over the world. That is a major challenge to the actual moral work in (teacher) education. Young people are left to their own resources and have a larger freedom of choice, which makes for a wider scope of alternative actions and behaviors, but also places a greater pressure on people to choose. Young people today are expected to make an independent choice from the alternatives that are open to them. Many regard this both as a privilege and as a burden. Moral education that addresses moral values and ethical principles can help young people to weigh their opportunities and make balanced choices. Stimulating critical thinking and fostering a sense of 'moral' values and ethical reflection can help them to develop the ability to form a reflected personal opinion. This is important for all the students but may also have a preventive function for those who feel burdened by the pressure to make choices and are liable to suffer from a "fear of freedom" (Fromm, 1942) which may lead to authoritarian, orthodox or extremist tendencies among the population.

Nowadays teacher educators are confronted with a variety of specific youngsters who seek for other than the traditional sources of meaning. Some students may even reject going into morals or ethics. This makes teacher education today indeed a more complicated matter than ever. A lot of research gives the impression that more interest in reflective working with narratives and 'collegial support' in teacher education seems to be more effective than to solve these problems with a sort of a technological approach or a 'receipt book' for teacher students. Any teacher who is

not professionally blind is confronted with the matters discussed above and is hopefully talking with his or her colleagues about solving these issues.

The Teacher and Teacher Educator as a Moral Exemplar

In society and especially in teacher education it is widely assumed that the teacher functions as a model whom students will imitate and as a person with whom they could perhaps identify. This exemplary role of the teacher is considered important primarily in the attitudinal and moral forming of the students. It is expected of teachers that they show 'their best side' to students. Thereby it is assumed that teachers have certain specific qualities that students can observe and acquire. In many studies about moral values in teacher education, the relevance of the educator as role model is generally accepted. For instance in their publication on the moral dimensions of teacher professionalism Althof and Oser (1993) from the University of Fribourg in Switzerland brought forward the proposition that: "Beyond being good instructors, good teachers know that they are role models, with a responsibility to foster students' social understanding, and a choice to help to facilitate or destroy a willingness to find humane, cooperative, peaceful strategies of interpersonal negotiation and conflict solving" (p. 197).

The message is clear: teacher professionalism is not only about 'academic cognitions' but also about professional morality in the service of the learner. Another clear example is given by Noddings (2008) who claimed that: "Almost all approaches to moral education recognize the importance of modeling. If we would teach the young to be moral persons, we must demonstrate moral behavior for them" (p. 168). Many representatives of the 'character education movement' see the possible effects of teachers as exemplars as their trump card. "Virtually all schools involved in character education recognize that the good character consistently modeled by school personnel is among the most powerful means of developing good character in students" can be read in the mission statement of "*The Character Education Partnership*" (CEP, p. 2, see also, Lickona, 1991).

Since antiquity, much thought has been given to the exemplary function of the teacher. Socrates and Aristotle propagated the importance of 'setting a good example' and 'learning by observation' as a most efficient and effective means of moral values education. Plato and Aristotle concluded that the expression of virtue was essential for the best possible life. Virtues are the qualities that make a life admirable; for instance the virtue of (moral) courage is universally admired. Today too, exemplary learning receives particular attention from the philosophical viewpoint. Leading works are those of Carr (1991), Steutel and Carr (1999), Kristjánsson (2006) in Europe and in the United States e.g., Warnick (2008).

Much has been said about the exemplary function of teachers, but there is little empirical research about role models in education (Klaassen, 2012, 2012a; Sanderse, 2013). Empirically our knowledge of how a teacher actually functions, or can function as a moral role model or moral example, is still insufficient. For instance there

is little known about the question of whether a teacher actually functions successfully as a role model (Osguthorpe, 2009). We know little about 'how' a teacher or teacher educator tries to be an effective role model. Neither do we know how role modeling can be implemented as a didactic strategy, in particular in connection with the 'moral' learning of students. There is also little knowledge of how students 'interiorize' role models or even 'if' and 'how' they 'build' role models by themselves. Overall empirical insight into the opinions of students and teacher educators on the exemplary function is still scarce.

An Austrian researcher, Bücher (1997), studied how young people experienced all kinds of role models, such as in the media or in sports. According to this research, teachers were not very high on the list of relevant role-models for the study participants. In a large British study, Arthur (2011) found that students expected their teachers to function as role models. In a survey study among 92 preservice teachers, Sanger and Osguthorpe (2013a, 2013b, 2013c) found that one of the most prominent and strongly held beliefs about teaching was in the importance and power of modeling. In the Netherlands, Klaassen (2012, 2012a) collected qualitative and quantitative data about the opinions of different categories of teachers in acting as role models. The first study was carried out among 20 experienced teacher educators. The second mixed method study included experienced secondary vocational school teachers of various subjects and in the third study 92 teachers were involved. They were working at a new type of school that offered a practical and technically oriented education integrated with moral aspects of learning.

In the first study, the teacher-educators ascribed great importance to the exemplary function they provided for future teachers. According to them, it was part of their job to provide a good example, and 90 % of those asked felt their students needed and expect it. 'You can tell students everything about good and evil, but the only thing you can really do is show them. Somebody once said to me "Don't believe me, but experience me"' (Klaassen, 2012, 2012a, p. 35). An exemplary function can also be expressed by the way in which one reacts to students' behavior. Teacher-educators are aware that their attitude toward their students is crucial. In their supervisory role they try to consider the present needs of the student teachers: 'How do you deal with experiences in the classroom? How do you stimulate people? How do you correct them? Keep asking questions and do not judge too quickly'.

In the second study among vocational teachers almost all teachers (93.8 %) reported that they want to be an example to students and that they viewed it as part of their job. Students need a pedagogic example. 'As a teacher you have to be open and honest, but also show that you understand. You have to show how to talk to somebody' (Klaassen, 2012, 2012a, p. 30). An exemplary function can be fulfilled in the way in which they react to the behavior of students and others. 'As a teacher you have to be open and honest, but also show that you understand. You have to show how to talk to somebody'; 'If, as a teacher, you have clear views on something, students can see this and identify and (learn to) make their own choices. At the same time a teacher must show as many sides as possible of a particular issue.' (Klaassen, 2012, 2012a, p. 30). A majority of the vocational teachers (81.2 %) declared that a teacher's personal values cannot be separated from his or her

professional values. However, from the qualitative part of the mixed-method research, it emerged that particularly younger teachers who had worked in education for a shorter period of time said they were a different person while teaching and wanted to keep their work and personal lives strictly separate. This finding is not in accordance with the reported beliefs of three fourths of the respondents that their personal values should be or are apparent in their model function as teachers.

Studying the relevant literature it is often forgotten that as well as 'positive' models there can also be 'negative' teacher models. More than three quarters (81.2 %) of the vocational teachers in the second study stated that they had known a teacher who was a negative example. The teachers in this second study had clear ideas of how the exemplary function could be improved; according to almost all the teachers questioned (93.8 %), there was a view that they should discuss values, standards and their behavior with students more frequently.

In relation to the concept of a 'hidden curriculum' it is worth reflecting on the following result of the aforementioned studies. The majority of teachers in the three fields researched were very aware of their exemplary function, but they did not consciously bring this up or point to an explicit method, or explain the values, traits and competences concerned. Two thirds of the teacher-educators in the study were of the opinion that the exemplary function should be fulfilled subconsciously. There is also little emphasis on explaining to students how they could emulate certain qualities of a role model (see also Lunenberg, Korthagen, & Swennen, 2007; Sanger & Osguthorpe, 2013a, 2013b, 2013c).

Three quarters of the larger sample of vocational teachers also thought that modeling should take place subconsciously. Even in the new type of schools that are officially oriented to learning by modeling, teachers advocated a latent modeling approach and not an explicit 'method' centered on the exemplary function. Confronted with this paradox it is necessary to further reflect on the question of whether often recited 'model learning' should be an 'implicit' or 'explicit' moral method, and whether and how the effectiveness of this aspect of the 'hidden' or 'unstudied' curriculum of teacher education can be improved.

From research conducted by Gibson and Cordova (1999) it appears that teachers simply assume that students accept their teacher as a role model. This corresponds to the literature about the moral work of education where it is frequently assumed that a teacher 'unavoidably' has an exemplary role. In many local teacher education syllabuses and publications, it seems that role modeling is assumed to be a 'self-evident' assimilation process that goes all by itself and that the teacher is the starting point for of all this. There is relatively little interest in the recipient(s) of this process and the various ways they happen to interiorize the model.

By his or her behavior and attitudes in the everyday events of the school a teacher broadcasts value oriented and moral messages. It is widely assumed that the teacher functions as a model whom students will 'logically' imitate. The personality of the teacher, the 'person of flesh and blood', if it works properly, emerges in the professional. This is what many parents mean when they talk of a good teacher and say, "I

did not hire a robot" (Leeferink & Klaassen, 2002). However, our knowledge of how a teacher can acquire the competencies and sensibilities to function as a role model has to grow. Some relevant scholarship (e.g., Fallona, 2000; Fenstermacher, 2001; Noddings, 1992, 2002) points to possible strategies in which learning by modeling can take place in practice, while others pay special attention to the significance of the modeling personality (Walker, 1999; Walker & Hennig, 2004); which is very important for teacher education. But teachers must also learn about the literature that focuses on the student-recipient(s) of the role modelling.

In *identification theory*, as originally formulated by the psychologist Erikson (1968), the emphasis lies on the fact that someone is attracted to people with whom he or she shows some resemblance. For instance, one can think of certain values, common goals or a certain type of behavior or a desired social position as a point of resemblance. Individuals can feel an emotional and cognitive connection with a role model whereby they make comparisons and imagine themselves to be the same. When the young person identifies with a role model (a 'target person') then there is a motivational effect, which can lead to imitation and behavior modeling. Typical of this approach of Erikson is the attention given to the reciprocal relation between the role model and the person observing the social and inspirational role of the model. Identification with a role model can stimulate a degree of imitation. The observation of role models can encourage the personal development of students.

Bandura (2007) is another major theorist and researcher in the field of role modeling who sheds important light on the recipient. In the *social learning theory* of Bandura, more attention is paid to the 'learning process' that takes place in 'model learning'. In this form of learning the 'psychological matching' of cogitative skills and behavior patterns between the observer and the model is central (Bandura,1977, 1986) Their experiments on imitation have concentrated on the determinants and mechanisms that play a part in learning by observing role models (see for an extensive review: Bandura, 2007).

Another scarcely known concept of role model is that of a cognitive construction by the person of various elements that together form 'an ideal' of what the person wants to be (Ibarra, 1999). In this view, it is not the behavior of a (prominent) specific person, but of a student that actively builds an image of an imaginary role model. This active building is done by taking all kinds of traits that are considered important from various people and combining them together to form a whole (Gibson, 2004). The ideal self-image is then a 'collage' of diverse fragments that can contribute to a personal 'ideal self-image'. Here we can speak of an active learning process in which students construct a model or ideal image of what they want to be from numerous possibilities. This 'constructivist' approach puts the student in a position to form a series of 'possible selves' and to try these out (Cross & Markus, 1991; Markus & Nurius, 1986). On this basis, a choice can be made that is in accord with the desired self-image that is to be developed.

Implicit Moral Education: The Hidden Curriculum

Viewed from an international perspective, research has been going on for years into various aspects of the hidden curriculum in education and the expectations for behavior which are implicit in it. The hidden curriculum transfers many norms and values that are crucial for individual moral development but also for the maintenance and underpinning of economic growth and political stability in the social system. Norms such as willingness to adjust, to work and to be mobile are expected of students every day and are embodied in the rules, routines and rituals of the institution of the school. The performance ethic and the competitive ethic are also ingrained in the education system (Apple & King, 1983).

If we turn from the deliberately planned learning processes and examine the rules of the school as an organization, at social interaction in the classroom, and at other aspects of the hidden curriculum, it is evident from research that students undergo far more learning experiences in the school than those which come from the material in their textbooks. Various analyses of the content of textbooks have shown that they also contain many 'hidden' messages and implicit values and norms (Anyon, 1981; Loewen, 1995). By being subjected to the order of the school, the classroom and the lesson, young people learn, day after day, year after year, the norms and values that are of great importance for their later functioning in the workplace and in society. Values and norms derived from them are incorporated into institutional patterns in the school, such as the grading system. Furthermore, attitudes toward figures of authority and hierarchies in society are learned through years of daily attendance at school.

Our society would not run as smoothly if latent socialization processes did not take place. They seem to be as obstinate as they are effective. Based on an analysis of explicit and implicit moral education in schools, Edwin Cox formed the opinion "that, in the existing situation, the only effective moral education is likely to be an implicit one. This means that schools are likely to contribute to moral education more by their organization, by what is known as the hidden curriculum, than by structural moral lessons in the classroom" (Cox, 1988, p. 96). It is important for teachers to continually remind themselves of this frequently forgotten curriculum because of the potential and actual influence which it has. It would not seem to be a good idea to deny the existence of the hidden curriculum given its significance for the success or failure of explicit efforts to bring about moral education in the lessons of the formal curriculum. The hidden curriculum is an important mechanism of moral education and value transmission in daily practice in our schools. The hidden curriculum deals mainly with (moral) standards and values as content and at the same time with scholastic practices. More generally it concerns the side effects of the curriculum, namely:

(a) the hidden aspects of the official curriculum; and,
(b) the numerous additional learning effects that are concomitant in schooling.

In both cases, it involves 'latent' learning processes. Possibly they are only apparent in the consciousness of students and teachers when their 'self-evident'

process is disturbed or the learning processes have such side effects that corrective measure are needed. In addition to the 'official' curriculum, which chiefly steers the transmission of knowledge and skills, the informal, unnoticed or unmentioned learning experiences of schooling are mainly responsible for the transmission of values, rules and interpretation schemes. Students learn them at school but they are often not articulated and not recognized as such. In other words this 'latent' curriculum is concerned with the moral insights and standards that many people have, but have never learned in a conscious and intentional way. It is important that we realize that the hidden curriculum is not made manifest only by people and their interactions but also by the structure of the school as an organization and rituals and institutional practices of the school culture.

In practice, the official and the hidden curricula can complement and reinforce each other, but can also undermine or work against each other. Many researchers think that the norms and values communicated by the hidden curriculum (because they are often unacknowledged) are more powerful than what is explicitly thought. The hidden curriculum has always had a moral dimension and a social control function in society and perhaps accounts for the association of the hidden curriculum and moral education (see the title of the important book edited by Giroux & Purpel, 1983).

John Dewey, at the beginning of the last century in his well-known book 'Democracy and Education' (1916, 1966), offered various examples of the ways in which certain characteristics are transmitted to students in an often unclear but self-evident manner as a by-product of the learning process, or as a socialization effect of what happens in the school. In 'Experience and Education' (1938), he also made clear the significance of the hidden curriculum and what it was about, namely 'collateral learning', which simply takes place in the everyday educational system.

The concept of the hidden curriculum does not have a positive connotation for everyone. Sometimes it is associated with unjust intentions, manipulation or secrecy. In the 'negative' approach to the hidden curriculum, which is characterized by a high degree of suspicion, it is seen as a form of 'conscious concealment', of a deliberate influence that is aimed at convincing students and others involved without them being aware of it. This 'negative' interpretation ignores the neutral meaning and scientific value of this concept and phenomenon. The messages transmitted by the hidden curriculum in education are termed 'hidden' because generally in everyday life almost no one 'recognizes' or 'notices' them or sees them as such. In addition, a number of these 'latent' messages are not recognized simply because they are 'forgotten' or 'neglected'. For this reason Cornbleth (1984) prefered the term 'implicit curriculum'.

Jackson (1968) was one of the first scholars to use the term, *hidden curriculum*. Using a combination of diverse qualitative approaches Jackson demonstrated empirically that 'the process of schooling' in fact is a broader socialization process than the official curriculum or formal education. Like Eisner (1985), Jackson can be seen as a representative of what, in our opinion, can be called 'the school culture approach'. In his book 'Life in Classrooms' (1968) he showed how students learn important social attitudes and behavior patterns just by sitting in class each day. In

his conclusion he pointed out, for example, the importance of characteristics such as controlling instant gratification, obedience to authority, waiting your turn, working carefully, etc. In his research, Jackson particularly showed how the 'rules, routines, rituals and relationships' socialize youth for their present position and, at the same time, prepare them for the adult world.

In the 1970s and 1980s there was a great deal of interest in the nature and significance of the hidden or latent curriculum on both sides of the Atlantic Ocean. In the 1990s attention given to the theory development and research related to the hidden curriculum declined. An important reason for this decline was that in the 1980s the study of the hidden curriculum gradually became the preserve of the 'neo-Marxist' and 'critical pedagogy' theories, such as the 'reproduction' approach in educational theory (Anyon, 1980; Bowles & Gintis, 1976).

With a decrease in interest in these social scientific paradigms, attention to the important value-forming significance of the hidden curriculum almost disappeared. However, despite this stagnation, several scientists have tried – in a less ideological and more neutral manner – to bring the theory in this field up-to-date (Anderson, 2001; Gordon, 1996; Gordon, Bridglall, & Meroe, 2005; Halstead & Xiao, 2010; Hamilton & Powell, 2007; Klaassen, 1992; Meighan & Siraj-Blatchford, 2003; Skelton, 1997) and to formulate new research initiatives into the hidden curriculum (Jackson, Boostrum, & Hansen, 1993; Klaassen & Vreugdenhil, 2012).

Theory development and research on the hidden curriculum is important for reflective teacher education and the moral work of teaching. The more recent definitions of the hidden curriculum do not deviate much from earlier ones. The hidden curriculum is still not seen as 'a thing', but to a great extent is still regarded as a way of thinking, a direction, a form of research that poses certain questions that are not usually asked. Gordon et al. (2005) focused on the sources of the hidden curriculum and demonstrated that various aspects of 'schooling' also found in higher education contribute to the success attributed to the hidden curriculum. In other words, the 'practices, procedures, rules, relationships, and structures' (see also Haralambos, 1991). Hamilton and Powell (2007) talked of the hidden curriculum as 'The unofficial rules, routines and structures of schools through which students learn behaviors, values, beliefs and attitudes' (p. 2116). In his important book: 'A Sociology of Educating', Roland Meighan (1981) offered the following description:

> The hidden curriculum is taught by the school, not by any teacher … something is coming across to the pupils which may never be spoken in the English lesson or prayed about in assembly. They are picking-up an approach to living and an attitude to learning. (Meighan, 1981, p. 76).

On the basis of a literature study on the theoretical discussion and an inventory of the empirical research current on this topic, Klaassen (1992) proposed the following description of the hidden curriculum: 'the unconscious and unintentional learning arrangements and processes that potentially or actually influence pupils' (p. 41). In his meta-analysis of much qualitative research he distinguished the following elements or 'sources' of the hidden curriculum (see also Klaassen, 2010). The:

1. filter function of the teacher;
2. extra message of the lesson content;
3. hidden curriculum of the interaction in the class;
4. hidden curriculum of the school as an organization;
5. hidden curriculum of the student culture;
6. hidden curriculum of the vocabulary;
7. hidden curriculum of the language codes;
8. hidden curriculum of the school evaluation and differentiation; and
9. hidden curriculum of the spacial setting.

Klaassen (1992) did a meta-analysis of the prolific research carried out over the years in the area of the various elements noted above. It appeared that there was a plethora of empirical research results for the majority of the elements. The meta-analysis revealed that the concept of the hidden curriculum was not only a widely used and attractive theoretical concept but had also an empirical fundament. In studying this 'taken for granted' curriculum it proved to be fruitful to make a distinction between macro- and meso-micro approaches: Macro-educational studies examine the relations between education and the functioning of society as a whole. A central question in this approach is: what purpose does the hidden curriculum serve and in whose interest is it?

In many macro studies from the past decades it is assumed that the hidden curriculum not only encouraged ethnic inequality, but also gender and social differences. It could be argued that some research in schools is conducted with a high number of students with below-average performance. An example of such research is that of Anyon (1980). In her research she examined closely five different (primary) schools and compared them with respect to such things as the physical surroundings of the school. Anyon described how the hidden curriculum strengthened ethnic inequality, but also often stimulated inequality of the sexes and social backgrounds. She also paid attention to the mechanisms that played a role in this. Female students, but also students from poorer districts and large categories of immigrant students were often treated in a certain way that caused or increased a negative self-image. Frequently people had less confidence in them, they were given less autonomy and saw themselves as less independent and thus it was concluded that, because of this, they would rather be subject to authority for the rest of their lives. The other side of this process is that for students from the dominant social groups the mechanism takes a very different turn. In school these students are treated in ways that increase their self-esteem, their autonomy, and independence and so thereby the probability of their success.

In the meso-micro-educational analysis a central question is: how does the hidden curriculum work? In the present 'recovery' of the hidden curriculum there is more attention to the meso-micro level; especially so when student friendship and interaction patterns in the classroom are studied (Ballentine & Hammack, 2012; Meighan, 1981). But of course the old questions still remain: The concept was originally used to gain further insight into the unrecognized aims and effects of 'the

process of schooling' and to pose pedagogically directed research questions as to whether the aims of the school are really what they appear to be.

Recent studies concentrate on the 'learning of all sorts of values' (often these are moral values) both in formal and informal education. An example of this is the renewed exploration of the hidden curriculum and its significance for immigrant students in the context of the educational elite culture of intellectual top schools in the Netherlands (Klaassen & Vreugdenhil, 2012). These schools have the self-perception of offering the academically most promising youngsters a quality education. The Independent Classical Gymnasia see their schools as a preparation for inclusion in the intellectual elite of the country by giving their students a Classical Cultural and Language & Literature Education. They see that it is desirable to increase the number of immigrant students so that their schools are a better reflection of society. However, they also think that the hidden curriculum stands in the way and is why in a mixed method investigation, the embedded cultural and moral values of the school need to be researched in order to shine a light on the 'hidden' conservative or emancipation or justice oriented opinions of administrators, teachers, students and other school participants, their unifying activities, implicit rules of behavior, relationships, rituals and routines.

The School as a Moral Community and Organization

To fulfill the moral task of the school, it is important for (student) teachers to reflect continuously on value laden aspects of the moral school culture and the moral organization aspects of the school. Therefore it is necessary for prospective teachers to pay extra attention to the meso-level of education.

In the debate about the moral significance of the school and values education, the focus is not only on the teacher but also on the school and the classroom as a socio-cultural and moral learning environment. The culture of a school refers to the norms, values, rituals, habits and systems of meaning shared by the members of the school. The concept of school culture is closely related to the organizational innovation concept of the-school-as-community (Brysk & Driscoll, 1998). The notion of a school as a community presupposes shared values, ideas, and ideals that make the school a purposeful community.

In the school-as-community approach, the school becomes a place in which people care for and help each other, and in which they are devoted to their work. These are the fundamental values of a community. If the members of a school-as-community have internalized these values, they will feel compelled to act according to them in their daily lives. Motivated from within, all of the members are able to direct themselves. There is a need for intensive and continuous reflection on the values which the school team consider to be core values and which they want to disseminate via the standards and rules of conduct based on those values.

A crucial aspect of the school as a community concerns the quality of the underlying relations, which relates to the manner in which the actors in the school interact

and relate to each other. Characteristic of the forms of interaction found within a community are concern and involvement with each other. For educational practice, this means sufficient space for personal and trusting forms of interaction between the students themselves, between the students and teachers and between the teachers as well. In such a manner, a safe and secure climate emerges as important, which further promotes feelings of well-being and acceptance. The research of Ann Higgins and Sadh (1997) among others has emphasized the moral relevance of social climate and mutual relations aspects between students as relevant aspects of the school culture (see also Battistich, Solomon, Watson, & Schaps, 1997).

According to Kohlberg (1985) the cultural aspects of school are important for the moral and identity development of students. A school which aspires to do deliberate and systematic work on education in (moral) values and norms must give attention to objectives, events, rules and customs which serve to further personal development. Kohlberg saw the moral culture of the school as "a bridge between moral judgment and moral action" (1981b, p. 33). The school needs to be so organized that it develops a social climate in which, for example, responsibility and a sense of community, respect for others and tolerance are encouraged among students.

Power, Higgins and Kohlberg (1989) tried to develop the idea of moral school culture into that of a "just community", meaning a high-quality moral community. Kohlberg (1980) was very well aware of the relationships of moral development and judgment and the social and societal phenomenon of democracy. In line with the insights of Dewey and others he thought that characteristics of schooling could be very important for both moral and democratic citizenship development. In the past decennia citizen development has become high on the political agenda in many countries. Knowledge about democracy and competencies to act democratically, but also the will to act in a democratic way, are considered important and refer to the interrelations of moral and democratic education (Klaassen, 1996).

A democratic internal organization for the school constitutes an important condition and characteristic of the 'just community approach' (Power, 1993). The so-called 'Just Community Schools' in the United States offer illuminating experiences, 16 of which had been started in 1991. These schools, inspired by the work of Kohlberg and his staff, aimed at the creation of 'a democratic community that stimulates not only students' morals judgment but also their imagination, their sense of self and social transcendence' (Power & Power, 1992, p. 194). Through this approach, moral education and democratic citizenship education is combined with the development of social skills. The democracy at school and the extra-curricular discussions about what happens at school are taken as a starting point. In the 'just community schools', there is a student parliament in which rules, based on mutual respect, are formulated and maintained by students themselves. The school allows this group to discuss everything and has them make their own (moral) decisions when incidents have occurred or when things have gotten out of hand. Developing 'a just community' out of a school culture—as Power, Higgins and Kohlberg attempted—appeals to the cooperation and collegiality of teachers.

There are many moral discussions and collective student activities: The Just Community Approach' involves students in democratic decision-making about the

discipline and general welfare of their particular school or programme (Althof, 2008; Power et al., 1989). Over several decades, the effectiveness of this approach has continuously been researched in the U.S. and also in Switzerland. The research shows, amongst other things, that there is a gap between the competence in moral reflection and the moral action. One conclusion drawn from the results with about 20 of such schools in the U.S. was that students tackled certain concrete moral problems in the everyday context of class or school in a much less balanced and reflective way than they dealt with the hypothetical dilemmas that they had also discussed in the regular classes.

In solving the concrete problems at school students took the opinions and values of the 'peer-group' as a frame of reference, which can often appear contrary to the values and rules of the school. A number of schools involved with the experiments were 'inner city high schools' in the big cities with all the inherent and associated problem situations. Here, too, positive results were found in research, namely an improvement of the moral competence of the students and a change in political behaviour. Phenomena like theft, truancy and fights did not occur any longer. The students learned to adequately take part in democratic meetings.

A remarkable and important perspective of the moral work of teaching and the school as a moral community is the caring approach inspired by the work of Nel Noddings on the meaning of human caring in moral theory and educational practice (for empirical evidence of this approach, see Battistich et al., 1997). Two years after Carol Gilligan (1982) published her important work on psychological theory and women's development, another feminist inspired scholar, Nel Noddings, published her very influential book, Caring: a feminine approach to ethics and moral education (1984). In this book, Noddings not only took a stance to a purely cognitive developmental approach in the Kohlberg tradition for nurturing moral qualities, but also asked for more attention to be paid to the affective side of acting in a morally sound way. In her view, moral reasoning is not a sufficient motivation for moral action in real life situations. Contrary to the purely cognitive approach, she appeared to be more attached to the thinking of a philosopher like Hume or other more emotion-directed scholars who subscribed to the significance of 'sentiments'.

In her various books on 'Caring' (e.g., Noddings, 1984, 1992), she described the significance of the phenomenon and practice of caring for the development of the ethical ideals or the 'ethical selves' of students. To create a society in which people are capable of caring, we must, according to her thinking, show children and students how to care. Caring is a reciprocal, but not an equal process, of giving and receiving care. Effectively learning how to care is not a matter about teaching a theory of caring or reading essays about examples of caring. On the contrary, it is only really possible by having been cared for. Parents and teachers must therefore demonstrate their caring in their relations with their children and students.

Noddings made a clear distinction between 'natural caring' and 'ethical caring'. Natural caring refers to the feelings we have for and with other people. Newborn children all over the world are dependent on the caring of what sociologists and social psychologists call their 'significant others'. Historically, in many cases around the globe, these significant others are woman, especially the mother as the

primary care-giver. 'Ethical caring' refers to the ethical ideals we and others have and feel and that motivate us to cherish and express caring. The continuous and dynamic interaction with others and reflection on the different ways of being in the world and giving form to our relationships with others and our views on caring lead to the construction of an 'ethical self'.

In several publications Noddings (2002, 2008) discusses various means of creating a caring relationship with a student and to nurture what she calls 'the students' ethical self'. The main four means or methods of so doing are:

- 'Modeling'. This first condition is seen as a fundamental as well as general mechanism of moral education.
- 'Dialogue'. This second condition is important to build an 'ethical self' by reflecting on relationships and what it means to care.
- 'Practice'. This third condition to improve the caring relationship is to demonstrate –for instance in teacher education-that caring is important in the moral work of teaching along with other fundamental 'roots' like justice.
- 'Confirmation'. This condition refers to the identification of positive traits (or a better self) in another person and to nurture and encourage the development of these traits in order to confirm them.

To achieve a moral social climate in the school it is necessary to analyze specific organizational policies and characteristics and policies of the school. The work of Sergiovanni (1994) on the moral school community and Starratt (1994) on building an ethical school can be regarded as a fundamental educational rethinking of the traditional school organization and also of the leadership approach (Sergiovanni, 1992, 1996; Starratt, 1995, 2003). Seeing the school as a moral community draws attention to important change processes and new conceptualizations of leadership, teacher professionalism, school character, bureaucracy, governance, etc.

In response to the reassessment of the moral role of the school, interest in moral leadership (Fullan, 2003) has increased greatly in the past two decades. In addition to the significance of school leaders to the organization of schools as moral communities (Greenfield, 1999), the role of the school leader in facilitating the moral education of students (Oser et al., 1992) has received considerable attention.

In the school as a moral community, the need for 'direct' leadership has been reduced in favor of 'moral' leadership. Traditional bureaucratic hierarchical authority is for a large part replaced by moral authority and shared leadership. In the school as community people are bonded and official leadership has changed. Through this approach leadership is much more oriented at articulating the values and purposes of the community. Leadership and authority must be based on 'ideas', for instance about what is good, what is right or what is worth doing. But we can also think of 'ídeas' such as being an example for others, nurturing relationships and thinking about caring activities in daily school practice. Leadership is no longer seen as purely formal bureaucratic top down leadership. Instead, leadership can be viewed as a function of the school as a community for which all the teachers of the school are responsible. According to Sergiovanni (2009), leadership increases in value as it is shared. Every teacher can be a leader and the 'official' school leader

must be ‘a leader of leaders’. Building a strong school community through distributed leadership also means contributing to teacher empowerment, shared accountabilities and creating collaborative cultures of teaching and learning.

From the point of view briefly outlined above, professionalism can be seen as an important substitute of formal and bureaucratic leadership. Instead of stiff managerial control mainly directed at technical rationality, external governance and official standards and prescriptions, real professionals are more oriented to the common values and the cultural side of the school community and the life world of schooling. In the school as community, professionalism is not only about competence but has also a moral dimension. It presupposes commitments to the common good, to professional standards, not only concerning academic expertise but also on collegiality and professional norms and ideas about pedagogy, caring and relationships.

Conclusion

In this chapter, we have tried to make visible some theoretical and empirical foundations for the moral work of teaching and their possible implications for teacher education. We started by underlining the importance of regarding teaching as an inherently moral endeavor. Along two lines, we have approached the moral dimension of teachers’ professional work in this field: teaching morally; and, teaching morality. By way of a review of various approaches and perspectives, we have tried to explicate the manifest and latent, formal and informal influences and activities that are constitutive for the moral work of teaching. In our view teacher education has an important task to fulfil in this relatively neglected area of teacher knowledge. By means of explicit attention the awareness of teachers of the moral and ethical implications of teaching, learning and schooling should be more stimulated and better articulated in favor of the moral and intellectual complexities of teaching. We have indicated what we think is absolute relevant knowledge in this field and what we are likely missing or must be developed further to stimulate the awareness of teachers in pursuing a meaningful approach to the moral work of teaching.

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