Professional and Practice-based Learning

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Supporting Learning Across Working Life

Models, Processes and Practices

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Professional and practice-based learning brings together international research on the individual development of professionals and the organisation of professional life and educational experiences. It complements the Springer journal *Vocations and Learning: Studies in vocational and professional education*.

Professional learning, and the practice-based processes that often support it, are the subject of increased interest and attention in the fields of educational, psychological, sociological, and business management research, and also by governments, employer organisations and unions. This professional learning goes beyond, what is often termed professional education, as it includes learning processes and experiences outside of educational institutions in both the initial and ongoing learning for the professional practice. Changes in these workplaces requirements usually manifest themselves in the everyday work tasks, professional development provisions in educational institution decrease in their salience, and learning and development during professional activities increase in their salience.

There are a range of scientific challenges and important focuses within the field of professional learning. These include:

- understanding and making explicit the complex and massive knowledge that is required for professional practice and identifying ways in which this knowledge can best be initially learnt and developed further throughout professional life.
- analytical explications of those processes that support learning at an individual and an organisational level.
- understanding how learning experiences and educational processes might best be aligned or integrated to support professional learning.

The series integrates research from different disciplines: education, sociology, psychology, amongst others. The series is comprehensive in scope as it not only focusses on professional learning of teachers and those in schools, colleges and universities, but all professional development within organisations.

More information about this series at http://www.springer.com/series/8383

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Series Editors' Foreword

A central focus for the *Professional and Practice-Based Learning* book series is on understanding the processes supporting individuals learning the capacities required for effective professional practice, and on the way how experiences in workplace settings contribute to that development across the span of working life. Consequently, a volume that focuses on both the processes of ongoing development across working life, and the different means by which that learning is supported and sustained are central to the scope and ambitions of this series. Moreover, as much of the educational effort is directed towards initial occupational preparation, it is helpful to have a volume that offers models for how that learning might be supported, and elaboration of processes through which that learning arises, and also workplace and personal practices that promote that learning. As such, this volume makes a welcome contribution to this series. As the editors elaborate in their lengthy preface, a range of terms is used to refer to the ongoing development of occupational competitors, including but not restricted to continued education, training and professional development. However, common to all of them are kinds of learning that are directed towards sustaining employability, often associated with and for through engagement in work.

All this interest and emphasis lead to questions about what is often referred to as the lifelong learning agenda. Although, in governmental policy terms, this agenda is seen as being exercised largely through educational programmes, there also needs a greater consideration of how practice-based experiences can contribute to ongoing learning across working life. This is not to suggest that educational programmes have no role or should be reduced and disbanded. What it does suggest is that a greater consideration needs to be given to the focus on learning across working life, and how that learning can best be supported both through experiences in work settings and elsewhere.

Helpful here is the breadth of the occupational areas that are represented throughout this volume. Considerations of social workers, teachers, doctors and hospitals as well as those in general practice, as well as individuals working in the aviation sector sit alongside those who work in mining, aged care, commerce, and service related industries. There are similar imperatives across all of these sectors associated

with ongoing learning and development associated variously with securing employment, seeking advancement, improving and enhancing practice and engaging in new forms of work. Moreover, the studies are drawn from a range of countries all of which have modern industrialised economies of the kind that are experiencing significant challenges and demands for the restructuring of work and changing working requirements.

Hence, the contributions provided to this volume should be of interest to those working in the tertiary education sector, professional and industrial bodies associated with responding to change in work and the ongoing development of workforces, as well as with considerations how to support and sustain employees' learning across the working lives. Then, within all this there is the central role of the learners themselves and how they need to engage with the kinds of experiences they are afforded to achieve their work life goals. This is particularly important because in focusing on practice-based experiences, the need for workers to play a greater role in mediating that and other workers' learning arises. Outside of the domain of education institutions, there is the need for workers themselves to assist in the process of the road and others learning across working life.

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Preface

Worldwide, in countries with advanced industrial economies, there is a growing interest in sustaining all kinds of workers' employability and advancing their careers across their now lengthening working lives. This interest is articulated by the policies of governments, exercised in the mandates of professional bodies, requirements of employers and actions of workers (Field, 2000). Much of this interest is driven by key social and economic imperatives associated with sustaining individuals' employability (Edwards, 2002), advancement in the context of changing requirements of work and working life (Billett, 2010; Department of Education Science and Training, 2002; Organisation for Economic Co-operation and Development, 2010) and responding to changes or more fully meeting societal expectations (National Health Service, 2010). Significant transformations are occurring within most, if not all occupations, and will continue in frequency and amplitude across people's lengthening working lives (Coffield, 2000; OECD, 2006).

These changes include the kinds of work which are available, changes in the requirements for that work, how it is enacted and who is undertaking that work (Billett, 2006). For instance, in many countries, there is a growing polarisation in labour markets. On the one hand, there is a shift towards service-related occupations that are often contingent in their employment conditions and precarious in their duration, with limited prospects for continuity and advancement. On the other hand, there is a growing demand for technical, paraprofessional and professional occupations requiring high levels of educational achievement, and is in constant need of ongoing development, such as that required in the field of healthcare (National Health Service, 2010; O'Keefe, McAllister, & Stupans, 2011).

Yet, these different kinds of occupations often experience distinct demands for continued learning. Those employed in contingent work, which includes short-term contracts and work conditions and continuity that are precarious, are likely to be involved in job or task-specific training provisions to support their employability, including their advancement, across working lives (Cervero, 2006). Increasingly, these kinds of occupations are subject to achievements of certificates, through mandated short-term courses, which are often related to regulatory arrangements associated with occupational health and safety, hygiene or aspects of work that include

risks to workers or clients. So, these workers need to engage in training programmes often with assessments required to demonstrate occupational competence. The same goes for technical, paraprofessional and professional workers such as those in healthcare who are required to sustain the currency of their skills and, potentially, demonstrate that competence to retain occupational licensing. So, workers in these highly dynamic occupations are often required to demonstrate currency of skills and work competence (National Health Service, 2010). Therefore, for both kinds of workers, the changing requirements for work will mean needing to update, transform or extend the capacities they developed during initial training for their occupations.

Much here also suggests that, to achieve these outcomes, the kinds and processes of learning and learning support need to be different from and go beyond that comprising initial occupational preparation as provided by training organisations, tertiary education institutions, including universities. That is, much of this ongoing learning and development of occupational capacities cannot be realised through the models, processes and practices of initial occupational preparation, which are typically education institution-based, long-duration programmes divided into subjects that are taught in circumstances remote from where the requirements for employability are manifested (Billett et al., 2012, 2014). The possible exception here is for those workers whose occupational skills are no longer in demand or afford them employment. For these individuals, provisions of continuing education are those which will help them secure employment in areas of growth and occupations with greater stability, which can extend through to learning a new occupation, as in initial occupational training.

So, there is a need to identify models, processes and practices that can effectively support ongoing learning for these different kinds of workers. That is, consider, and potentially rethink and reorganise how support for learning across working life can be best conceptualised, organised and enacted. These are the key focuses for individual and collective contributions to this edited monograph. Such considerations seem important currently and for the foreseeable future.

There seems a little indication that the nature of these changes to work and working life will dissipate, and even less that they will disappear. Instead, there will continue to be shifts in the demands for particular occupations and changes in the requirements for work performance within a growing range of occupations. These changes extend beyond the technical competences of the occupation and include the ways work is undertaken. For some, these changes involve workers engaging in teams where performance is based on collective action rather than individual prowess, and collaborative discretion and decision-making. It can also include having a range of capacities to service the needs of clients or agencies more directly and in a targeted way than might have occurred in the past (Billett et al., 2012).

Furthermore, workplaces are becoming increasingly heterogenic in terms of the gender, age and ethnicity of workers across many sectors. Consequently, the growing demand to sustain employability extends to working productively with others whose precepts, needs and capacities may well be more diverse. It is perhaps not surprising that demands to sustain employability are placing a premium on ongoing

learning through and for work, and emphasising the importance of the continuation of learning and educational provisions across working life (Field, 2000), sometimes variously referred to as continuing education and training, professional development or recurrent training.

Clearly, there is growing concerns by and action now being undertaken by global agencies, national governments, professional bodies, industry associations, workplaces, educational institutions and learners themselves about continuing to learn for occupational purposes across working lives. Much of that learning is likely to be associated with sustaining employability, including occupational or workplace advancement. Global agencies and national governments are making arrangements to organise and sustain continuing education and training, or professional development to meet important economic and social goals (Yacob, 2009) through supporting individuals' learning (OECD, 2006).

Professional bodies and industry associations are concerned about having workers identifying with their sectors and occupations as being effective and current, and sustaining the standing of those occupations. These bodies are increasingly coming to share concerns about the need for CET or PD for their sector, and members having access to arrangements that support their learning and having that learning certified as a requirement for individuals to maintain their occupational license. Many workplaces are also addressing concerns about skill shortages and ageing workforces (Tikkanen, Lahn, Ward, & Lyng, 2002) through workplace-based continuing education provisions and engaging with providers of such programs. Moreover, for individuals now faced with maintaining employability across lengthening working lives, the ability to secure and sustain their occupational competence arises as a key personal and professional consideration (McNair, Flynn, Owen, Humphreys, & Woodfield, 2004). Increasingly, and likely in the future, many individual workers will need to make greater material and personal investments in sustaining that employability through arrangements supporting and certifying learning across their working lives, as governments in advanced industrial economies tend to now enable rather than support it directly (Field, 2000). In particular, in small- and medium-sized companies, where human resource development provisions may well be absent, there is increasing need for models for continuing education that are viable for such enterprises and which are adaptable enough to meet dynamic workplace requirements. There is also a need for processes for sustaining employability which are able to meet workplace requirements including regulatory measures advanced by government agencies, yet in ways that are accessible for workers.

However, it might be mistaken to conclude that while there are a common set of concerns and perspectives across these interested parties, the preferred means of addressing those concerns are commonly agreed upon. Indeed, in their study of workers, managers and training organisations, Billett et al. (2014) found that there were quite distinct preferences across these parties. For instance, workers' concerns were about sustaining their employability and securing advancement in their current employment, and their preference was towards models of continuing education and training focused on and based in their workplaces. That is, they preferred to learn in their workplace, being supported by more experienced co-workers, supervisors and

external trainers. It was usually only when their motives were to secure new occupations or advancement in occupational hierarchies that they preferred to engage in programmes within educational institutions. However, and in contrast, many managers reported a preference for employees to participate in training programs so that they might develop the kinds of capacities which they could target and pre-specify as being the object of these programmes. Whereas workers, not surprisingly, were interested in developing the capacities associated with their interests and goals, managers were more focused on outcomes associated with meeting enterprise-specific outcomes.

In turn, the preferences of those from the training sector (i.e. vocational educators) were for provisions of continuing education and training to be largely undertaken within educational institutions through educational programs they offered, thereby rehearsing current practices and preferences. Moreover, the interests of national agencies associated with continuing education and training very much reflected their particular mandates and purposes. So, across these parties there were divisions in the goals for continuing education and also the means by which that education might be enacted (Billett et al., 2012).

All of this suggests that models and processes for continuing education and professional development are likely to require kinds of support and guidance from learning that go beyond those offered through orthodox classroom-based provisions and aligned with standard educational practices. Instead, procedures aligned with workplaces' goals, available resources and embedded in practice situations may well be required. Put simply, the kinds of education and development models that are often used in initial occupational preparation, and that usually focus on young people, will not necessarily be those which will become orthodox in the future. Practice-based provisions of learner support and guidance may well become far more common and integrated with everyday work life of employees, their supervisors and those who manage enterprises.

So, in considering how provisions of continuing education and training, professional development and recurrent training need to progress, it is necessary to not be constrained by models which fit comfortably within practices of tertiary education institutions. Instead, such models, processes and procedures might take quite diverse forms; engage with workers and others in ways quite distinct from orthodox educational provisions; and demand engagement and agency of workers that are different from when they are positioned as subordinates or students.

Hence, a consideration of different approaches, precepts and practices is now necessary because simply expecting educational provisions to be able to meet these goals or relying on the practices of educational institutions is probably not only fanciful because of the financial and institutional resources for such provisions, but also because identifying effective means of securing this ongoing learning is now a governmental priority in many countries. That is, work-related lifelong learning (i.e. for working life) is now becoming a common area of focus for: (i) policy action by governments and global agencies, (ii) securing currency by professional bodies, (iii) initiatives by employers to maintain the skill levels of their workforces and (iv) workers to sustain their employability and locate opportunities for advancement and

specialisation. Consequently, there is a need to consider what kind of models for organising these learning experiences are to be used in continuing education and training, professional development and recurrent education. An additional question is in what ways these models are likely to be effective for different kinds of work, learning and learners. Therefore, considerations for educational and learning support processes will likely need to include approaches that fit well within working lives and workplaces, and support work and learning as a co-occurrence.

Structure of Book

The structure of this monograph reflects the sets of concerns set out above. As such, it comprises four parts: (i) *Supporting learning across working life; (ii) Models, processes and practices for supporting lengthening working lives internationally;* (*iii) Towards a national model of continuing education and training: an Australian case study; and (iv) Learning across working life.* The Preface introduces each of the chapters, highlighting their particular contributions to the edited volume. An overview and the contents of each of the four parts that follow the Preface are provided here in preview.

Part I: Supporting Learning Across Working Life

In the opening chapter, *Conceptualizing Lifelong Learning Across Working Life, Provisions of Support and Purposes*, Stephen Billett and Steven Hodge propose there are growing national and global policy focuses as well as local concerns about lifelong learning, particularly as it pertains to working life. At the commencement of this book, it is important to capture some key precepts through what comprises these concerns and how they can be understood and addressed. These include being clear about what this concept of learning for working life comprises, and the kinds of purposes to which that learning is held to be directed. This necessitates securing greater clarity about what are variously referred to as lifelong learning, lifelong education or learning across working life so they can be distinguished from each other, and their specific qualities and characteristics understood.

Currently, the overall concern is about individuals' learning across working life and how this can be effectively promoted and supported when addressing needs associated with sustaining their employability. Beyond resisting unemployment, employability includes workers developing and sustaining the kinds of capacities needed by their workplaces to remain viable as requirements of goods and services change, the industry sectors in which they work seeking to remain responsive to transforming demands and for the nations in which their citizens are to be competitive in the production of goods and services. In essence, these sets of personal, workplace, local and national lifelong learning imperatives arise from the realisation

that individuals' initial occupational preparation will be insufficient to meet their needs for employability across lengthening working lives. The dynamic requirements for work mean that focused and sustained learning across working life is now required by all kinds of workers, occupations and industry sectors. Having defined some of the key concepts, discussed precepts and concerns, the purposes of intentional learning through and across working life are set out through considering both personal and institutional imperatives. Following this, consideration of approaches for organising, ordering, supporting and guiding this intentional learning are advanced.

Part II: Models, Processes and Practices for Supporting Lengthening Working Lives Internationally

This part comprises nine chapters, each of which makes a particular contribution to the discussion about approaches for sustaining and developing further workers' employability across working lives. These contributions include reviews of literature about learning through work and working life, and learning through experience more broadly, including how effective work capacities are created and extended within professional fields. Also discussed within this part is a consideration of a systemic approach to promoting learning across working life through institutional arrangements.

In the first chapter in this part, *Employee Strategies in Organizing Professional Development,* Rob F. Poell and Ferd J. Van Der Krogt propose that many employees in the twenty-first century are given great responsibility in organising professional development. Increasingly their own input is called upon in pursuing lifelong learning, preserving their employability, creating a career development plan and using learning opportunities available in the workplace. This tendency has considerable implications for organising human resource development (HRD) in organisations. HRD comprises a complex constellation of actors, structures, facilities and processes for learning and development. Each employee needs to create his or her own path through this learning landscape. Thus they need to operate strategically when it comes to organising their own professional development, with a view to acquiring the qualities that will enable them to conduct their present job, to obtain new/better positions in the labour market and to realise the necessary personal development. Of course, it could be suggested that there is nothing new here; self-directed learning by employees has surely been on the agenda for decades already. Nonetheless, HRD practices and the roles of employees are changing so dramatically in the twenty-first century that individual self-direction is no longer sufficient for employees to organise their professional development. A major change in the existing HRD theory will be necessary to be able to better analyze the developments in organising professional development and to support organisational practices around HRD. This chapter aims to contribute to such a change, by showing that employees can operate

strategically in several ways when it comes to organising their own professional development.

The chapter first describes two major changes that are to be expected in organising professional development, which have far-reaching implications for the roles of employees. First, it proposes a shift from a didactical to a strategic role and, second, a shift from directing their professional development individually to doing so in a network of actors. The chapter then presents an employee perspective on organising professional development, to suggest several ways that employees can engage strategically. Furthermore, the chapter discusses existing empirical research about employees' professional development strategies and confronts the results with theory. The chapter concludes with a number of suggestions for further research into employee strategies for organising professional development.

Following this professional development theme, in their chapter, *Learning to Work Together Through Talk: Continuing Professional Development in Medicine,* Walter Eppich Jan-Joost Rethans, Pim W. Teunissen and Tim Doran examine the development of professional identity, particularly through collborative learning. They propose that initial education takes place in programmes accredited by medical regulatory bodies and curricula are largely or entirely uniprofessional. After graduation, doctors enter the workforce and learn to work alongside other professionals, whose identities are similarly uniprofessional. This second phase of doctors' education is termed residency. Once residency is completed, doctors become independent practitioners. They work in medical teams, usually composed of several fully trained doctors, a number of doctors in training and perhaps medical students too. There is a formal requirement for doctors to remain in an educational programme for the remainder of their working lives. Continued licensure is a prerequisite to remain licensed for practice. The focus of this proposed chapter is on how doctors learn to work collaboratively throughout their working lives and how they become interprofessional workers. Whilst learning to work collaboratively with other doctors is an inescapable component of medical education from residency onwards, my personal experience is that much of the formation of a truly interprofessional identity takes place after formal education has finished. The type of continuing education in which doctors are required to undergo to remain licensed is uniprofessional and predominantly off-the-job so it contributes a little to useful development of interprofessional skills. But, meanwhile, medical practice is constantly changing, there is a continuing trend towards increased interprofessional working, and each re-organisation of health services requires doctors and their fellow health professionals to adapt.

This chapter highlights the essential role of discourse in learning and the development of professional identity of physicians. Shared understanding and co-construction of clinical experiences – and learning – are mediated through talk. Argue contemporary continuing professional development focuses on knowledge acquisition that is divorced from authentic clinical practice. We provide examples of structures that strengthen collective learning processes and steer the discourse of practice in ways that promote learning. Patient focused-quality improvement projects and simulations aligned to workplace needs could meet the requirement for

continuous professional development to be both measurable and linked to authentic practice. Future work could usefully further explore how steering the talk of practice can promote learning.

Gunilla Avby continues the theme of professional development in her chapter – *Organizing for Deliberate Practice Through Workplace Reflection.* What it proposes is that the bases for professional work is no longer stable, but rather is in constant transition. This constant process of change emphasises the need for professionals to engage in continuous learning, critical awareness and renewal and extension of professional capacities to sustain employment and ensure effectiveness in practice. The growing demands in professional work have unquestionably put social work in Sweden under close scrutiny. Different stakeholders have displayed a growing interest in evidence-based approaches so as to develop the existing knowledge base and enhance decision making. Whilst the role of work-based learning and reflection for practitioners and managers in work so far has received a little attention, the evidence-based agenda has highlighted its importance as practitioners are increasingly expected to critically appraise evidence and integrate new findings into their practice.

The focus of this chapter concerns reflection as a mechanism for professional development. The chapter presents a theoretical framework with the aim of contributing to improved understanding of how workplace reflection can provide a mechanism to integrate research-based knowledge with pre-existing practice-based knowledge. A basic assumption behind this chapter is that when tacit knowledge is articulated and externalised, it can be shared by others, possibly to be challenged, by using explicit knowledge and function as the basis for new knowledge and learning. Another important presumption is the importance of organising learning at work. The chapter is structured in three sections. In the first section, a distinction is made between two different but complementary knowledge forms, research-based and practice-based knowledge, and two modes of learning in work, adaptive and developmental learning. In the second section, two mini cases concerning managers in the public sector in Sweden serve as an illustration of how reflection can provide a mechanism to integrate research-based and practice-based knowledge. In the concluding section, some of the challenges involved in achieving reflection in the workplace that exploits research-based knowledge are addressed.

The section then moves from considerations of professional development strategies and processes to a proposal for *A Sociocultural Model for Mid-Career Post-Secondary Teacher Professional Learning.* Annique Boelryk and Cheryl Amundsen describe a multi-phased, sociocultural model of teacher professional learning that emerged from the findings of a descriptive phenomenological study. The aim of the study was to better understand the complex sociocultural learning process involved in the development of teaching practice for mid-career post-secondary teachers. In post-secondary institutions, increased demand for enhanced teaching and learning practices has led to growth in educational development, a field that supports professional learning related to ongoing development in teaching. Sociocultural research now needs to inform the design of educational development approaches, particularly as it relates to teachers' authentic experiences of development in teaching. The

model, that was the product of that inquiry, comprises a four phase developmental process that includes: (i) a catalyst phase, (ii) an idea development phase, (iii) an implementation phase and iv) an outcomes phase. The nature of each phase is explored through discussions of the individual, social and contextual dimensions as well as interrelationships between these dimensions. Using Billett's sociocultural theory of co-participation, learning in each phase is examined as the interrelationship between individual intentionality and workplace participatory practices. Educational development approaches are then considered through the lens that the proposed model offers as it provides an empirical foundation for a sociocultural approach to supporting post-secondary teacher professional learning.

That focus on a particular profession but considering wider applications of the research findings is continued in the next four chapters in this part, each of which is based around case studies in organisational settings in particular fields: aged care, nursing, pharmacy and medicine and aviation.

Charlotte Wegener proposes in her chapter – *Driving Forces of Welfare Innovation: Explaining Interrelations Between Innovation and Professional Development* – that innovation is now no longer seen solely as a function of management and investment or as top-down initiatives from policy levels. Along with a broader view of innovation, expectations of educational institutions as innovation drivers have increased. Within educational research, innovation is regarded as a competency which can contribute to a better world and as the transformation of creativity into something valuable for others in a given social practice. In Denmark, innovation has been introduced as a solution for addressing growing global economic competition, so the Danish Government formulated policies for the development of innovation competencies and strategies at schools and workplaces. Innovation competencies can be imparted, and innovative workplace cultures can be created and nurtured. But how?

The chapter discusses the potential and necessary interrelations between professionals' ongoing development and their engagement in innovative practices at work. A growing number of countries and organisations are putting great effort into integrating innovation in school curricula, as well as in staff and manager training programmes. Innovation strategies and government-sponsored documents throughout the world have stressed the need to accelerate innovation. Innovation is no longer reserved for research and development departments or the so-called creative professions. It has become a key goal towards which on-going professional development needs to be directed. Now perceived as germane and even necessary in almost all kinds of work, the innovation potential in everyday practices and ways of allowing for employer creativity have become highly relevant objects of study. However, there is a need to know what professionals actually do in the process of experimenting in and through their work, as well as the managerial priorities from which experiments and adjustments can be supported to become innovations. Traditionally, research has regarded innovation in terms of phases of invention, implementation and dissemination. These phase models, despite often being described as messy and iterative may, however, be inadequate for investigating and supporting innovation as an integrated part of ongoing professional development. A case study of everyday

innovation efforts in elderly care in Denmark is used here to propose an alternative model. The model suggests that innovation can be studied and supported by means of three driving forces, termed (i) craft (i.e. professional skills and knowledge), (ii) levers (i.e. experiments and adjustment of routines) and (iii) purposes (i.e. values and visions). The model points to the necessary interrelations between professionals' ongoing development and their engagement in innovative practices and thus provides a conception of welfare innovation which is not translated from firm innovation, but derived directly from welfare contexts.

Focusing on sustaining competent practice, this time in health care, Johannes Bauer, Veronika Leicher and Regina Mulder in their chapter, *On Nurses' Learning from Errors at Work,* emphasise the importance of ongoing professional learning within the occupation of nursing. This learning relates to the dynamic nature of nurses' work, characterised not only by continuing changes in professional knowledge and standards but also by new developments in organisational conceptions of nursing, patients' demands or changes in the workforce structure. Next to being an important profession in itself, these features make nursing an interesting case which receives increasing attention in research on workplace learning and professional development. This chapter synthesises several of the authors' studies that investigated processes, practices and conditions of nurses' learning at work related to the occurrence of errors. Dealing with errors in a learning-oriented way has been subject to intensive debate in health care. Researchers have argued that errors can be important sources of professional learning, if they are analyzed properly, and thereby help reduce the probability of their re-occurrence. The chapter commences with a discussion about nursing as a profession with high demands for continuous learning at work and professional development, and highlights the potential contribution of learning from errors. The main part of the chapter summarises and integrates findings on typical errors in hospital and elder care nursing, as well as available evidence on a model of nurses' engagement in error-related learning activities. We also discuss findings on how nurses' learning contributes to their professional development by building (potentially) shared knowledge. The chapter concludes with suggestions on how nurses' learning from errors may be supported on the individual, interpersonal and organisational levels.

In their chapter, *Sustaining and Transforming the Practice of Communities: Developing Professionals' Working Practices*, Christy Noble and Stephen Billett focus on two other health-related professions. They discuss how practice-based professional development experiences can be used to build occupational capacities and, concurrently, sustain and transform the practices of work communities. It focuses on how both individual and collective change can be brought about through interactions between professional practitioners within their work community and individuals with particular expertise from outside of the community. The central concern here is to understand how both individual capacities can be further developed and work practice changed to accommodate the transforming nature of occupational practice. The particular case selected to illustrate and elaborate these two kinds of changes (i.e. individuals' further development and transforming work practice) is that of pharmacists engaging with junior doctors to develop further their prescribing

skills, and how this engagement can also assist the continuity and development of the practice community and its ability to provide a more comprehensive and effective patient care.

Another occupation that is strong on practice-based professional development is that of airline pilots. This is the focus of Tim Mavin's chapter, entitled *Models for and Practice of Continuous Professional Development for Airline Pilots: What We Can Learn from One Regional Airline.* They propose that in the airline industry, professional development begins when a pilot is inducted onto a particular aircraft and continues throughout the pilot's career. Even though pilots who obtain a position in an airline already have considerable experience flying aircraft, inducting them to fly the particular aircraft that a company is operating is a costly and time-consuming endeavour for airlines around the world. Fundamentally, initial airline pilot training models entail two stages. The first is principally classroom-based knowledge instruction – either face-to-face or more likely computer-based training – aimed at developing a pilot's knowledge of the systems of the new aircraft they are assigned to fly. Successful transfer to stage two is via a knowledge exam – almost always multiple-choice. Stage two training is chiefly based in a high fidelity simulator, where training aims at developing technical proficiency of the particular aircraft type. On completion of these two stages, pilots undergo extensive training on real aircraft prior to being assessed competent to fly as a normal airline pilot. From here, pilots begin a lifelong programme of continuing professional development while employed with the airline.

Even though modern airlines have quite sophisticated systems and instrumentations, curriculum models used to induct new pilots have seen a little change. In contrast, continuing professional development programmes have undergone significant review and investigation: with previous programmes focusing on assessing technical proficiency of a pilot – ability to fly, for instance. However, it was identified that non-technical skills – such as communication and decision-making – were more prevalent in major airline accidents than previously thought. These discoveries – especially around the 1980s and late 1990s – led airlines to change the focus of their professional development programmes from mere assessment of technical proficiency to include greater awareness training for non-technical skills. This involves both classroom lectures and problem-based exercises in simulators. Nevertheless, it now appears that both classroom and simulator-training curriculum may have failed to update forms of training, and there is increasing critique concerning these modes of professional development.

In the final chapter in this part, in contrast to a consideration of organisational strategies and practices, Peter Cantillon considers the task of sustaining professional competence for individuals who largely work alone. He uses the experiences of medical practitioners in his chapter entitled *Learning at the Frontier: The Experiences of Single Handed General Practitioners.* It describes the processes and effectiveness of continuing professional development (CPD) practices employed by isolated medical practitioners. The benefits and drawbacks of current approaches are highlighted. The chapter also explores newer models of professional learning from within and outside of the health professions, which can be used to support the

CPD activities of doctors working in isolation. The chapter explores what is meant by "isolation" in the context of medical practice. The prototypical example of the isolated doctor is the geographically remote general practitioner. However, many other doctors also work and learn in relative social isolation, e.g. specialists in exclusive private practice and medical locums. It is also arguable that the context of key elements of doctors' practice, i.e. patient consultations, deliberations about diagnosis and management also take place "behind closed doors". Thus, all doctors are to some extent isolated and autonomous in both their clinical practice and contextual learning.

The profession of medicine is founded on a principle of professional autonomy underpinned by self-regulation. New medical graduates are prepared for individual rather than collective competence and enter a world of work that promotes individual expertise and learning rather than more distributed ways of knowing and acting. In the past individual competence was assured by self-regulation underpinned by self-assessment. However, concerns about medicine's propensity to place self-interest above self-regulation and growing awareness of the limits of self-assessment have led to the imposition of external validation (revalidation) and practice incentive schemes throughout the developed world. These changes have had a profound effect on how and what doctors learn. Hence, this chapter describes the continuing learning practices of geographically isolated practitioners based on research from Canada, Australia and the USA. The chapter will also examine how learning occurs amongst socially isolated practitioners particularly in the context of changes in clinical behaviour. The chapter concludes with examples of how relative geographical and social isolation can be mitigated through new CPD approaches based on examples drawn from within and outside of the health professions.

Part III: Towards a National Model of Continuing Education and Training: An Australian Case Study

This part comprises chapters that collectively outline the processes and findings of a national study into the provision of continuing education and training and how a national system of continuing education and training might be organised, ordered and enacted, and participated in by learners.

In the first chapter, *Continuing Education and Training: Needs, Models and Approaches*, Sarojni Choy, Stephen Billett and Darryl Dymock set out the context, framing, procedures and broad outcomes of a 3-year study of continuing education and training undertaken in Australia. In essence, the study has sought to identify what might comprise a national approach to continuing education and training that can assist employability across working life and address the needs of industry, workplaces and communities in supporting and sustaining that employability. In particular, the challenge was to identify a set of models through which continuing

education and training could be advanced to support workers of all kinds sustain their employability through ongoing learning in and for their working lives.

The study was enacted through surveys and interviews with workers, their managers and also providers of continuing education and training, in both metropolitan and regional locations across four Australian states. Having identified a set of findings provided by this interview data, a series of focus groups were held in both metropolitan and regional locations with similar groups of informants to verify and extend what had been identified. One of the key findings was a strong preference for learning through work and as part of work activities for most categories of workers interviewed. Much of this learning was directed by individuals through their everyday work activities, but often supported by other workers. Models of training or educational interventions were also identified. Some of these were necessarily required to occur within the workplace so that what was being provided as continuing education and training experiences were richly contextualised. Yet, in addition, when individuals needed to reskill or change occupations, their workplaces were not always able to offer such experiences for the kinds of certification that were required. Consequently, certain kinds of continuing education and training would have to be based within educational institutions.

In contrast to a strongly workplace-based focus which stood as a preference for many workers, employers and managers often preferred training programmes as a way to bring about particular changes and secure distinct kinds of learning. These kinds of provisions were held to offer a greater certainty than skill development in the workplace because they could be intentional and directed towards pre-specified forms of learning that contributes to work-related outcomes. In this way, this chapter sets out the context, processes and outcomes of that project which are then elaborated in the subsequent three chapters.

In their chapter, *Workers' Perspectives and Preferences for Learning Across Working Life*, Raymond Smith and Ann Kelly focus on the perspectives of experienced workers and how their continuing learning processes might be best supported across lengthening working lives. They hold that workers, who have been engaged in occupational practice beyond initial entry preparations and requirements, have substantial views about the kinds of work-learning experiences that will support and sustain their competence and continued employability. These views are based on their years of generating and responding to the changes that characterise their work and working contexts and represent valuable sources of insight and expertise that can inform understandings and provisions of the continuing education and training needs of contemporary workplaces. Further, these views are evidence of workers' understandings and acceptance of the nature of work as increasingly dependent on learning, not as something separate from or prior to their practice, but as an inseparable aspect of it. In short, workers are highly informed and capable contributors to the learning needs that underpin their work and the viability of their employer organisations. These conclusions and some of the implications for the provision of continuing education and training that arise from them are advanced here.

The chapter draws on research conducted with workers from four Australian industry sectors: mining, aged care, financial services and hospitality services.

Through interviews and surveys, these workers described and explained their work-related learning experiences in ways that identified, evaluated and advocated how best that learning should proceed. Significant within these accounts were recommendations aimed at securing access to expertise and learning support that aligned with the social and performative nature of work as shared collective practice. These practice goals can be realistically pursued when worker engagement is high, learning support is direct and well-resourced and constitutes a recognisable developmental trajectory that leads to accreditation. In more general terms, the workers who participated in the research reported here value, prefer and advocate work-learning experiences that bring together task authenticity, expertise and shared practice. They were very clear about the importance of learning in and for work and equally clear about how best they learned. Their work-learning experience and preferences suggest that effective continuing education and training goes beyond a focus on classroom training for skills development to meet immediate work needs. Rather, effective continuing education and training should take a more expansive, local and learner centred focus to support learner engagement in personal and organisational development requirements that meet and direct change as a constituting element of work practice.

Whereas the previous chapter focused on workers concerns and perspectives, in their chapter, Mark Tyler, Darryl Dymock and Amanda Henderson focus on *The Critical Role of Workplace Managers in Continuing Education and Training.* They propose that as workplaces increasingly become sites of ongoing learning, the effectiveness of the learning and training undertaken by workers already in employment becomes a significant issue. While learner engagement is a key factor, the nature and extent of the involvement of managers in workers' continuing education are also important considerations, especially in large and medium enterprises. Based on interviews and a short survey, this chapter presents and discusses the perceptions of 60 managers in five Australian industries about the sorts of changes that are driving ongoing learning and the consequential impact on continuing education and training practices. The findings show that managers are tending to be more proactive in promoting, organising and facilitating support for learning, and monitoring the outcomes of their support and of employees' learning. Nevertheless, the increasing "formality" also often lead to managers seeing "learning" in narrow terms, particularly in the form of training courses, which are regarded as providing a more structured approach as well as greater certainty of achieving the desired outcomes. On the other hand, the study found examples of organisations using a variety of strategies to achieve their ongoing learning goals, consistent with the literature that advocates greater use of the workplace as a site for learning. The authors conclude that managers need to consider a broader range of strategies if workforce development is to encompass as much as possible the full range of learning opportunities available.

Finally, in the chapter in this part, entitled *Towards a National Continuing Education and Training System,* Sarojni Choy and Raymond Smith advance considerations about what might constitute a national system of continuing education and training. The discussion here draws upon findings from the interviews and focus

groups with workers, their managers and also providers of continuing education and training. In addition, the views of senior figures in large national institutions and agencies with responsibilities for continued education and training are taken into account. A range of models for the provision of continuing education and training are advanced, as well as sets of practices which might promote that kind of ongoing learning. In addition, considerations of assessment, recognition and certification of knowledge required to sustain employability are advanced, as are issues associated with the administration and financing of such a national system.

Then, building upon ideas from the contributions to this volume, a broader set of premises for ongoing learning across working lives are advanced in terms of how these arrangements might flow through to a wider range of occupations and circumstances of work than those within the national study from Australia.

Part IV: Learning Across Working Life

The final chapter – *Conceptions, Purposes and Processes of Ongoing Learning Across Working Life* – discusses the growing consensus across governments and supra-national agencies, spokespersons for industry, occupations, employees, workplaces, education systems and communities and by workers themselves that the ongoing development of occupational capacities is now required by all kinds of workers and for all occupations across their working lives. This consensus arises from the recognition that not only is the knowledge required for effective occupational practice subject to constant change, but also the nature and form of that change is more than simply keeping up with the latest developments. Instead, many occupations are being transformed, which affects what constitutes occupational competence and extends to how and what individuals (i.e. consumers, clients, patients) now expect of those occupations. Moreover, the nature and kinds of paid employment, how it is undertaken and by whom are also constantly changing. Therefore, there is a need to view the ongoing development of workers' skills across working lives as being a major education project. However, to do so requires having a more elaborate set of understandings about what constitutes this project. Hence, in this chapter, consideration is, first, given to the ways in which this ongoing learning is conceptualised. Second, a set of purposes associated with this project are identified and exemplified. Third, something of a range of means by which this project is enacted is also set down. Overall, it is proposed that more than being seen as a process of topping or freshening up, there is a significant and central educational project to be addressed, and not only through educational systems and institutions but also in the places where occupations are enacted (i.e. workplaces, work practices and communities). Given that ongoing learning across working life constitutes an entire educational project, there needs to be clarity about what conceptions underpin it, the kind of purposes to which it is directed and the kind of processes used to realise these purposes. In this way, this closing chapter sets out something

of what comprises the educational project associated with ongoing learning across working life.

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Part I
Supporting Learning Across Working Life

Chapter 1
Conceptualizing Learning Across Working Life, Provisions of Support and Purposes

Stephen Billett and Steven Hodge

1.1 Learning Across Working Life

This book is largely concerned with the means by which individuals can remain employable across lengthening working lives through considerations of premises about, models for and practices associated with ongoing work related learning across lengthening working lives. Whilst much of the educational effort associated with work is directed at initial occupational preparation, in this book the focus is on the ongoing development beyond that initial preparation. Based upon the realization that such an initial preparation alone will be insufficient for a lifetime's work there is now increasing interest in this ongoing learning and how it might best be supported. Indeed, there are growing national and global policy focuses as well as local concerns about lifelong learning, particularly as it pertains to working life. Collectively, this interest has become the 'lifelong learning agenda' that is promulgated by supranational agencies (Edwards, 2002; Organisation of Economic Cooperation and Development (OECD), 2000) and engaged with as a central educational policy by a range of countries with advanced industrial economies. Yet, at the commencement of this book on learning across working life, it is important to capture some key premises about what comprises the concerns that have given rise to this agenda and propose how they can be understood and addressed. These premises include being clear about what this concept of learning for working life comprises, and the kinds of purposes to which that learning is held to be directed educationally. Realizing such goals necessitates securing greater clarity about what are variously referred to as lifelong learning, lifelong education and learning across working life so they can be distinguished from each other and their specific qualities and characteristics understood. Currently, much of the policy interest concern is

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about individuals' learning across working life and how this can be effectively promoted and supported when addressing needs associated with sustaining their employability. Beyond individuals resisting unemployment, employability includes workers developing and sustaining the kinds of capacities needed by their workplaces to remain viable as requirements of goods and services change, the industry sectors in which they work seeking to remain responsive to transforming demands and for the nations in which they are citizens to be competitive in the production of goods and services (OECD, 2006).

Importantly, these changes in work requirements should not be seen as being just about profitability within the private sector, or individual advancement. Instead, they permeate the provision of the kinds of services that people need and for which competent practitioners are required. For instance, the requirements for provision of effective health care are constantly changing as new technologies and patient and community demands arise. Yet, these requirements need to be enacted within the constraints of existing resources. Hence, the capacities of healthcare workers need to remain current and responsive to changing circumstances. In this way, sustaining workers' employability is the common goal for workplaces, industry sectors, professional associations, government, workers themselves and, most importantly those whose needs are served by workers. In essence, these sets of personal, workplace, local and national purposes for lifelong learning arise from the realization that individuals' initial occupational preparation will be insufficient to meet their needs for employability across lengthening working lives. The constant changes in the requirements for effective work mean that focused and sustained intentional learning is now needed by all kinds of workers and across all kinds of occupations and industry sectors (Billett, 2006) and throughout their working lives.

Hence, there are new challenges arising for those whose role it is to support this learning across working lives. For nations' educational systems the challenges for their institutions, programs, provisions and educators is to identify and enact the means to support the development of these capacities across lengthening working lives. For professional bodies, industry sectors and workplaces, the challenge is to identify means by which that learning can be variously promoted, supported and, where required, certified. For individuals as workers, the task is to engage agentically (i.e. with selective intention and agency) in their work life learning. That is, to identify and engage in opportunities afforded by workplaces, educational provisions etc. yet also actively and selectively identify opportunities for developing further their occupational capacities. To emphasize this engagement is not to rehearse a neoliberal doctrine of worker self-reliance (Olssen & Peters, 2005). Instead, it acknowledges the need for effortful and sustained engagement on the part of workers in the learning and refinement of knowledge that is demanding to learn. That is, effortful and sustained engagement is required by individuals to develop the kind of understandings, procedural capacities and nuanced dispositions associated with effective work practice of the kind required to respond to changing work requirements (Ericsson, 2006; Malle, Moses, & Baldwin, 2001). This is a requirement long-recognized in considerations of human thinking and acting (Dewey, 1977). Also, this effortful kind of engagement seems most likely to be

exercised when it is aligned with individuals' subjectivities or sense of self as workers (Billett, 2008). Analogously, for workplaces, it seems that opportunities are afforded most strongly by their workplaces when there are perceived workplace imperatives that need to be addressed to sustain their viability (Carnevale & Schulz, 1990; Smith & Billett, 2005).

It follows that when addressing these important imperatives associated with learning across working lives, both consideration and actions need to be well-informed and carefully elaborated. This includes clearly delineating and distinguishing amongst what variously constitutes lifelong learning, lifelong education and work life learning, and considering how they might be utilized in addressing these imperatives. Not the least here is that these terms are often referred to as being synonymous and therefore not requiring differentiation (Schuller & Watson, 2009). Indeed, the views advanced in this chapter seek to redress this error and also challenge the orthodoxy of the primacy for that learning across working life being largely realized through institutional arrangements in workplaces or educational institutions alone and these being the most appropriate way to respond to changing work requirements. Instead, a greater consideration of individuals' learning across and through their working lives is advocated in this chapter. In all, it is proposed that advancing issues associated with learning across working life, considerations of forms of support and educational provisions, guidance and support should not be constrained by the orthodoxies of schooling and arrangements for tertiary education. That is, orthodoxies that privilege experiences provided through taught processes, in classroom type arrangements (i.e. either actual or virtual) and in or through educational institutions, because these are currently and will be insufficient in the future. Instead, a broader view of learning experiences is required. That is one taking into account the kinds of knowledge required to be learnt, the kinds of circumstances through which that knowledge can be experienced, and the appropriate provision of support and guidance for that learning can be made accessible. In making this case, and having defined concepts, discussed premises, the prospects for and some propositions about the purposes of this learning across working life are advanced.

1.2 Delineating Key Concepts

As the 'lifelong learning agenda' with its focus on ongoing learning and development of workers' capacities increases, often promoted by institutions and agencies without particular expertise in learning and development, it is important to be clear about some of the key concepts associated with this agenda, because they are often used interchangeably and as such inappropriately. Consequently, here the three key concepts of: (i) lifelong learning, (ii) lifelong education and (iii) work life learning are delineated and elaborated.

1.2.1 Lifelong Learning

Often in the public and governmental (and at times academic) discourse, the term 'lifelong learning' is used interchangeably with the term 'lifelong education' (Schuller & Watson, 2009) even though each has quite different meanings and emphases. It is categorical error to see them as being synonymous, as one is a personal and the other institutional fact (Billett, 2010a). It is advanced here that lifelong learning constitutes the personal processes individuals engage in and through which they change (i.e. learn) when encountering experiences across their life histories. That is, learning arises naturally through what individuals experience across their lives. These experiences can comprise those arising through their work, family life, social and community engagement, as well as through participation in intentional educational activities. In essence, people are learning continually across their life courses through the everyday processes of thinking and acting (Billett, 2009a).

Likely, much of this learning comprises the reinforcement and refinement of what people know, can do and value. Experiences in family, work and community lives serve to question, confront, disrupt, and potentially extend what individuals know, can do and value. This is what constitutes learning across individuals' lives or lifelong learning. This learning arises through a moment-by-moment engagement with the world as it is experienced and is referred to as micro-genetic development (Rogoff, 1990). This everyday learning both contributes to but is shaped by what individuals already know, can do and value, referred to as ontogenetic development (Scribner, 1985b), which arises and accumulates across individuals' lives through the person-particular complex of experiences people have and how they come to experience them. This ongoing learning and development is inherently shaped by individuals' intentions, projects and goals for their lives, perhaps best captured by the term subjectivities or sense of selves. Psychological conceptualization of a temporal dimension of cognition suggests that 'possible selves' – images of future states of being – play a role in initiating and directing activities (Markus & Nurius, 1984) in the immediacy of the lived world, which includes working lives. Philosophical conceptualizations of this temporal dimension of learning are offered by Husserl (1964) and Heidegger (2010). For instance, Husserl argues that individuals' present actions are conditioned by anticipation of the future and their retention of the immediate past. Reference to future and past is implicit in our intentional actions, endowing learning for occupational purposes, for example, with direction and significance. In Heidegger's phenomenology of everyday activity, the meaning of present undertakings are constituted by temporal processes in which projection of future possibilities is the primary reference point for meaning making (Hodge, 2015). Similarly, the social constructivist Gergen (1994) refers to making sense of what is experienced in the immediacy of the moment by reference that what individuals have experienced and learning in the past.

> … our actions in each passing moment will necessarily represent some simulacrum of the past; we borrow, we formulate, and patch together various pieces of preceding relationships in order to achieve local coordination of the moment. Meaning at the moment is always a

> rough reconstitution of the past, a ripping of words from familiar contexts and their precarious insertion into the emerging realisation of the present (pp. 269–270).

In these accounts, learning, as a process and outcome of personal experience is required for the realization of possible selves, intentions and projects (Hodge, 2015). Hence, lifelong learning arises as a product of personal factors including individuals' personal histories or ontogenies. It is a personal fact.

Importantly, the intervention of others or institutions is not a necessary condition for lifelong learning. Instead, learning occurs continuously as humans think and act, engage in activities and interactions, discuss, evaluate and extend what they know and can do. It follows that this kind of learning is person-dependent as it arises through the particular experiences each individual has had (Valsiner, 2000). Consequently, from the same work life experiences, individuals will construe and construct (i.e. learn from those experiences) knowledge in personally-particular ways depending upon what they know, can do and value (Billett, 2009a). This valuing, selection and engaging in particular experiences by individuals is important as it both shapes and is shaped by the intention and effort exercised through what they experience and what and how they learn (Malle et al., 2001). The interventions by others, however well they are designed, can only achieve the purposes for which they were intended when those who are subject to them understand what they are, and engage with them in intended ways and then appropriate those experiences (Luria, 1976; Wertsch, 1998); that is taking what they experience as their own. So, whilst it is ongoing across individuals' lives, the process and outcomes of lifelong learning is person dependent. Hence, this learning is a personal fact and can only be understood through a consideration of individuals, what they know, can do and value, including their intentionalities.

1.2.2 Lifelong Education

The conception of lifelong learning advanced above stands in contrast with that of lifelong education: the provision of experiences from which intentional learning is aimed to be secured. As such, lifelong education is an institutional fact: one generated by society (Searle, 1995). In most instances, the provision of experiences, support, and intended outcomes are shaped by others (i.e. governments, education institutions, teachers, parents, industry bodies, professional associations etc.). Indeed, much of the policy provisions associated the 'lifelong learning agenda' centers on the provisions of training courses, professional development programs, in-service education and other taught processes, provisions that conceptually align with educational provisions. Certainly, since the Year of Lifelong Learning in 1996 (OECD, 1996) and subsequent reports and reforms proposed by supranational agencies (e.g. OECD, UNESCO) and increased focus upon global competition have led to the development of the lifelong learning agenda internationally which is very much based upon the provision of educational programs. For instance, a major

report associated with this agenda for the United Kingdom referred solely to kinds of educational experiences (Schuller & Watson, 2009), thereby excluding the ways that probably most learning occurs across individuals' working lives. Moreover, because the focus in these reports is on participation in educational programs, they become linked to other policy imperatives, such as who should pay for these forms of ongoing development. This includes concerns such as to what degree should efforts to promote learning be directed towards goals associated with particular workplace, industry sector or individuals' needs. As consequence, those paying for these educational provisions are deemed to have a legitimate say in what they comprise and what outcomes they are directed towards. Certainly, governments in most countries with advanced industrial economies are trying to divest themselves or at least minimize the cost of this ongoing development and passing it to individuals, as allegedly recipients of the benefits of this ongoing development (OECD, 2000). Not only that, but individuals are being encouraged to accept greater personal responsibility for their own employability through directing their efforts towards further development (OECD, 1996). For instance, requirements for work are constantly changing and some aspects of occupational qualifications need to be refreshed and recertified on a regular basis for many forms of employment. Increasingly, this responsibility falls to individuals to fulfil.

Moreover, investing in these arrangements within educational systems and programs raises other concerns about the ways in which they are appropriate and well aligned with the needs of working people. The great risk is that models associated with initial occupational preparation are used to try and promote ongoing learning, when these models may be quite inappropriate (Billett et al., 2012). Although there is often the need for the legitimacy and certification which comes through programs that are hosted or auspiced by educational institutions, the provisions for promoting and supporting lifelong learning should not be constrained to these kinds of arrangements. All of this underlines that whereas lifelong learning is about the process of personal change (i.e. a personal fact), lifelong education is an institutional fact, as it is created by and enacted through human society, and its institutions. Lifelong education comprises provision of experiences organized and enacted through social institutions and for societal purposes. Hence, whether in the form of intentional programmed experiences offered by educational institutions, or through a set of experiences that promote the interests and needs of a particular workplace or other institutions, experiences designed to achieve specific kinds of outcomes need to be selected and ordered to achieve their particular purposes. In all, lifelong education is about the provision of experiences. From this discussion, it is important to account for, but distinguish between, individuals' intentionalities and sense of self or subjectivities that shape the value or worth associated with both individual learning, on the one hand, and educational experiences, on the other. Also, understanding the relations between the two is central to what individuals come to learn through their personally-mediated process and for what purposes.

1.2.3 Worklife Learning

This leads then to the third concept referred to above: work life learning. This third concept is quite specifically focused upon learning associated with work as in paid employment, whereas lifelong learning and lifelong education prior to 1996 and the Year of Lifelong Learning were associated with adults' social and cultural betterment. That does not necessarily mean that this conception of work life learning is wholly focused on enhancement of skills to support individual employability, workplace viability and secure national social and economic goals. Indeed, the concept of learning for working life has its origins in Scandinavia where the quality of working life was a key concern for many years (Gallie, 2003). That is, a focus on individuals working safely, avoiding the harmful impacts upon the body in the long term, how their interests and concerns can be expressed in the workplace and through to a consideration of learning that might assist the quality of work-life experiences. Hence, learning here is associated with more than the technical aspects of work. Such a broader set of concerns about learning associated with work are not restricted to Scandinavia. The Francophone concept of 'ergonomic', founded in French republicanism has qualities of this conception that are analogous, as there are significant concerns about how a person engages in their work in ways that are both effective in the conduct of that work, but also not injurious to them as workers (Bril, 2015; Mayen, 2015). Quality of work was also a concern of Marx (1990), who viewed work or creative labour as the defining characteristic of human being and opportunities to exercise capacities as fundamental to human dignity. Indeed, this perspective generated criticisms of restrictive work design as limiting the scope of workers' discretion in the exercise of skills. Braverman (1974) updated this critique in addressing advances in work organization in the last century, which sought to restrict workers' discretion in the exercise of their work, and deny the very agency that humans can exercise in ignoring or resisting such impositions. These accounts tend to focus on the uncritical acceptance of the principles of division of labour (Smith, 1976) and the scientific management of work (Taylor, 1906). These principles assume that workers are more efficient if their jobs are designed to be broken down into units that require minimal skills and, therefore, replaceable workers. Yet, what was found with the application of such an approach to work organization ignored workers' agency, including their resistance (Newton, 1998) or them electing to leave the workplace (Kincheloe, 1995), which Braverman himself failed to acknowledge. That is, arrangements that tend to ignore or deny what motivates and directs individuals' learning and development, all of which is central to the processes of personally-mediated learning.

So, here it is proposed that these three key concepts need to be delineated and distinguished into that which refers to individuals' learning and development (i.e. lifelong learning) which is premised upon what individuals know, can do and value; that which refers to the provision of educational programs much of which are directed towards outcomes determined by key interest groups such as government, professional bodies, industry sectors, employers (i.e. lifelong education), and work

life learning, which refers to a broader concept of learning associated with not just occupational practice, but the quality of working life. As noted, often, the discussion about lifelong learning progresses without clear delineation amongst these concepts. Yet, even for the most pragmatic of concerns, such as the achievement of policy intents and securing industry, professional and workplace goals is the degree by which workers' learning meets their own as well as those of key interest groups. So, regardless of conversations about each of these three concepts, none can be considered successfully enacted without accounting for what motivates, directs and realizes individuals' learning. Hence, it is necessary to consider some bases associated with individuals learning across their working lives.

1.3 Some Premises Associated with Learning Across Working Life

To begin redressing the confusion that has arisen from conflating these three concepts, in the following section, four interrelated precepts are differentiated to provide a platform to inform what kinds of support are appropriate to sustain that learning. These premises are associated with: (i) the need for ongoing learning across working life; (ii) the strong focus on employability in that learning; (iii) the importance of going beyond a consideration of training programs and educational interventions (i.e. lifelong education); and (iv) the accessibility of the kind of experiences required to secure the kinds of knowledge for employability. Hence, these precepts refer to purposes, processes and outcomes making them consistent with other kinds of educational projects. In more detail, these are as follows.

Firstly, focused and intentional learning across working life is now an inevitable prerequisite for individuals' ongoing employability. The changing nature of work, requirements for occupational practice and ways in which work is undertaken mean that workers need to learn across their working lives in ways that build their capacities to respond to these changes and position them as productive and viable employees (Billett, 2006). As noted, it is now widely accepted that initial occupational preparation, often undertaking at the end of school life, will be insufficient to sustain individuals' employability, continuity of employment and advancement (OECD, 1996). Hence, there is a need to intentionally learn the capacities required for employability and, in quite focused ways, across working lives and that learning needs to encompass the changing requirements for occupations and employability (OECD, 2006).

Secondly, policy and academic discourse about the three conceptions outlined above (i.e. lifelong learning, lifelong education, work life learning) has increasingly come to focus upon workers' learning and further development; their employability. Likely, even the most attuned provisions of education will be unable to support the kinds of learning and development required for specific kinds of work, workplaces and work practices. This is because the requirements

for work performance are often necessarily workplace-specific (Billett, 2001) and subject to constant change (Billett, 2006). Moreover, much of what is required to be learnt is unlikely to be secured through educational provisions alone. In particular, there may well be a requirement for experiences that are authentic in terms of what needs to be learnt or very good substitutions for them (Dochy, Gijbels, Segers, & van den Bossche, 2011; Eraut, 2011). So, there are important issues associated with access to, engagement in, and the sufficiency of learning experiences that drives considerations for supporting intentional learning across working life. These considerations go beyond the provision of classroom-based experiences and contributions of teachers. Part of the considerations here is to be reminded that learning occurs as individuals engage in thinking and acting, and time spent at work is no exception, and, indeed, that learning can be rich and adaptable (Scribner, 1985a). So, this ongoing learning that arises through workers engaging in their everyday work activities and interactions needs to be seen as worthwhile and legitimate (not informal) and when utilised effectively is central to effective work life learning. Indeed, these needs are required to be considered alongside those intentional experiences provided through what might be referred to variously as educational, professional development, continuing education and training, continuing professional development programs, as a number of the contributions to this book suggest.

Thirdly, however, much of the orthodoxy associated with contemporary education practice and policy is associated with and exercised through the provision of intentional educational experiences of the schooling kind. That is, through training courses, professional development programs, action learning sets, action research projects etc. that can be collectively referred to as provisions of lifelong education. This orthodoxy extends to these kinds of provisions being associated with administrative imperatives and familiar (i.e. school-like) models than the efficacy of particular approaches and their accessibility. Therefore, there is a need to question the viability and comprehensiveness of this orthodoxy and propose a broader account of how workers learn across their working lives, and how that learning needs to be supported (Department of Education Science and Training, 2002). That is, for provisions of lifelong education to go beyond training courses and educational programs. As is reported in Chap.12, when workers are asked, they place limited value on training courses. Yet, their managers prefer training programs in the belief that they offer certainty in outcomes, because they are organised and taught. Hence, even when referring to lifelong education it is necessary to go beyond the orthodoxy of training courses and identify what kinds of experiences are most likely to secure the intended learning and not be constrained to what can be organised and enacted through training type provisions. Overall, there is a need to go beyond the orthodoxy of educational provisions and processes, to identify how learning through working life can best be realised, albeit, in work settings, outside of them, direct instruction or through learning-based processes of development.

Fourthly, and following on from this, is the need for a fit between the kinds of learning that is required to be learnt and the kinds of experiences that can be accessed

by workers to secure what needs to be learnt. Importantly, the accessibility of experiences is important for individuals who are primarily workers and not students. For instance, in a study of options for older Singaporean workers' ongoing work related learning (Billett, 2010b), it was found that most of them have very long work days and many have lengthy commutes at each end of the day, meaning that attending polytechnics or technical colleges for evening sessions was quite restricted. Hence, it was important to identify what kinds of knowledge these workers can learn through their everyday work experiences, including those which will require the guidance of more experienced co-workers or supervisors, and consider how the workplace could be a central location for ongoing continuing education and training. Certainly, securing of other kinds of knowledge may require educational interventions of specific kinds to assist that learning. However, the important point is not to view attendance at courses as being the first option, but rather one which is exercised where that attendance can secure particular contributions that might not be found elsewhere. Hence, it is important to understand the different contributions that can be made by particular kinds of experiences, support and guidance, and place these alongside considerations of accessibility. That is, being clear about what needs to be learnt and what kind of experiences are most likely to secure that learning, which extends to the accessibility of those experiences for workers.

It follows from the above, that the provision of support and guidance for learning across working life needs to be aligned with the kinds of purposes for which that provision is intended. Therefore, it is helpful to delineate something of the kinds of purposes towards which learning across working life and the support and guidance for it might be best directed.

1.4 Purposes for Learning Across Working Life

For the broad project of learning across working life, it is helpful to consider the diverse purposes (i.e. different kind of goals for workers' learning and development) and then consider these against the experiences most likely to generate these goals. That might be achieved through activities and interactions provided in work settings, through intentional educational interventions or some other kinds or combination of experiences. Hence, delineating these purposes can help to offer a more nuanced consideration of how learning across working life might best be promoted to achieve those purposes.

As way of considering the scope and kinds of specific purposes for intentional learning across working lives, it is to delineate those purposes that are founded in either: (i) personal or (ii) institutional imperatives. The former are those associated with individuals' needs, interests and requirements, and are often bases by which individuals engage in intentional learning (Billett, 2009b). The latter are those associated with the demands of the social world, changes arising from and forms of

support and guidance that are offered through workplaces, educational institutions and other agencies. These institutional imperatives are projected in different ways and levels of intensity, such as workplace performance requirements, and those for continued employment or advancement, the demands of co-workers or supervisors, not to mention those of clients, patients, students et cetera whom the work undertaken serves. So, whereas the former can be seen as being in some ways highly person dependent, and, therefore, needing to be understood from the perspective of individuals' learning needs and requirements, what they currently know, can do and value, the latter are often associated with needs and requirements associated with or embedded in particular changes in the requirements for their work or workplace practices, and their participation in particular workplaces.

Yet, in all, there are also important alignments between the personal and institutional imperatives and the degree by which these are either consonant or incompatible with each other. Those alignments are most likely to only be understood in through actual circumstances and people acting in them, as this brings together the enactment of the two sets of imperatives. Consequently, there can be no comprehensive effort here to identify a set of conditions under which intentional learning associated with working life is likely to be optimum and, therefore, able to be maximised. Instead, what is described below is a set of personal and institutional imperatives that likely shape intentional learning across individuals' working lives. There is also no claim that this list is exhaustive, rather that these listings are those which appear to reflect current research and theorising.

1.4.1 Personal Imperatives for Work Life Learning

The personal imperatives for learning across working life can be seen broadly as being twofold: (i) maintaining employability, which includes staying employed and securing advancement in and through work; and (ii) engaging in worthwhile and rewarding work.

1.4.1.1 Maintaining Employability (i.e. Sustaining Employment and Securing Advancement)

Key reasons for individuals to engage in intentional and focused learning associated with their paid work are to sustain their employability. That is, for them to possess and/or maintain the kind of occupational capacities that are required for them to perform adequately that current work, and most pertinently how that work performance is manifested in that particular workplace. Whilst individuals may well possess a range of occupation-specific capacities, these may or may not meet the needs of their particular workplaces where learning is to be enacted. Moreover, individuals' capacities need to change both incrementally and transformatively to remain employable across working lives. Incrementally, changes in work techniques, how

work is undertaken, workplace practices and the composition of workforces over time require changes in what workers know, can do and value. The increased use of electronic technology in workplaces, for instance, means that knowledge of and ability to utilise these forms of technology are becoming a growing requirement for work, albeit more demanding in some settings than in others. In many forms of work, these capacities are now essential core competencies, not specialist occupational ones. So, there is an expectation in most contemporary workplaces that individuals should be able to perform these kinds of activities.

Other incremental changes include individuals working in teams or groups and having to communicate, engage in collaborative problem-solving, share work and draw upon others' specific contributions to an overall work project, such as in health care work (See Chaps. 8 and 11 of this volume). Similarly, issues associated with communicating with others and clients now might be part of specific work functions and capacities associated with effective performance of work. These are sometimes referred to as non-occupational specific capacities ('soft skills'), may not have been included as part of individuals' initial occupational preparation, but developed through workplace experiences. Yet, they are now required for effective work performance. Then, norms and practices associated with effectively interacting with colleagues, engaging in safe working practices, the use of appropriate language and engaging with workers of the other genders, and from diverse ethnic, religious and racial backgrounds form requirements in many if not most workplaces. So, it is not only the particular occupational-specific conceptual, procedural and dispositional knowledge that has changed, capacities required to utilise that knowledge effectively in work environments have also changed.

Learning for new occupations, particularly by more mature learners, can precipitate transformative learning when the knowledge and values of intended occupations come into conflict with existing knowledge and values (Hodge, 2014). Transformative changes have been associated with major life changes including changes in work life (Mezirow, 1991). Qualitative change in work practices can also lead to transformative change in workers who have adjusted to earlier practices. For instance, the process of learning new 'flatter' management practices can produce considerable tension in managers who were used to centralised, top-down decision making (Hodge, 2011). Such tensions are thought to drive transformative learning in adults.

It follows, then, that a key issue here is how these kinds of capacities might be best learnt across working life. That is, identifying when the development of these capacities is best undertaken through close interactions with other persons who possess those capacities or when the learning process is best realised through more personally-directed and mediated processes. Associated here is whether this development can most effectively be secured through educational experiences (i.e. training programs), by participating in everyday work activities and interactions and through guidance, or some hybrid arrangements. Moreover, as workers are inevitably at different stages along personal work life trajectories, how intentional educational arrangements might best progress is often person-dependent. Much of the educational provision is premised upon having a starting point from which learners

progress through the curriculum – the course or pathway to progress along. However, in the ongoing development of workers' knowledge, there are as many pathways as there are learners.[1] Concerns about health, safety, language use, engagement with others and their interests and capacities to respond to these changes are likely to be distributed across the working population. Hence, any processes aiming to secure intentional learning outcomes, including provision of direct support, are likely required to be differentiated in particular ways.

For instance, in one automotive workshop work practices changed to a more customer-focused provision of mechanical services with the advent of extended warranties for new vehicles represented quite a challenge for many of the mechanics (Billett, Smith, & Barker, 2005). Yet, within this group of workers there were significant differences in their confidence, disposition, interest and communication skills to effectively engage with customers in advising them about issues with their motor vehicles. At least one had been involved in working directly with vehicle owners yet, most of the others lacked this capacity by degree, and some saw this as being unnecessary or irrelevant to their work as mechanics. Hence, intentional efforts to develop the capacities to engage effectively with customers, for instance, would require processes that would need to be tailored to the particular individual's pathway of development. Importantly, when transformational learning is required to maintain workers' employability in the face of change of workplace practices, technologies or products and services, or even management styles, it is these individual bases that are central to not only personal learning, but also being able to bring about effective responses to those changes. These transformations by their nature can occur quickly (e.g. change in the warranty period for a newly purchased car) and be quite large in scale (e.g. changing core elements of an occupation).

So, individuals' capacities (i.e. what they know, can do and value) will be central to their readiness to engage with and effectively enact these changes. Returning to the case of the automotive workshop above, a requirement for supervisors was to be the point of communication between the mechanics and customers. One mechanic had a long work history as a roadside recovery mechanic and was used to engaging with people whose cars had broken down and required assistance to get their vehicle working to complete their journey. He actually enjoyed this work and he found directly engaging with customers was very fulfilling. This experience aligned well with his interest and he had developed his capacities to be an effective and empathetic communicator with customers, whereas the existing supervisor disliked and struggled with this role (Billett et al., 2005). Hence, for this mechanic, the need for more direct communication with clients was well-suited to his occupational skills and interests, whereas for the existing supervisor it was outside and beyond them, and he had no interest to develop these capacities.

Consequently, it is unlikely there will be a simple educational formula here, such as the use of the training interventions. What needs to be acknowledged is the diversity of individuals' readiness to engage in effective intentional learning. Therefore,

[1] This is undoubtedly true for children engaging in schooling, but is probably more pronounced with adults' ongoing learning.

a starting point might be to understand the extent of the gap between what individuals know, can do and value, and that which is required for them to respond effectively to transformational changes occurring through their work which are necessary to sustain their employability and seek advancement. Consequently, the focus needs to be more centrally on lifelong learning as a precursor to provisions of lifelong education.

Hence, seeking and securing employability can encompass both incremental and transformational changes to individuals' capacities that extends to seeking promotion or advancement. Sometimes, that advancement is based on the enactment of existing capacities. Yet, often it can require the development of new capacities. Here, issues associated with how best these new capacities might be developed include whether individuals' workplaces are the best environments for learning or whether these capacities should be developed and then practised and honed elsewhere. So, these personal imperatives are likely to be person dependent to address. All this emphasises individuals' work life learning needs and processes as being a precursor to a consideration of what constitutes lifelong education, rather than the other way round.

1.4.1.2 Engaging in Worthwhile and Rewarding Work

Another key motive for individuals engaging in learning across working life is to secure advancement in the form of more worthwhile and rewarding work, such as the Scandinavian conception of working life mentioned above. That is a kind and form of working life whose concerns are about conditions and practices that enrich work activities and purport to genuinely value workers' contributions. This can include learning capacities associated with a new occupation or part of that occupation to position them to engage in the kind of work they want to do (e.g. specialism), rather than what others want them to do. In many ways, this is central to Dewey's (1916) notion of vocations – what they mean to individuals and are worth to their associates. Making this kind of change may require individuals to participate in an educational program which leads to the certification required to practice that occupation or specialism. Hence, this imperative could well involve becoming a student again, engaging with assignments, and examinations. Such a change may also be one undertaken without the knowledge of the workplace, as it may well indicate a desire to leave that workplace to secure a new role in another workplace. Increasingly, the pathways to changing occupations or moving through occupational hierarchies will be dependent upon not just securing the capacities, but also appropriate educational certification. So, for instance in the studies of continuing education and training reported towards the end of this book, in the aged care sector one informant reported that she was undertaking a college course at night to become an early childhood or primary school teacher. However, she did not want this information revealed to her employer as it would indicate her leaving employment. The point here is that this personal imperative is likely to be realised through engagement in educational programs with all of what that entails for the individual: i.e. attendance,

engagement, becoming a student, fulfilling requirements of educational institutions, not all of which are easy for adults to negotiate.

Securing worthwhile and rewarding work may also entail challenging existing work practices. Where practices are unsafe, not adequately remunerated or in other ways unsatisfactory, workers may engage in negotiation or conflict with employers to secure better conditions. The avenues for negotiated change in modern industrial states are often intricate, and the learning required to avail such opportunities is substantial. Some of this learning is concerned with recognising the value of potential change and articulating the case in settings in which such questioning may be unprecedented. This intricacy can extend to shaping how workers engage in lifelong education. For instance, in a study of open cut coalminers' learning (Billett, 1993), miners refused to engage in additional safety training. What they argued was the employer was trying to get them to take more responsibility for mine site safety, which was a legislated responsibility of the mine site manager. So their decisions about participation in this additional training were not just about their own skill development, but the practices of the workplace. In this way, learning is required to engage in sanctioned forms of resistance and negotiation that may involve intricate processes to manage. The great industrial conflicts of advanced economies obviously subject workers to a range of new learning to secure worthwhile and safe working conditions, a key measure of the quality of working life.

In this way, lifelong education can play a particular role and offers provision of experiences and outcomes that are distinct from those to be realised through individuals' lifelong learning experiences alone. Taking the example of aged care workers, it is important for workers with either little or no educational certification to have the opportunity to obtain secure certification. In increasingly competitive labour markets and where the acquisition of occupational certification is a requirement for employment these workers can be marginalised without that certification. Hence, the importance of lifelong education resides in provisions that are responsive to workers' needs and accessible for the kinds of outcomes which can sustain and advance their employability. Again, the alignment between individual's readiness to participate in those educational programs and provisions for engagement and support are likely to be salient here for successful outcomes. Here again, it is not possible to consider the prospects for successful lifelong education without considering individuals readiness to engage and be successful in such provisions.

1.4.2 Institutional Imperatives (Global, National, Industry, Occupational and Workplace Levels)

The personal imperatives listed above are associated with individuals' needs and interests. Yet, there are also sets of imperatives for intentional learning associated with what the workplaces want learnt, the requirements for professional occupational licensing and the kinds of demands made by national governments and global

agencies for the conduct of work. Institutional purposes thus span global, national, industry, occupational and workplace levels. At the global level bodies such as the OECD regularly publish statements on what workers need to be learning. For instance, a 2014 OECD report on adult learning states that 'Workers need to adapt to changes in the course of their careers as the skills demanded by the labour market change' (2014, p. 1), and identify information-processing skills as important to maintaining this adaptability. These imperatives often resonate through many institutional levels. At the workplace level, for example, workers such as truck drivers learning to utilise the information systems in a highly automated truck might require the development of specific capacities to effectively maximise fuel use and in controlling vehicle emission and noise (Lewis, 2011). Hence, the employer might expect that the employee will understand how to use digital displays and engine management systems and drive the truck in ways that make limited demand upon brakes and use fuel efficiently. Truck drivers might also be required to wear high visibility clothes and be forbidden to take unauthorised detours from their routes, and know that the location of their vehicle can be monitored. Extrapolating from such a list, the kind of imperatives comprising changes in work requirements that work life learning needs to respond can be seen as being fivefold: (i) changes in occupational requirements and demand; (ii) changes in the requirements for work; (iii) changes in the ways of working; and (iv) changes with those in work (Billett, 2006). Institutional purposes aligned to each of these are briefly discussed below.

1.4.2.1 Changes in Occupational Requirements and Demand

Both the demand for occupations and the requirements for their effective enactment constantly change. As discussed above, when demand for occupations drops away, it may be necessary for individuals to develop a new set of occupational skills or extend those they currently possess. These can be transformational changes for individuals and to sustain their employment this might mean changing significantly what they can do and developing new sets of occupational capacities. Alternatively, it might be incremental change or responding to external requirements such as occupational health and safety demands, periodic occupational licensing or other checks on capacities. So, the extent and scope of these changes in occupational requirements are likely to have particular implications for learning across working life. These range from learning an entire new set of occupational capacities through to the updating of existing capacities to respond to new technologies, such as required for the transport industry as discussed, through to small incremental changes that need to be addressed constantly. Such a diversity of purposes mean that, variously, perhaps midway through working life individuals will need to abandon their existing occupation and learn new occupational capacities. As noted, most likely, this learning will require engagement with educational programs, participating as a student, and securing recognition and certification of new occupational skills, as noted above, through to models of development work by in-service or work-based educational provisions, or those offered by industry or professional bodies. Then, there is

the kind of learning which can be secured through everyday practice, and perhaps assessed through external means. Again, depending upon the extent and scope of change required by the employer, different kinds of continuing education and training interventions will be required.

The overall point here is that the demands for occupations and their requirements to be practiced constantly change. For many in the workforce this means engaging in different occupations than those in which they were initially prepared or have been the basis of their working life to that point. When there are shifts in the demands for occupations, and most noticeably when this occurs suddenly and dramatically such as the closure of an entire industry sector, there can be dramatic implications for individuals and their communities. Hence, lifelong learning and provisions of lifelong education will have to focus on more than developing fresh sets of occupational capacities. There are also issues associated with an individual's sense of self as adults and workers and how this transformation shapes relationships between themselves and their community, workplace and possibly family.

1.4.2.2 Changes in Work Requirements

As well as transformations in demands for occupations, there are changes in the requirements for occupations as new ways of working, techniques, technologies and processes are adopted. Then, there are changes in the organisation of work or ways of working. So, the requirements to use particular technologies, vendor products, or respond to particular kinds of customers' needs might well generate sets of learning goals of a different kind. Above, mention has been made about changes in the requirements for the use of technology in workplaces and the reliance upon technology for many work systems. Here, learning about how to use this technology may well have conceptual and procedural dimensions (i.e. understanding and capacities to use technology effectively), and finding ways of engaging workers' interest in using this technology optimally. In these circumstances, it is likely that engagement with more experienced others, possibly educational programs and close guidance will be required to develop these capacities in the first instance. Then, processes of engaging workers in using this technology, and being monitored and guided through its effective enactment might be required. So, more than developing occupational procedural and conceptual capacities, there are also distinct values associated with new work requirements that might need to be developed. Often, these capacities are best learnt, and cannot always be taught. For instance, increased use of quality regimes and checks might require engagement in active monitoring and reporting processes, which can extend to commonly performed practices. For example, the requirements for enhanced hygiene and infection control in health care settings have led to a growing focus upon hand washing.

Yet, for this learning to effectively occur requires individuals to self-monitor their own behaviour in terms of frequency and thoroughness in their practice of hand washing. Such outcomes are unlikely to be achieved unless the healthcare workers come to appropriate or value the importance of hand washing and extend

the time and effort required to do this task effectively. So, beyond the provision of support, educational programs, the efforts of others, central to engaging with and learning through these experiences is how individuals come to engage in their work and learning activities.

1.4.2.3 Changes in Ways of Working

Workplace practices or ways of working are also subject to change. How work is organised to achieve workplace goals is subject to change and being able to adapt effectively to those new ways of working may require particular kinds of interventions for individuals to develop appropriate capacities. For instance, a fairly common phenomenon is for work to be organised on the basis of collaborative or team efforts. For those used to close supervision, this can be challenging as both the quality and quantum of decision-making individuals engage in changes. However, developing these capacities is not simply just about learning to work collaboratively, as there are a range of situational factors which shape how collaborative work progresses (Hodge, 2011). There is likely to be clear distinctions between groups of individuals coming to work together collaboratively where there is no particular hierarchy amongst workers, and when a group of workers such as those in health care are asked to work collaboratively, yet within a hierarchical work culture (O'Keefe, McAllister, & Stupans, 2011).

Consequently, as well as considerations of the extent, quality of the kind of changes that might also inform the kind of interventions required there are those associated with new ways of working. For instance, in the second set of circumstances (i.e. working collaboratively within a hierarchical structure) it may be necessary to focus on group processes in overcoming unhelpful hierarchical arrangements, whilst maintaining the activities of work team. Hence, rather than the approach to supporting lifelong learning being about individual development of occupational capacities there will be instances where it needs to be focused at the group level, yet undertaken in ways that build effective work relationships, rather than fracture those working relationships with awkward or inappropriate impositions upon individuals working in teams. Once more, it is easy to conclude that such arrangements require a consideration of both individuals' readiness and the kinds of workplace norms and practices that currently exist, and those to which individuals are being asked to conform.

1.4.2.4 Changes in Those Who Work

Over time, the composition of workforces change which can lead to the need for changes or even transformations in how individuals conduct themselves in the workplace, the language they use, and how they organise and distribute activities and opportunities. That is, the development of the capacities for individuals to engage with others effectively and do so regardless of their gender, age, and

language, or their racial or cultural heritage. In many Western countries, in particular, the percentage of women workers has increased and these are often now close to or in the majority in many work situations, requiring gender-inclusive approaches to work activities and interactions, including allocation of work tasks and opportunities for advancement. That is, processes need to be fair and equitable, and seem to be as such. Moreover, beyond the changing gender composition of workplaces, increasingly as workers have longer working lives the percentage of older workers increases and these kinds of workers become essential elements of workforces. Hence, multi-age workforces and teams of workers are potentially becoming more frequent in a range of occupations and workplaces. Therefore, to assist with effective engagement of all members of the workforce and to direct their efforts towards workplace goals, there may need to be development associated with being more inclusive, and supportive of such a group of workers. Often, these changes and the outcomes associated with them are not directly related with occupational capacities per se, but those associated with effective management, communication and interactions across workforces. Often these are the kinds of outcomes that are best learnt rather than being taught. That is, they arise best from individuals intentional efforts to learn (i.e. lifelong learning), rather than educational interventions seeking intentionally to develop these capacities (i.e. lifelong education).

Of course, individuals' dispositions (i.e. attitudes and values) are likely to be central to the degree by which they are willing or interested in engaging with others, and are respectful in workplace intersections with diverse groups of workers. In a study of older workers, a male who had retired from military service and was now working in a civilian workforce, confided that for 30 years he had only ever worked with males, and now he had to work with and be supervised by females, which he found quite challenging. It was not that he was unwilling to engage with female workers, he just was uncertain how to engage (Billett, 2010b). Needless to say, such changes are unlikely to be addressed through the provision of short training programs, mandated information sessions or edicts from management. Instead, the kind of outcomes required to be effective in a diverse workforce are required to be learnt. Achieving this outcome, is subject to individuals' intentionalities and efforts as generated through their intentional learning rather than the provision of educational experiences (i.e. a training program).

From these accounts of the two kinds of imperatives (i.e. personal and institutional), it becomes clear that it is necessary to delineate between a focus on intentional learning that is largely shaped by the individuals themselves (i.e. lifelong learning) and, provisions of support, guidance or teaching by others (i.e. lifelong education). Different kinds of imperatives are likely to be more reliant upon one or the other of these. However, even these distinctions will be moderated by the person-dependent nature of human learning and development, and also the extent and the kind of demands which are arising from workplaces. On the one hand is the readiness of the individual to engage with the learning entailed by these motives. That readiness broadly comprises what individuals can know, do and value. Yet, that readiness will be person dependent by degree. On the other hand, is the degree of change or transformations which comprises the imperatives of the occupation or

workplace whose amplitude and extent will determine the kind and quantum of learning required for individuals' employability. Yet, even the most apparently obvious of these kinds of changes will be confronted by individuals in quite person-dependent ways. What for one individual is a small change in work requirements, is for another wholly transformational. Accordingly, there can be no confidence that particular models of continuing education and training, continuing professional education, professional development or whatever it is called will be able to address all of the kinds of imperatives that are listed above. Instead, different kinds of models and approaches will be required, as shaped by the particular requirements of what needs to be learnt for individuals' employability and the particular readiness of those who are to learn.

1.5 Lifelong Learning and Work

It has been proposed in this chapter that when progressing issues associated with learning across working life, albeit under the aegis of everyday work, continuing education and training, professional development, vocational education or continuing professional education, considerations of forms of support and educational provisions guidance and support, need to focus upon supporting intentional work-related learning. Such a project should not and cannot be constrained by the orthodoxies of schooling and arrangements for tertiary education. That is, of considering mainly experiences provided through taught processes, in classroom type arrangements and in or through educational institutions will be insufficient. Instead, a broad account of how this intentional learning might progress is required. That accounting needs to include the range of learning experiences through which workers' personal imperatives can be realized as well as those of their occupations and workplaces. In particular, consideration needs to be given to how support and guidance for that learning can be made accessible in the context of work and working life. Given that much of this knowledge and circumstances pertain to what can be experienced, the workplace arises far more frequently in considerations than, for instance educational institutions and training rooms, although experiences in each of these can provide a set of important forms of support and guidance for learning. Finally, approaches for organizing, ordering, supporting and guiding this learning has been advanced through a consideration of curriculum provisions and pedagogic practices.

As has been advanced here, it is not possible to consider the promotion of intentional learning across working life without accounting for both personal and institutional motives. Together, it is these that provide the impetus for that intentional learning, and also mediate it. So, as has been elaborated above, issues such as individuals' readiness in terms of what they know, can do and value is central not only to how they come to engage in their work and sustain their employability, but also how they come to engage with processes that variously support, direct or guide in their work-related learning and development. Then, there are also workplace

imperatives. These include the kind of changes to which individuals need to respond to sustain their employability and what is afforded them to achieve that outcome, in terms of opportunities to engage in activities and interactions from which to secure the required knowledge. For instance, close guidance and opportunities to learn and become competent with new technologies, procedures or ways of working together are likely to be supported by guided experiences which might be referred to as pedagogic practices. Then there are the educational processes that assist individuals learn about procedures which they cannot observe, touch or otherwise directly engage with (e.g. symbolic knowledge, that which is opaque), factors that they cannot directly experience and values that are not modelled or difficult to access.

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Part II
Models, Processes and Practices for Supporting Lengthening Working Lives Internationally

Chapter 2
Employee Strategies in Organising Professional Development

Rob F. Poell and Ferd J. Van Der Krogt

2.1 Employee Strategies and Professional Development

Employees in the twenty-first century are given great responsibility in organising professional development. Increasingly their own input is called upon; in pursuing lifelong learning, in preserving their employability, in creating a career development plan, and in using the learning opportunities available in the workplace. This tendency has considerable implications for organising human resource development (HRD) in organisations. HRD comprises a complex constellation of actors, structures, facilities and processes for learning and development (Poell, 2006; Van Der Krogt, 2007). Every employee needs to create their) own path through this learning landscape. Thus, they need to operate strategically when it comes to organising their own professional development, with a view to acquiring the qualities that will enable them to conduct their present job, to obtain new/better positions in the labour market and to realise the necessary personal development.

One might argue that there is nothing new under the sun; self-directed learning by employees has surely been on the agenda for decades already? Nonetheless, HRD practices and the roles of employees in them are changing so dramatically in the twenty-first century that individual self-direction is no longer sufficient for employees to organise their professional development (Poell, 2006; Van Der Krogt, 2007). A major change in the existing HRD theory will be necessary to be able to better analyse the developments in organising professional development and to support organisational practices around HRD. The aim of this chapter is to contribute

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to such a change, by showing that employees can operate strategically in several ways when it comes to organising their own professional development.

The chapter will first describe two major changes that are to be expected in organising professional development, which have far-reaching implications for the roles of employees. First, a shift from a didactical to a strategic role, and, second, a shift from directing their professional development individually to doing so within a network of actors. The chapter will continue by presenting an employee perspective on organising professional development, which holds several ways for employees to operate strategically. Furthermore, the chapter will discuss existing empirical research about employees' professional development strategies and confront the results with theory. The chapter will finish with a number of suggestions for further research into employee strategies for organising professional development.

2.2 Changes in the Roles of Employees in Organising Their Professional Development

Fundamental changes are expected in the roles of employees in organising their professional development. These expectations relate to two trends for change:

- from didactic to strategic issues
- from individual self-direction to operating in an actor network

2.2.1 From Didactic to Strategic Issues: A Threefold Strategic Challenge

In literature, self-directed learning by employees is often viewed as a didactic issue (Bolhuis & Simons, 1999). Self-direction is focused on adjusting the learning process in such a way that learning targets are achieved. How employees themselves can play a substantive role in the management and direction of their professional development is barely discussed. In other words: it is almost entirely unrecognised that employees struggle with strategic issues in organising their professional development and yet that is clearly the case. After all, employees are expected to take account of three orientations. Employees are required to focus attention on (a) executing and improving their current work; (b) their employability on the internal and external labour market in the longer term and (c) their personal development as the basis for their further career and lifelong learning.

Firstly, in their professional development they will have to take account of their current work. A whole raft of changes is taking place in their work which they will have to learn to deal with. Secondly, in organising their professional development, maintaining and strengthening their position on the internal and external labour market is a clear point for attention. This is often designated as the employability

issue. Thirdly, as well as focusing on their work and their position on the labour market, employees will also have to consider their personal development. This does not merely mean the qualities that they need in other areas of their life – such as their private life or their role as a citizen – but also personal qualities that form the basis for their working life. They will for example have to learn how to take personal responsibility, to stand up for their own ideas and interests, and to manage their own career (Poell, 2006; Van Der Krogt, 2007).

In other words, employees face a threefold strategic challenge in their professional development. We would like to specifically point out that it is by no means logical that these challenge elements tie in with or underpin one another. In modern society, it is a far more difficult challenge to ensure that work and career make a positive contribution to personal development (Van Hoof, 2001). Experiences in their current employment environment will not always contribute to an interesting career (Korver, 2009). If employees focus above all on improving their performance in their current position, and as such above all develop job-specific qualities, they could in fact even worsen their position on the labour market as a result (De Beer, 2009).

2.2.2 From Individual Self-Direction to Operating in an Actor Network

There can be no doubt that the characteristics of employees have a major influence on their professional development (Poell, 2006; Raemdonck, 2006). Their own values and standards, their knowledge and skills and their learning motivation have a major influence on the progress of their learning processes. This realisation forms the background to the central role awarded to employees in organising their professional development. Self-direction is more effective because it acts as a greater motivator to employees, and offers them more possibilities for a tailor-made approach. Take for example theories on self-motivation for learning (the so-called *self-determination theory*; Martens, 2007), the self-direction of learning processes by employees (Bolhuis, 2000; Ratering & Hafkamp, 2000) and self-direction in groups and teams (see for example the communities of practice in Wenger & Snyder, 2000).

There are, however, other actors who wish to have an influence on the professional development of employees and who wish to help define the substantive direction taken in that development. Each of those actors – managers, colleagues, trade unions, government bodies, customers, HRD specialists and HRM managers – have their own interests in and their own visions on the professional development of employees. For employees, professional development is not only their own individual responsibility, but also requires them to learn to play the game with other actors in the learning network: namely involving other actors in their professional development, attempting to obtain their support and at the same time gaining an

understanding of their possibilities and interests. Increasingly, the employees are becoming actors who, in a complex interplay with other actors, are required to direct their own professional development, within a network.

2.3 Strategies from the Perspective of the Employee: The Learning-Path Cycle

Employees are the driving force behind many processes in organisations, even though employees can differ considerably in terms of their agency and workplaces can differ significantly when it comes to the learning opportunities they afford employees (Billett, 2001). Certainly in the organisation of processes aimed at training and development, they are the key actors who, together with actors in and around organisations, work on their professional development and thereby make use of structures and facilities. They too will have to start to operate strategically in organising their professional development. But what exactly does that mean, and how can employees arrive at that situation?

In the learning-network theory (Poell, 2006; Van Der Krogt, 2007), one of the central questions is: how can employees organise their own professional development in learning networks? In that process, the creation of learning paths is the HRD process within which employees have numerous opportunities to direct their professional development and to follow a strategic approach.

2.3.1 From Strategic Planning to Operating Strategically: Learning-Action Theories as a Framework

Generally speaking, 'strategy' is linked to what 'an organisation' and 'the management' do. They develop a strategy or course on the basis of which guidelines are derived for actions in and by the organisation. However, how should we view employees' operating strategically, when it comes to their professional development?

In many cases, operating strategically is summarised as the development and subsequent execution of a strategy. This is one of the possibilities of strategic operation, which we have designated as strategic planning and execution. However, there are other forms of operating strategically. In this vision on operating strategically by employees, we allow ourselves to be inspired by the vision of Mintzberg, Ahlstrand and Lampel (1998), in particular by the approach they describe as the 'learning approach' to strategy forming. The core of that learning approach is that actors – and although what they intended was an organisation, their vision on strategy forming can be applied to all actors – acquires experiences over the course of time, from which they can learn what they consider important, and how they can best achieve

those important values. Mintzberg et al. suggest that a strategy first emerges as a pattern from the past, subsequently perhaps becomes a plan for the future, and eventually develops into an approach that helps direct the operations of actors. This approach may be more or less fully developed, and may change over the course of time. After all, as time goes by, an actor 'learns' different forms of operating strategically.

Employees – who are these actors – can also have just such an approach when it comes to organising their professional development. They can perfect that approach over the course of time and as time passes, learns to operate successfully in their professional development. We describe this method of approach and action as their learning-action theory (cf. Argyris & Schön, 1996).

Employees can also make their learning-action theory quite explicit. That explicit theory is then the approach and the mode of operation they explicitly employ in organising HRD, based on his own values. In many cases, however, such a learning-action theory will only be made explicit to a limited degree. Nonetheless, even with a learning-action theory that is not completely explicit, the values of employees can be used to direct their professional development. Values and standards are expressed whenever employees experiences problems in their professional development; their goal will be to reduce those problems, and in that process, will allow themselves to be guided by their own learning-action theory. The same learning-action theory can also come under threat whenever employees are forced to choose to acquire particular types of experience, for example in their work, if they are forced to opt for a new job or if they wish to develop specific personal qualities. In such situations – which are often referred to as strategic choice situations – personal learning-action theory will serve as a guideline for their actions. Employees can also use their learning-action theory when they wish to identify learning themes about which they prefer to acquire systematic experiences.

We can distinguish between four clusters of values and standards that serve as the driving forces for employees in organising their professional development. These clusters relate to their professionalism, their personal entrepreneurship, their employeeship and their membership of social groups (Hendrix, 2008; Knip, 2007). The *profession-driven learning-action theory* is based on the values that hold sway in the profession (for example among doctors or teachers). Professionals themselves underwrite those same values; in literature, this is often described as the professional identity of the employee. In the *person-driven learning-action theory*, the employee considers it important to face up to challenges, to be able to exercise an influence, and thus to be able to express their own qualities. This value orientation is strongly related to personal entrepreneurship. The *work-driven learning-action theory* is the consequence of a striving for security, and acting in accordance with agreements previously reached. Employees who operate according to this learning-action theory likely view learning and working as an obligation, and expect to receive the resultant (material and non-material) rewards. The *socially-driven learning-action theory* is based on solidarity and social acceptance. People who apply this learning-action theory feel responsible for one another, and wish to establish social ties with one another, in which the overruling pattern is equality.

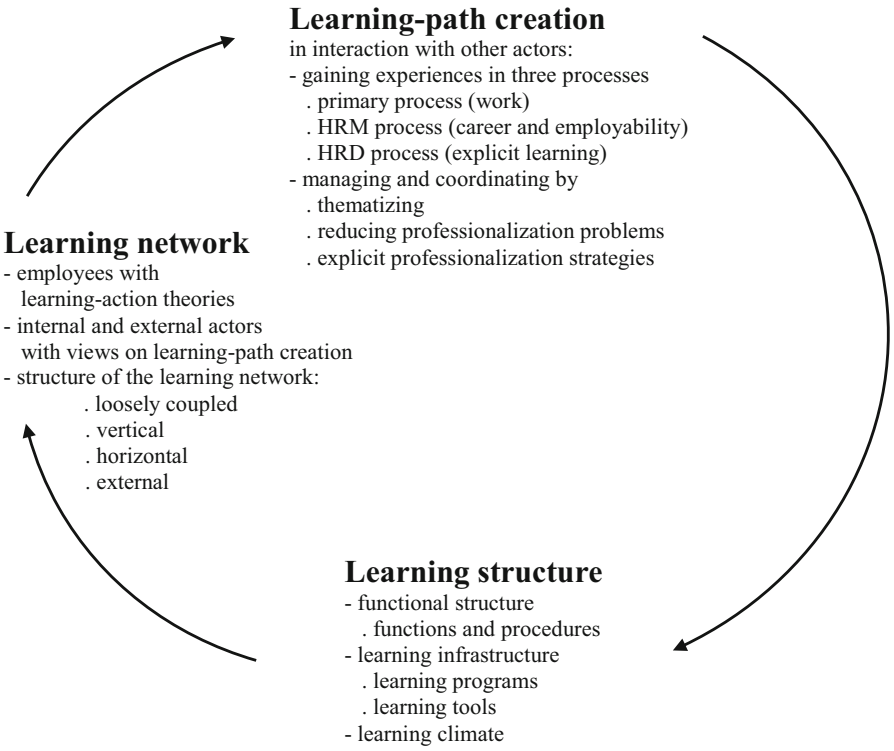

Fig. 2.1 Organising a learning path in a cycle: Structure of the learning network the learning-path cycle (Based on Poell, 2006; Van Der Krogt, 2007)

2.3.2 The Learning-Path Cycle

Employees can participate in a range of different HRD processes, such as learning policy forming, learning programmes, learning processes and learning-path creation (Poell, 2006; Van Der Krogt, 2007). Here, learning-path creation is the most important process for employees in directing their own professional development. In such a process, in interaction with other actors, employees acquire a range of different experiences – in executing and improving their work, in working on their career and in explicit learning activities – and together with other actors, the individual employee is able to thereby direct each of those experiences.

Learning-path creation takes place within a cycle, as indicated in Fig. 2.1 (Poell, 2006; Van Der Krogt, 2007). Employees create their own learning paths in the context of the existing learning network, which comprises all other relevant actors as well, each with their own views, beliefs and interests when it comes to organizing

learning. The structure of this learning network can be more or less loosely coupled, vertical, horizontal or external.

Learning-path creation is something employees do in interaction with other actors by gaining experiences in three organizational processes: (1) the primary work process, which affords them various opportunities for development; (2) the HRM process, in which career planning and employability are key notions; and (3) the HRD process, which focuses explicitly on employee learning (Poell, 2006; Van Der Krogt, 2007). As will be elaborated upon below, the process of learning-path creation can be managed and coordinated by the employee through thematizing, through reducing professionalization problems and through explicit professionalization strategies.

Employees creating their own learning paths can influence the existing learning structure in the organization, which is comprised of the functions and procedures around learning (functional structure), the learning programs and tools (infrastructure), and the dominant ways of doing concerning learning (climate) (Poell, 2006; Van Der Krogt, 2007). This learning structure, in turn, forms the context in which the constellation of actors needs to operate as they create learning paths. In this way the cycle is completed.

2.4 Three Strategic Access Routes for Operating Strategically by Employees

The learning-path cycle explains how employees are able to operate strategically in organising their professional development. From the learning-path cycle, we can identify three access routes for employees for operating strategically see Table 2.1: following existing structures and actors, aspect-based strategic operation and integrated strategic operation.

Table 2.1 Possibilities for employees to operate strategically in creating learning paths

1.	Following existing structures and actors	Following automatically
		Following deliberately, on the basis of strategic considerations
2.	Aspect-based strategic operation	(a) Mobilizing actors: which actors should be involved in the learning-path creation?
		(b) Creating a mix of experiences: using work and/or explicit HRD experiences
		(c) Directing: directing the learning path as you go or according to a plan
3.	Integrated strategic operation	Developing and executing an explicit strategy

2.4.1 Following Existing Structures and Actors

In this approach, an employee follows the existing structures and the wishes and ideas of other actors. The employee imposes few personal accents and deviates minimally from the structures and the plans and ideas of others. He can 'blindly' follow the structures and ideas of other actors, but it is also possible for him to take up this approach on the basis of strategic considerations. In that situation, he believes that sufficient of his own ideas can be realised in the current approach. This approach is dominant in most of the extant HRD/HRM research (e.g., DeSimone & Werner, 2012).

Operating in learning-path creation according to the existing structures and the wishes of other (powerful) actors can for example take place in a (bureaucratic) organisation where well-elaborated procedures exist, and in which the management and HRD specialists and HRM officers occupy powerful positions in the learning network. In professional organisations, employees above all follow ideas and plans of external bodies and colleagues. In entrepreneurial organisations, with their disconnected learning networks, they are often forced to rely on their own attitudes and wishes in directing their professional development. In organic organisations, with horizontal learning networks, the probability is high that employees will follow the ideas of the group and the group members. In this 'following' approach to operation, an employee will often nonetheless introduce his own accents. This happens because his own visions and attitudes play a major role in his interpretations of the learning structure, the learning network structure and the actions of other actors. (Often unconsciously), the employees will create for themselves a picture of the situation, and act accordingly (Poell, 2006; Van Der Krogt, 2007).

2.4.2 Aspect-Based Strategic Operation

Learning-path creation focuses on three elements: interactions with specific actors, acquiring specific experiences, and management and coordination. Each of these three elements can be used by employees to influence the learning-path creation. Employees can do this by mobilising (specific) actors, by focusing emphasis on specific experiences and by managing or directing their own learning path in a particular manner (Poell, 2006; Van Der Krogt, 2007).

2.4.2.1 Mobilising Actors

Employees can deliberately employ other actors for achieving their own ideas on their professional development. They can involve other actors – for example their internal and external colleagues, managers, (internal and external) trainers and learning advisors and HRM officers – in their attempts to give form to their

professional development. Mobilising those actors can take place while acquiring experiences – in work, career and HRD processes – or in managing those experiences.

In creating their learning paths, employees can attempt to involve other actors who occupy strong positions in the learning network, to encourage powerful actors to support their plan, and together with them, acquire experiences and direct those powerful actors. If they are unable to achieve their own ideas on professional development in a given situation, they can for example go in search of managers who they know to be positive in respect of their ideas. Together with them, they can attempt to adjust the learning structure and learning network structure in such a way that they can then work towards the learning-path creation, according to their own ideas.

For employees, involving external actors in their learning-path creation can also be an interesting option. Actors from outside the organisation are often independent – for example representatives of trade unions and professional associations – and can often apply the power arising from their specific expertise – such as HRD specialists from external consultancy firms – to support them and to bring about changes in the structures.

2.4.2.2 Strategically Deploying Work Experiences and HRD Experiences

Another important strategic option is to create and use specific experiences. Above all the mix of work experiences and explicit learning experiences, and the bringing together of these two types of experience are crucial for professional development of employees (Ministries of OCW/SZW, 2009).

Integrating work and learning has been a dominant school of thought over the past few years: working = learning. This has applied to such an extent that explicit learning is at risk of being neglected. Employees should in fact be able to focus the accent more on explicit learning experiences in connection with their position on the labour market, and the acquisition of new experiences. In the creation of learning paths, it is important to make sure that a good mix is created of explicit learning experiences and work experiences. Employees must be able to acquire sufficient experiences in their work to be able to compensate for problems arising at the interface between learning activities and work. Managers can concentrate on this aspect, as can trainers, and of course the employees themselves!

2.4.2.3 Planning Learning Paths in Advance, or Directing While Doing

The systematic planning of professional development of employees by managers, trainers and HRM officers continues to be a dominant element of theory of organising HRD. Nonetheless, employees themselves can be more responsible for the direction of their learning paths. They can do this by developing their own strategic individual learning plans, but at the same time the processes of thematization and

problematization in learning-path creation both offer employees opportunities to direct their learning paths 'while they work'.

When it comes to thematization, an employee can take an overall learning idea as the starting point and then further elaborate on that idea during the creation of the learning path together with his working and learning experiences. This can easily result in the ability of the employee, over the course of time, to formulate learning objectives, and to efficiently and with a clear focus work further on achieving those learning objectives. In the case of thematization, an employee can also build on positive experiences – and not only problems – that he acquires on the learning path (cf. the methods in 'appreciative inquiry', Tjepkema & Verheijen, 2009).

Tackling the problems that arise in the learning path also offers possibilities for adjusting the learning path as it develops. This is not merely a question of making the learning path itself more effective. Employees can also attempt to make the learning path 'more congenial', in other words making it tie in better with their own ideas on acquiring experiences.

2.4.3 Integrated Strategic Operation

Generally speaking, employees will have a broad idea on how they can organise their professional development, and which elements they consider important. They can however make those ideas more explicit. This enables them to gain a greater insight into the strategic elements of their activities and the relationships between those strategic elements. Employees can also develop an all-encompassing strategic plan, and make use of that plan in undertaking activities in learning-path creation. In developing this plan, they are guided by their own vision on professional development and the ways in which that development should be tackled in the situation in which they find themselves. In that connection their position in the learning network and the learning structure play an important role. This approach draws on ideas about personal development plans (PDPs), although it emphasizes the employees as pro-active champions of their own development, rather than as a passive recipient of development goals drafted by their manager (Habraken, Büchel, & Hafkamp, 2004).

2.5 Research into Operating Strategically by Employees

As we have seen, employees can introduce their own accents to their learning paths, in a number of different ways, and operate strategically in their own way. Although little research has been carried out so far, which explicitly investigates the organisation of learning paths by employees, research into learning activities in companies has provided some empirically-supported indications about how employees can lay

out their path in the wide variety of possible experiences in and around organisations. We will discuss these briefly.

2.5.1 Use of Personal Development Plans

A recent innovation in the field of managing professional development by employees is the introduction of the personal development plan (Habraken et al., 2004; Pool & Van der Bijl, 2000; Van Berlo & Van Lonkhuyzen, 2009). In such a plan, individual employees, generally together with his managers, draw up a plan that lays down a course for their learning activity in a given period.

Empirical studies into personal development plans in practice reveal that employees find it difficult to work successfully with such plans (Fenwick, 2003; Habraken et al., 2004; Halbertsma & Ratering, 2003; Janssen, 2009; Van der Bijl, Muller, & Pool, 2003). Furthermore, we must consider that personal development plans are probably less commonplace than is generally assumed (Ott, Van Dijk, & Messchendorp, 2004; Seezink, 2009).

2.5.2 The Role of Employees in Employability in Organisations

Increasingly, employability is becoming a personal responsibility of individual employees. Employees themselves must focus their attention on their position on the labour market, and help direct their own career. In that process, they can make use of their own professional development.

Research was carried out by the CNV trade union (Dik, 2002) into the theme of employability in 19 organisations. In all of these organisations, working towards employability in line with personal capabilities and wishes is considered an individual responsibility of the employee, while in a number of institutions it is viewed as a shared responsibility. In this framework, almost exclusively, use is made of training, and even then training that is directly relevant to the fulfilment of tasks in the workplace. The one-sided deployment of instruments (training) for employability is also reflected in a large-scale study by De Vries, Gründemann, and Van Vuuren (2000) into employability policy in organisations.

Forrier is one of the few who have carried out empirical studies (Forrier & Sels, 2003) into the training participation by employees, and their position on the internal labour market. Her studies revealed among other things that temporary employees more often tend to invest in training than ‘permanent’ employees. This investment is above all made in training courses which could strengthen their position on the labour market. It is interesting to note that companies often provide training courses with a view to improving performance in the employee’s current position, and less

with a view to future positions or labour market opportunities. For employees, the position on the labour market is apparently an important consideration, while the management is focused more on reducing problems in the current work situation.

De Vos, Dewittinck, and Buyens (2007) undertook research in six organisations into the degree to which employees direct their own career and the support offered to them in that process by the organisation. The direction chosen by employees themselves and the support they receive from the organisation both have a clear influence on career success. De Vos et al. also identified indications that self-direction by the employee cannot automatically be viewed as a substitute for career support from the organisation.

2.5.3 Learning Paths in Organisations

Specific research focused on learning paths has to date above all been undertaken to determine how employees work on their own professional development. These studies are above all focused on learning skills. In studies among nursing staff and teachers, the emphasis was on forms of learning and learning environments. Initial studies among probation officers focused on the way in which they create and direct learning paths, and the substantive accent they apply within those paths.

2.5.3.1 Learning Paths Among Nurses

In a study into health care, an attempt was made to chart out the learning paths followed by nursing staff (Lisman, Natte & Poell, 2007). The researchers identified four learning aspects according to which learning paths can be described, namely the learning theme (i.e. the subject of the learning), the learning form (i.e. how people learn), the learning environment (in what social network learning takes place) and the learning facilities (the support provided for learning). The analysis of data about the individual learning paths of almost 100 nurses employed in various hospitals identified four types of learning paths, which have been designated as follows

- the self-managed learning path (25 %), with an accent on the importance of the learning environment itself;
- the formal-external learning path (34 %), with an accent on the importance of learning forms in a formal setting (for example in vocational education);
- the social-emotional learning path (25 %), with an accent on the importance of learning themes, for example ‘counselling’ and ‘information provision’;
- the information-oriented learning path (17 %), with clear accents on learning through theory, through reflection and the consultation of experts.

An essential criterion for all four types is the learning environment. In all four learning paths, it turns out that social interaction is vital, but in different ways. In the

self-managed learning path, the individual structure is very important, as is the role of the manager. The formal-external learning path is characterised by considerable interaction with others, in formal learning settings. In the third type, the social-emotional learning path, contacts with patients and their family play a major role. In the information-oriented learning path, reflection and interaction with experts are common.

2.5.3.2 Learning Paths and Professional Development Among Teachers

Some empirical research has now become available into learning paths in the practice of the teaching profession. These studies above all focus on the processes and situations employed by teachers in their professional development. Gajadhar (2007) investigated the learning paths of 32 experienced teachers in a secondary school, in the form of personal interviews. She was able to identify four learning paths. She characterised these learning paths as:

- self-reflecting learning path, with as its central theme professional improvement and individual, critical reflection as its characteristic learning form;
- formal subject-didactic learning path, with a didactic learning theme and courses involving self-study as the characteristic learning form;
- private-focused learning path, with as its dominant characteristic learning in private situations;
- innovation-oriented learning path, in which the learning theme above all relates to new developments in education, a theme which is then tackled directly in a range of learning forms.

In a study involving 24 teachers at a secondary school, Schietecat (2007) proved unable to identify any different types of learning path. He was able to specify learning paths in the interviews with the teachers – on the basis of learning theme, learning form, learning environment and learning facility – but even within the same school, these learning paths varied very considerably. He identified as a possible explanation for the huge variety of learning paths the disconnected learning network, and the learning climate in the school in question. Within that particular school, the teachers were given considerable freedom in setting the course of their own professional development.

2.5.3.3 Learning Paths Among Probation Officers

An initial study was recently undertaken into the learning paths among probation officers. In this study, 28 probation officers were questioned in detail about the ways in which they create and direct their learning paths. One finding from this study is that five learning paths could be identified (Khaled, 2008; Sloots, 2008). These learning paths, it seems, are above all based on the themes related directly to the work of the officers in question. The five learning paths were identified as

- practice-based learning path; this learning path is primarily based on improving the process of service provision. For example, the officer selected a learning theme on motivating interview techniques, or learning to deal with clients with psychological problems. The officers worked on this theme by sharing experiences from professional practice with one another, in discussions of case histories, consultation meetings with colleagues, and work supervision sessions.
- knowledge-oriented learning path; characteristic of this learning path is that themes are selected that help generate new (scientific) insights relevant to the field of work of the employees. For example, the probation officers wanted to know more about specific psychiatric disorders among their clients. They attempted to acquire this knowledge by studying specialist literature or by inviting experts to discussion sessions.
- task-oriented learning path; this learning path is primarily aimed at obtaining or optimising a particular position. Particular issues relevant to that position are then taken as themes for the learning path. Within this learning path, employees above all learn by participating in specific learning environments, for example work discussion meetings and consultation sessions with experienced colleagues.
- social learning path; within this learning path, the chosen themes relate to the acquisition of skills relevant to working with colleagues. The learning theme focuses on social interaction, appreciation of others and appreciation of individual roles within the team.
- person-oriented learning path; probation officers who learn according to this learning path are driven by a theme that relates to their private (home) situation.

It was remarkable that despite the deliberate attempts made within the intensive interviews, in the case of 10 of the 28 probation officers, no learning theme was 'found'. These officers were unable to identify a particular theme about which they had recently acquired experiences relevant to learning, and to which they had deliberately given real thought.

2.6 Further Studies on Professionalization Strategies Among Employees

On the basis of the learning-path cycle, we have shown that employees are able to operate strategically in various different ways, in organising their learning paths. The possibilities range from following existing forces and structures, via influencing specific aspects through to the integrated management of their learning paths on the basis of an explicit strategic vision. We then discussed studies into the strategic practices of employees in organisations. These studies among nurses, teachers and probation officers showed us that, also in organizational practice, employees can operate strategically by creating learning paths and they do so in various different

ways. What, then, can we learn from these considerations, for further studies into the professionalization strategies of employees in organisations?

If we place the practical findings in the learning-path cycle with the various strategic options, we are able to conclude that employees themselves are only able to a very limited extent to explicitly make use of the possibilities for introducing their own accents to their learning paths. Within their professional development, employees only collaborate with other actors to a limited degree, make use of their experiences in a relatively random manner, and are only able to a very limited extent to manage their learning paths through thematization or by tackling their professionalization problems, let alone operating in an explicitly strategic manner, in creating their learning paths. They above all organise their learning paths intuitively, in accordance with their own, often implicit ideas, and by deploying their own qualities, and making use of the available learning facilities and other learning structures, in their own way.

In other words, the study reveals that employees above all follow the existing structures and actors, and to a limited degree operate according to particular aspects. There is almost no evidence of integrated strategic operation. In further developing ideas on employees operating strategically, we should assume this situation within organisations: within the learning-path cycle, employees operate according to 'following' and 'aspect-based' strategies. We could also tie in with the observed trend that employees themselves should be developing ideas on the directions in which they wish to develop (from operating didactically to strategically), and that the management of professional development should become an interplay between various actors (from individual self-direction to operating in an actor network).

2.6.1 Contributing to Management According to a Personal Learning-Action Theory

In managing their own professional development, the learning-action theory of employees plays an important role. They have a number of ideas (often still only in outline) about what they consider important in their professional development, and how they could tackle that development process. They can develop their own learning-action theory. They acquire experiences from which they could learn how to organise their own professional development within the organisation in which they are employed. For example, they notice that certain actors are willing to support them, that more facilities and support are available to them from outside the institution, that the existing learning structures offer more possibilities than they previously believed, and that they would perhaps be better to trust their own learning ideas and learning wishes. In this way, they can develop their own learning-action theory, in the process of actually developing that theory (i.e. learning by doing). This is extremely important, because it means that according to that learning-action theory, they can adjust their own learning paths, as they go. After all, it is

their own learning-action theory that forms the framework in interpreting and reducing their problems in the creation of the learning path, and also forms the basis for their explicit strategies. In other words, they learn to operate strategically by actually doing it (i.e. as compared to learning by acquiring work experience)!

2.6.2 Mobilising Other Actors from Within Existing Learning Networks

In many organisations, a set of relationships have been established between actors, over the course of years. In other words, learning networks become more or less vertical, more or less horizontal and more or less external (Poell, 2006; Van Der Krogt, 2007). In principle, employees have two options for dealing with the learning networks which have gradually come into existence in practice: either they operate according to the existing learning network structure or they specifically introduce different accents within that structure. The most important element is that within the creation of the learning path, they are also able to move outside the traditional learning networks in the organisation, as a consequence of which they are able to deliver new impulses to the learning paths.

The individual, often informal, personal network is an essential means of breaking free from the existing structures and actors. This is what the verb 'networking' generally refers to. However, in principle there are far more possibilities for breaking free from the existing learning network. If within an organisation the horizontal learning network is fairly dominant, an employee could attempt to add more vertical elements to that network, by involving more staff officers or line managers. Another important possibility is to strengthen the external dimension, for example by calling in external consultants or by approaching professional colleagues from other organisations or fellow professionals from other sectors. Employees could also attempt to change the existing power relationships in the learning network by calling in other actors. They could for example attempt to involve clients or representatives of client organisations for whom they work.

How employees operate strategically deserves further study and empirical research, so that realistic suggestions can be made that can then be used by the employees in organising their professional development.

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Chapter 3
Learning to Work Together Through Talk: Continuing Professional Development in Medicine

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3.1 Learning to Work Together Through Talk

Becoming a physician is a lengthy process. The trajectory begins after secondary school, may include a general university degree before entering 4–6 years of medical school, and ends with some form of structured graduate training program. The latter can last from 3 to more than 10 years, after which physicians must continue to learn throughout their professional lives. They need not only to stay abreast of the evidence that informs practice, but also to translate evidence into action within the social context of clinical environments. In discussing how all of this might progress, this chapter has three main sections. In the first one, we focus on learning from work when becoming a doctor and explore an emerging framework for practice-based learning in healthcare. We highlight the essential role of 'talk' as a mediator of

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learning and how it informs communication practices. We address limitations of learning from work, including social structures that promote communication breakdowns. In the second section, we outline the current state of formal continuing professional development (CPD) in medicine, the stated goal of which is to maintain or further develop physicians' competence. In doing so, we highlight the paradox between: (a) how CPD is currently organized around activities that promote decontextualized knowledge and skill acquisition, and (b) the evolving understanding that learning and participation in authentic workplace activities are inextricably linked. We explore the limitations of formal CPD by addressing the primary factor that threatens patient safety: breakdowns in communication among healthcare professionals. Since current CPD models foreground individual competence, the competence of healthcare teams—and patient care—likely suffer. In the final section, we explore recent developments in healthcare education discourse relevant to clinical practice since collaboration and communication across professional and disciplinary boundaries are prerequisites for safe patient care. We then envision a world in which workplace learning plays a central role in certified CPD, and how foregrounding talk as a medium for collaboration and learning can enhance practice.

3.2 Section I: Becoming a Doctor

Medicine is one of many health professions. Undergraduate medical education consists of mostly uni-professional training programs, which are accredited by governmental and/or local medical regulatory bodies. These training curricula are not the focus of this chapter; see "Educating Physicians: A Call for Reform of Medical School and Residency" for an overview (Cooke, Irby, & O'Brien, 2010). After undergraduate medical studies, medical students emerge as doctors and enter the second phase of clinical training, or graduate medical education, termed 'residency'. After residency, doctors become independent practitioners (Cooke et al., 2010). In primary care settings, as well as in hospitals, they work in teams usually composed of several fully-trained doctors and a complement of nurses and other providers. In teaching hospitals, teams might also include a number of doctors in training (i.e. residents) and perhaps undergraduate medical students if the institution is affiliated with a medical school. A newly qualified doctor might enter a 1 or 2-year period of foundational training in a broad area such as internal medicine or surgery with the aim of pursuing focused training in general practice, internal medicine, obstetrics and gynaecology, surgery, paediatrics, or emergency medicine. Not infrequently, physicians pursue further specialized training to master the nuances of a specific area within their specialty (Cooke et al., 2010). Examples include:

- Internal medicine: e.g. endocrinology, cardiology, gastroenterology
- Surgery: e.g. colo-rectal surgery, heart surgery, neurosurgery
- Paediatrics: e.g. cardiology, critical care, neonatology, emergency medicine

3.2.1 *Practising Medicine Requires More Than Acquiring Knowledge*

We can apply two metaphors of learning to doctors' education: 'learning as acquisition' and 'learning as participation' (Sfard, 1998). Medical education requires learners to command large amounts of codified propositional knowledge. A 'knowledge as competence' discourse emphasizes knowledge mastery as an indicator of competence (Hodges, 2006) and foregrounds formal classroom learning, embodied by the metaphor 'learning as acquisition' (Sfard, 1998). Although learning from clinical practice alongside more experienced clinicians in a classic apprenticeship model (Dornan, 2005; Swanwick, 2005) is a time-honored form of physician training, recent trends towards the 'learning as participation' metaphor explicitly recognize the social nature of healthcare (Sfard, 1998). Lave and Wenger (1991) popularized the notion of learning by engaging in situated social activity in 'communities of practice'. Medical learners, thus, prepare for independent practice not only through acquiring knowledge by reading books or attending lectures, but by gaining access to healthcare communities—through legitimate peripheral participation—in order to work and learn with and from others, and consequently develop their professional identities (Lave & Wenger, 1991; Dornan, Boshuizen, King, & Scherpbier, 2007; Teunissen et al., 2007). There is, accordingly, a movement to promote earlier clinical experiences within undergraduate medical curricula (Diemers et al., 2007; Dornan & Bundy, 2004; Dornan, Littlewood et al., 2006; Littlewood et al., 2005).

In contrast to formal curricula focused on knowledge acquisition, Eraut (2004) outlines four categories of work-based learning: (a) participation in group activities; (b) working with others; (c) assuming challenging tasks; and (d) working with clients [or patients], all of which apply to healthcare. Eraut (2000) also proposes various forms of non-formal learning at work, including: (a) unconscious *implicit learning* that may never reach awareness, such as how to interpret social cues, (b) conscious *reactive learning* that is spontaneous and responds to emergent learning opportunities, such as unexpected changes in patients' conditions, and (c) *deliberative learning*, which involves actively reviewing past events and experiences and planning for future learning, as, for example, when debriefing after clinical events. As he notes, learning at work is mostly invisible and, thus, easily taken for granted (Eraut, 2004). Hence, the resulting knowledge is acquired without awareness and remains tacit (Eraut, 2000; Reber, 1989). Billett (2001c), however, views the differentiation between formal and informal learning critically since it suggests a situational determinism that de-emphasizes the role of human agency in the constructive processes of thinking-acting-learning. To the contrary, workplaces are characterized by participatory practices (Billett, 2004) that afford opportunities for individuals to engage in work activities (Billett, 2001b) within a guided learning workplace curriculum (Billett, 1996, 2000; Dornan, Arno, Hadfield, Scherpbier, & Boshuizen, 2006). Despite tendencies to emphasize formalized components of medical education, recognition that the social nature of clinical work environments affords both

tacit *and* explicit learning has refocused clinical training on authentic patient care experiences.

3.2.2 *Learning to Practise Medicine Involves Participating in Patient Care*

Sociocultural learning theories stress the importance of both context and social interactions within those contexts as prerequisites for individual and collective learning (Brown, Collins, & Duguid, 1989; Durning & Artino, 2011; Eraut, 2007; Lave & Wenger, 1991; Yardley, Teunissen, & Dornan, 2012) and highlight learning by doing, or experience-based learning (Ashley, Rhodes, Sari-Kouzel, Mukherjee, & Dornan, 2009; Dornan et al., 2007; Teunissen et al., 2007). Features of curricula, such as predetermined learning objectives on the one hand and, on the other hand, social interactions between medical learners and nurses, doctors, patients, and peers while engaged in supported participation in authentic environments, combine to promote competence and a sense of readiness for practice (Dornan et al., 2007). Importantly, feeling invited to participate and engage with a team is essential to initiate and maintain meaningful participation (Sheehan, Wilkinson, & Billett, 2005).

Indeed, Teunissen (2015) claims that the key strength of learning from practice is that it enables people to learn how to perform, think, and interact in ways appropriate for their specific work setting. Further, health care settings are particularly challenging as workplace learning environments since not only are they highly contextual, they are also structured primarily for patient care rather than learning. In exploring this tension, he outlines an empirically-based framework for practice-based learning in healthcare workplaces (Teunissen, 2015). In conceptualizing those who participate in healthcare, including patients, as learners, he also views learning as a process of constructing meaning that is both situated in specific contexts at individual and social levels. Learning may be visible if it leads to changes in future behaviour, making it easier to describe and study. However, learning often represents reinforcing or slightly modifying existing knowledge or behaviours, making it difficult to recognize or observe. The utility of Teunissen's experiences-trajectories-reifications (ETR) framework is to explore how individual and collective effects contribute to acting and learning in workplaces (Teunissen, 2015). First, learners engage in acts within specific situations embedded in social and cultural systems, select and make sense of information, and then adapt their behavior, which leads to personal *experiences*. They can be helped in this process when clinical teachers maximize the affordances of workplaces, support learning, and help create meaning from participation in clinical work activities (Bleakley, Bligh, & Browne, 2011). Of course, different learners will experience situations—and draw meaning from them—differently, because of their unique personal histories. These collections and combinations of personal experiences lead to *trajectories* over time—for

multiple individuals, whose trajectories intertwine as their professional and social identities evolve. Indeed, Teunissen also asserts that because many aspects of individuals' experiences and trajectories are shared with others, norms and conventions develop, hierarchies are established and exercised, and specific tools are invented, and a shared understanding of the situational requirements for performance emerges (Teunissen, 2015). Examples of these *reifications* are standard operating procedures, practice guidelines, tools, ways of talking, and structured communication strategies. Given the importance of talk and communication in healthcare workplaces for both learning and patient care, we will give these aspects special attention.

3.2.3 Talk Is Central to Learning from Clinical Practice

Learning from work can be seen as a by-product of engaging in work activities through social interactions with patients and other members of healthcare teams, highlighting the important role of talk in learning (Edmondson, 2012; Steven, Wenger, Boshuizen, Scherpbier, & Dornan, 2014). Both formal and informal opportunities to engage in conversation, including interactions over coffee with more experienced clinicians, contribute in important ways that promote learning and encourage professional thinking (Sheehan et al., 2005). Indeed, "learning to talk", represents the shift in modern societies away from "manual work to discourse work" (Scheeres, 2003, p. 332) in which talking has become one of the main components of the work (Iedema & Scheeres, 2003). Thus, although talk has always played a role in the work of healthcare, rather than a supporting role, we argue here that talk, as discourse, now plays a central role since it is a core activity in learning and in caring for patients.

Oral case presentations are a prominent example of healthcare talk through which medical students legitimately participate in patient care. During oral presentations, medical learners verbally summarize and present information gathered through interviewing patients/families, examining patients, and—importantly—interpret what it means in terms of diagnosis and/or management. In general, giving an oral case presentation to colleagues represents a fundamental communication skill for *all* physicians, not only to report key findings of patient assessments and diagnostic evaluations, but also to demonstrate an ability to process, prioritize, and synthesize information, formulate possible diagnoses, and outline steps in patient management. *The key is to include only what is relevant to the listener in a given setting.* Haber and colleagues used rhetorical analysis to explore how medical students learn oral case presentation skills (Haber & Lingard, 2001). Students struggle to tailor presentations to the context, in contrast to more experienced physicians who view the rhetoric of their presentations as fluid and dependent on patient, time, and situational factors (Haber & Lingard, 2001). In short, physicians *must* master oral case presentations. Lingard and colleagues (2003) note that socialization

involves learning to speak like other community members, both learning to talk *with* and *about* patients (Lingard, Schryer, Garwood, & Spafford, 2003). Indeed, professional identities are "constructed and co-constructed through talk" (p. 40) (Monrouxe, 2010). In addition to demonstrating an ability to synthesize and integrate patient information, medical students shape their professional identifies though oral case presentations, particularly in learning to deal with and convey uncertainty (Lingard, Garwood, Schryer, & Spafford, 2003). For example, students observe more experienced doctors using modal auxiliaries (e.g. can, could, may, might must, shall, etc.) and adverbs (e.g. perhaps, maybe, etc.) in oral case presentations to manage uncertainty in a skilful manner (Lingard, Garwood, et al., 2003). Thus, oral case presentations represent a textual form of talk that comprises a significant form of work for many physicians, one that has important implications for both learning and patient care in all career phases.

The discourse of clinical teaching is, like case presentations, an important example of talk in medicine for which learning is an explicit goal. Supervising or attending physicians are more experienced and fully qualified doctors who oversee medical trainees and are ultimately accountable for patients' care. These more senior physicians often use questions to assess trainee competence during oral case presentations (Kennedy & Lingard, 2007). For example, supervising physicians often pose clarifying questions to support their own understanding of the case. In addition, three other forms of question help assess trainee competence: (a) case-related probing questions to explore the trainee's understanding of diagnostic decision-making or management plans, (b) knowledge-related probing questions to assess medical knowledge, and (c) challenging questions to test the trainee's assumptions of shared knowledge that emerge during case presentations. Thus, oral presentations reflect a "regular discursive meeting place" (p. S14) for medical trainees and supervising physicians that plays an important role in how trainees develop and demonstrate evolving competence and thus earn progressive autonomy (Kennedy & Lingard, 2007). Further, a critical discourse analysis explored descriptions that both medical students and physician supervisors provided about their moments of interaction supplemented by follow-up student debriefing interviews (van der Zwet, de la Croix, et al., 2014). The authors identified various discourses within the Question-Answer dynamic between physician supervisors and medical learners. These included discourses related to a 'power game', 'distance' and 'equality and reciprocity' between educators and learners. Importantly, this analysis revealed affordances of student-doctor relationships conceptualized as 'developmental spaces' that generate positive learning momentum for students and doctors and 'developmental vacuums', which stifle learning. Another study examining the audio diaries of seven general practitioners (GPs) during a 10-week-long clinical placement uncovered trajectories of developing relationships through evolution of dialogue (van der Zwet, Dornan, Teunissen, de Jonge, & Scherpbier, 2014). Doctors in the study used dialogue to define and shape their discourses of good medical practice, both influencing *and* depending on students' learning trajectories.

Supervising physicians often view their questioning practices as activities that serve both teaching *and* patient care. However, Goldszmidt and colleagues (2012)

found that supervisors' interruptions to pose questions or make teaching points led to detours from the standard case presentation format that disrupt critical information sharing (Goldszmidt, Aziz, & Lingard, 2012). There is also a form of questioning known in medical circles as 'pimping', which is a slang term (Kost & Chen, 2015) referring to the practice of posing a rapid series of ever-more difficult questions (Brancati, 1989) in a manner that can be interpreted as intimidating or even humiliating to junior medical trainees (Martin & Wells, 2014). In 'pimping' we see an example of the 'power game' (van der Zwet, de la Croix, et al., 2014), which is, ultimately, pedagogically unproductive. Indeed, as a manifestation of inherent hierarchical structures within healthcare, 'pimping' may have negative impacts on medical students and junior doctors, such as fostering future disrespectful behaviour (as a doctor) towards nurses, trainees, colleagues, and patients (Leape et al., 2012). And, yet, both senior surgeons and resident physicians said that intimidation and harassment could have legitimate educational value (Musselman, MacRae, Reznick, & Lingard, 2005).

Talk plays a central a role in learning, identity formation, and socialization of doctors(-to-be) as well as being a core mechanism of patient care. The dialogical nature of interactions within healthcare teams and with patients has numerous positive benefits and in many ways reflects the shift to 'discourse work' seen in other professions. Given the complexity of healthcare settings in which it occurs, however, talk also has the potential to amplify less favourable social structures and practices that impede learning and patient care. These insights highlight the need to understand the positive and negative impact of talk in clinical practice so that we can better design strategies to improve communication for patient care *and* learning.

3.2.4 Shortcomings of Practice-Based Learning in Medicine: When Communication Breaks Down, Learning Breaks Down

The achievements of modern healthcare are, unfortunately, accompanied by errors that have the potential to harm patients. A majority of them result from breakdowns in communication, which we are only beginning to understand. These relate to a number of factors, including authority gradients and power differentials (Cosby & Croskerry, 2004; Nugus, Greenfield, Travaglia, Westbrook, & Braithwaite, 2010), conflict (Janss, Rispens, Segers, & Jehn, 2012), incomplete information sharing (Manser, 2011; Maughan, Lei, & Cydulka, 2011), and failures to speak up about questions or concerns (Okuyama, Wagner, & Bijnen, 2014; Rainer, 2015). Team communication in operating rooms (ORs), for example, was characterized by 'high-tension' events that impacted whole teams including trainees (Lingard, Reznick, Espin, Regehr, & DeVito, 2002) and led trainees either to disengage from the communication or mimic their senior colleagues whose behaviour contributed to the

tension. Thirty percent of over 400 communication events in ORs reflected communication failures, which compromised patient safety (Lingard et al., 2004). These failures included not sharing information at all or giving inaccurate information, failing to take account of important contextual issues, and communication without clear purpose. Effects included delays, inefficiency, patient inconvenience, procedural error, and tension.

Accurate information sharing is particularly important at times of transition of care, such as patient handoffs or handovers, which are highly contextualized forms of oral case presentations. A handoff is the verbal exchange of information between health professionals when responsibility for patient care changes hands (Cohen & Hilligoss, 2010). This verbal communication occurs in person or by phone and is called handover or handoff—both are interchangeable terms. An example would be a physician or team of providers handing over care of patients at the end of a shift to a new physician or team before leaving the hospital, thus passing the baton of accountability. Handoffs are also essential when patients are transferred from one area of a hospital to another, such transfer from intensive care units to hospital wards when life-threatening illness has improved. Factors that predict handoff quality include conveying clear, reliable, and salient information, developing shared understanding, and having a supportive working atmosphere (Manser, Foster, Gisin, Jaeckel, & Ummenhofer, 2010). An effective handoff includes a clear assessment of a patient's status and anticipated problems (Manser, Foster, Flin, & Patey, 2013) with the goal of co-constructing a shared understanding of the patient (Cohen, Hilligoss, & Kajdacsy-Balla Amaral, 2012). In surveys, however, residents in emergency medicine report receiving little training in effective handoff practices, increasing the likelihood of communication errors; standardized handoff tools are rarely used (Kessler, Scott, et al., 2014; Kessler, Shakeel, et al., 2014). There are several essential needs: enhancing our conceptual understanding of handoff communication (Beach et al. 2012; Patterson & Wears, 2009, 2010) and then developing comprehensive strategies to promote effective communication (Cheung et al., 2010).

In high-risk settings of emergency departments (EDs), despite the best intentions, information can be erroneous or omitted altogether when one physician hands over patients to another at change of shift (Maughan et al., 2011). In addition to within-unit handoffs, which are generally planned and involve team members from the same unit who know each other, between-unit handoffs require particular negotiation and coordination skills, such as when patients require hospital admission from the ED to the ward for ongoing care. Patient admission handoffs are more complex due to differences between health professions in their orientations towards illness and treatment, unequal power distribution, and lack of established relationships (Hilligoss & Cohen, 2013; Nugus et al., 2010). During handoff from ED doctors to inpatient teams, a particularly crass discourse is 'selling' patients; in other words, to persuade the inpatient surgical or medical teams to accept patients for hospital admission by minimizing and/or embellishing aspects of their cases (Nugus, Bridges, & Braithwaite, 2009). The goal is procuring inpatient beds expeditiously in order to maintain the flow of patients out of EDs (Nugus et al., 2011), especially when waiting rooms are full of patients still needing care. Selling patients is but one

of four metaphors for handoffs between doctors in EDs, who are hospital gatekeepers, and physicians who care for patients after admission. Three others (Hilligoss, 2014) are:

1. Sports and games: handoffs as competition
2. Packaging: handoffs as expectation matching
3. Teamwork and conversation: handoffs as collaboration

These metaphors highlight that handoffs represent more than just information transmission. Handoffs are social interactions in which conversation partners co-construct meaning in the heat of clinical care (Cohen et al., 2012; Patterson & Wears, 2010). This explains why simple technical fixes such as handoff tools to structure information exchange are insufficient to prevent communication breakdowns. Importantly, the social nature of such dialogues develops professional identity (Burford, 2012) and a tribe mentality (Weller, Boyd, & Cumin, 2014). There is an interesting relationship, moreover, between those dialogues and the media through which they take place. In-person compared with telephone conversations, for example, are differently shaped by their social contexts in ways that are familiar to all physicians but currently ill-understood by researchers (Henn et al., 2012).

An insidious and pervasive communication deficit is a failure to 'speak up', or raise concerns to colleagues or supervisors (Okuyama et al., 2014); in other words giving 'voice' (Morrison, 2011) to information, ideas, and opinions (Van Dyne, Ang, & Botero, 2003). In contrast to communication lapses that represent honest mistakes (Reason, 2000), not speaking up and giving voice to concerns represent deliberate choices to remain silent (Maxfield, Grenny, Lavandero, & Groah, 2011) about poor and unsafe patient care or deficient actions by healthcare team members. Factors influencing whether or not providers speak up include (Okuyama et al., 2014): (a) being motivated by a perceived risk to patients depending on how clear the clinical situation appears and what needs to happen; (b) contextual factors such as relationships among team members, attitudes of leaders/supervisors, and organizational support; (c) individual factors such as confidence in skills and education and feelings of responsibility toward patients; (d) feeling that speaking up will make a difference, and (e) the perceived impact of speaking up, for example, fear of reprisals or being made to feel incompetent. The ability to ask questions, express concerns or admit mistakes—thus taking risks—is part of learning (Edmondson, 1999). An important counterpart to trainees feeling empowered to speak up is supervisors being sensitive to unease in colleagues, such as nursing staff, and creating spaces where concerns can be voiced (Edmondson, 2012). Being able to speak up is related to the climate of learning environments (Boor, Van Der Vleuten, Teunissen, Scherpbier, & Scheele, 2011) and the approachability of clinical supervisors (Boor et al., 2008), which influence willingness to seek support when help is needed (Kennedy, Regehr, Baker, & Lingard, 2009) and ask for feedback (Bok et al., 2013; Teunissen et al., 2009). When viewed through a lens of 'feeling safe to speak up', the harassment and intimidation that is regarded as legitimate and of educational value in surgery (Musselman et al., 2005), 'pimping' by clinical supervisors (Brancati, 1989; Kost & Chen, 2015), 'tense' communication in ORs (Lingard,

Reznick, Espin, et al., 2002), and witnessing rude behavior (Flin, 2010; Porath & Erez, 2009) are threats to learning and safe practice because they inhibit a workplace culture of speaking up. These factors influence the internal tension providers face when faced with choosing 'voice' over 'silence' (Eppich, 2015).

As an example of how social milieus contribute to communication breakdowns, we explore some factors that impacted the activation of rapid response teams (RRTs) in four Australian hospitals (Kitto, Marshall, et al., 2014). RRTs are comprised of physicians and nurses who provide expert support to colleagues when a patient's clinical status deteriorates. In one-third of patients whose clinical status warranted RRT activation, issues of hierarchy between treating physicians and nurses, discrepant perceptions about who makes ultimate decisions, and barriers to interprofessional communication prevented RRTs from being called (Kitto, Marshall, et al., 2014). The opposite also occurred: nurses activated RRTs as 'work arounds' to compensate for breakdowns in collaboration with doctors. Together, those two types of shortcomings represent collective incompetence (Kitto, Marshall, et al., 2014). Unfortunately, however, the dominant discourse of competence is an individualistic one, which deflects attention from relational issues like power dynamics or inability to adapt collaborative strategies to new or changing situations (Lingard, 2012).

To summarise, this section shows that learning to become a doctor is more than just acquiring knowledge. Learning and doing are part of the same process (Teunissen, 2015), and participating in authentic patient care within the social context of healthcare teams is essential for learning. Shared activities in these social contexts are structured through verbal and non-verbal communication (Lingard, Reznick, DeVito, & Espin, 2002) enacted during work activities. Thus, talk is the vehicle to co-construct the meaning of shared experiences and is central to learning from practice. Now that we have explored the role of talk in learning, we turn our attention to the current state of continuing professional development.

3.3 Section II: The Current State of Continuing Professional Development

After completing residency and subspecialty training, doctors become independent licensed practitioners alongside nurses and other health professionals. Doctors must, however, participate in educational programs for the rest of their careers. Continuing professional development (CPD) helps them acquire and maintain specialty-specific knowledge and skills, which meet the needs of their patients (Peck, McCall, McLaren, & Rotem, 2000). Participation in approved programs of CPD allows them to remain licensed (Sole et al., 2014), maintain their specialty certification (Campbell & Parboosingh, 2013; Hawkins, Lipner, Ham, Wagner, & Holmboe, 2013; Holmboe, 2013), and be 'revalidated' as practitioners who are fit for purpose (Archer & de Bere, 2013).

The United Kingdom's General Medical Council (GMC) defines CPD in this way:

> CPD is any learning outside of undergraduate education or postgraduate training that helps [physicians] maintain and improve [their] performance. It covers the development of… knowledge, skills, attitudes and behaviors across all areas of…professional practice. It includes both formal and informal learning activities. p. 7 (GMC, 2012)

Traditionally, CPD focuses on the maintenance and development of medical knowledge and skills that are specific to an individual doctor's specialty practice (Davis, Davis, & Bloch, 2008; O'Neil & Addrizzo-Harris, 2009; Peck et al., 2000) and takes various forms (Davis et al., 1999; Mazmanian, Davis, & Galbraith, 2009). Unfortunately, however, it targets relatively low order cognitive skills of remembering and understanding (Legare et al., 2015) rather than behaviour change, which is more likely to impact clinical practice. CPD is largely decontextualized from workplaces, thus divorcing learning from the social context of clinical practice and minimizing the complexity of the learning experience (Bleakley et al., 2011). 'Knowing in practice', which is an essential element of vocational expertise (Billett, 2001a), plays only a secondary role in CPD.

Likewise, interprofessional and multidisciplinary working, which is ubiquitous in clinical workplaces, is largely ignored by contemporary CPD. Current frameworks privilege individual over collective accomplishment because they are profession-specific, constrained by regulatory bodies (Barr, 2009) and removed from the talk between different health workers, which is necessary for safe, effective patient care. While the metaphor of 'learning as acquisition' (Sfard, 1998) has at least some place, traditional CPD foregrounds 'acquisition' over 'participation' disproportionately. The work of Lingard (2012), which contrasts individualist and collectivist discourses of medical competence, supports that interpretation. The individualist discourse views competence as a construct which individuals acquire and possess, is context-free, and represents a state to be achieved. In the collectivist discourse, competence evolves from participation in authentic situations, is situated across networks of persons and artefacts, and manifests in interconnected behaviours occurring within time and space (Lingard, 2012). Lingard notes that "competent individuals can come together to form an incompetent team" (p. 44). Therefore, individualistic CPD is not well aligned with patients' needs (Kitto et al., 2013; Rowland & Kitto, 2014). It does little to combat tribal conflict between providers from different disciplines, whose values and cultural norms diverge (Weller et al., 2014). It seems reasonable to conclude that siloed initial and ongoing health professions education (Kohn, Corrigan, & Donaldson, 2000) contributes to collective incompetence.

Collective incompetence is a serious problem because, according to the 2000 United States (US)-based Institute of Medicine (IOM) Report *To Err is Human* (Kohn et al., 2000), over 70 % of medical errors are caused by communication breakdowns within healthcare teams. Medical errors are a leading cause of death, estimated at 210,000–400,000 deaths/year in 2013 in the US (James, 2013). Communication within and amongst healthcare teams is a critical medium for enacting knowledge and forms the basis for teamwork (Salas, Cooke, & Rosen, 2008), interprofessional collaboration and learning (Hammick, Olckers, & Campion-Smith, 2009) and safe patient care. Communication breakdowns involve

verbal, non-verbal, and written communication during patient handoffs, communication with patients, and failures to speak up with concerns (Sutcliffe, Lewton, & Rosenthal, 2004).

Interprofessional education (IPE), enacted "when members (or students) of two or more health and/or social care professions engage in interactive learning activities to improve collaboration and/or the delivery of care" (p. xiv) (Reeves, Lewin, Espin, & Zwarenstein, 2010), is one potential antidote to collective incompetence. But it is, at best, a partial solution. IPE, continuing education, and workplace learning intersect (Kitto, Goldman, Schmitt, & Olson, 2014) as do quality improvement, patient safety, and continuing education (Kitto et al., 2015). In contrast to uniprofessional, off-the-job education, work is *the* primary medium for learning interprofessional collaboration and communication. The next section explores how physicians and other healthcare professional can enhance their clinical practice by the way they work, talk, and learn together around the central task of giving patients high quality care.

3.4 Section III: Aligning Workplace Learning, CPD, and Improved Care Quality

We now envision a world in which workplace learning plays a central role in certified CPD, and enhances practice through quality improvement. We focus on three examples of fundamental structural changes, which support collective team learning and enhance communicative practice. Each example exemplifies Teunissen's (2015) ETR framework by representing concrete experiences and trajectories of activities, shared between individuals and groups over time. Each structural change focuses on a mechanism for steering the talk of practice through reifications, which promote collective learning and are inextricably linked to patient care. In each instance, learning also benefited patients. These examples include: (a) interdisciplinary and family-centred rounds (b) patient handoffs in a children's hospital, and (c) use of checklists in surgery and for central venous catheter insertion.

3.4.1 Improving Patient Care Through Enhanced Interdisciplinary Collaboration on Ward Rounds

When patients are admitted to hospital, a team of physicians, nurses, and other allied health professionals cares for them. Each day, physicians review patients' status and responses to treatment, and modify care plans during what is known as a 'ward round'. It is in this setting that medical learners give oral presentations about their patients in order to inform the team about patients' status and contribute to plan care. Given the sheer number of providers involved, there is great potential for

miscommunication. Indeed, doctors and nurses may not communicate clearly with each other or even agree about the care plan (O'Leary, Thompson, et al., 2010). In response to these findings, O'Leary and colleagues re-engineered ward rounds into structured interdisciplinary rounds (SIDR) on both units with medical trainees (O'Leary et al., 2010) and those units without trainees (O'Leary et al., 2011). They standardised where and when SIDRs took place, who participated, and how long rounds lasted. Nurses' perceptions of collaboration and teamwork subsequently improved. Importantly, key safety measures got better (O'Leary et al., 2011): patients hospitalized on units with medical trainees had significantly lower rates of preventable adverse events. In a subsequent study, preparing physicians and nurses to share leadership within SIDRs improved teamwork and communication, as measured by a Safety Attitudes Questionnaire (O'Leary et al., 2014). Stein and colleagues (2015) built on this work and reorganized the workflow of a hospital ward to create what they call an accountable care unit. In doing so, they integrated: (a) unit-based teams, (b) structured interdisciplinary bedside rounds, (c) unit-level performance reporting, and (d) unit-level nurse and physician co-leadership. Similar to the work by O'Leary and colleagues (2014), Stein and team (2015) structured rounds to include interdisciplinary input and shared leadership structures. Dissimilar was the location of rounds themselves; Stein and team conducted rounds *at the bedside* with a standard communication protocol that also engaged the patient. All participants prepared in advance to promote efficient and accurate information exchange. A preset choreography allowed each actor to play their role, from unit charge nurse, bedside nurse, junior physician, medical students, to allied health professionals. The protocol included daily review of a quality safety checklist. Health professionals, patients and families all reviewed the plan of care together to ensure shared understanding. Importantly, restructuring the hospital ward into an accountable care unit enhanced communication and work climate whilst reducing unadjusted mortality rates by half (from 2.3 to 1.1 %). Examples of family-centred rounds exist also in paediatrics (Muething, Kotagal, Schoettker, Gonzalez del Rey, & DeWitt, 2007). These innovations worked in part because they brought together interprofessional teams in both time *and* space, which served to facilitate the talk of collaborative clinical practice and harmonize patient care.

3.4.2 Improving Patient Handoffs

Given the variable size, weight, and developmental stage of sick and injured children (Luten et al., 2002), paediatric units are at particularly high-risk of communication errors (Kohn et al., 2000). Some attempts to standardize handoffs, focusing solely on information transfer, have not yielded the expected benefits (Cohen et al., 2012) but more comprehensively designed handoffs have been successful. Starmer and colleagues (2012) developed a mnemonic to standardize verbal handoffs called I-PASS, whose elements were:

- I: Illness severity in terms of patient stability or potential for deterioration
- P: Patient summary of key events, ongoing assessment/plan
- A: Action list of key to-do items
- S: Situation awareness and contingency planning
- S: Synthesis by receiver to summarize key elements, ask questions, restate key to-do items

Beyond clear and accurate information transfer, this model encourages providers to process what they have heard, repeat back key elements, and speak up with questions or concerns. This process helps them understand what to anticipate and what tasks they must complete. In other words, *this form of handoff provides a space for co-constructing meaning*. Rates of medical error and preventable adverse events in hospitalized children fell significantly after the handoff tool was implemented, which also comprised training and structured changes to where handoffs occurred and who attended them (Starmer et al., 2013). The training included workshops, simulation exercises, faculty development tools, and materials to influence institutional culture. It addressed individual, organizational, and contextual factors linked to both care processes and patient outcomes (Starmer, O'Toole, et al. 2014; Starmer, Spector, et al. 2014). Involvement of nine hospitals in the research provided a multicentre view of how improved resident handoff could reduce medical errors, preventable adverse events, and communication failures (Starmer, O'Toole, et al. 2014; Starmer, Spector, et al. 2014). In 10,740 patient admissions, the rates of medical error and preventable adverse events decreased significantly without increasing the time required to complete handoffs. These results show how structured processes can shape social and organization culture, shift the discourse of a high-risk event, and improve patient outcomes. Similarly, adapting standardized handoff approaches to local practice in 23 children's hospitals significantly reduced handoff failures (Bigham et al., 2014), highlighting how important it is to contextualize such interventions to institutional cultures. Shared understanding among 'sender' and 'receiver' during ED patient handoffs and structuring the input of nurses provide space for dialogue is gaining traction (Gopwani, Brown, Quinn, Dorosz, & Chamberlain, 2015).

3.4.3 Maximizing the Potential of Using Safety Checklists

The use of checklists also improves patient safety. For example, a surgery safety checklist implemented in hospitals in many different countries reduced rates of death and complications significantly (Haynes et al., 2009), although social factors such as the collaborative competence of individual teams (Kitto & Grant, 2014) influence uptake and effectiveness. Similar contextual issues (Dixon-Woods, Bosk, Aveling, Goeschel, & Pronovost, 2011; Dixon-Woods, Leslie, Tarrant, & Bion, 2013) affect the uptake of measures to reduce the rate of potentially lethal bloodstream infections (Pronovost, 2008; Pronovost et al., 2006) associated with

insertion of long catheters into the veins of the neck or upper chest in patients in intensive care units to administer medications and fluids. As Bosk and colleagues (2009) note, it is a mistake to view checklists as simple technical solutions for complex sociocultural problems. Indeed, use of checklists may have unintended consequences when implemented in a top-down fashion. Building checklists for interprofessional contexts requires understanding of the politics and complex local power structures as well as cultural and relational factors of stakeholder groups (Kitto, 2010). We conclude that both handoff tools and checklists are powerful mechanisms to improve communication and practice-based learning if they are designed and implemented with local context and social factors in mind.

3.4.4 Common Themes Relevant for Workplace Learning, Quality Improvement, and CPD

The positive patient outcomes demonstrated in quality improvement initiatives linked to interdisciplinary rounds, handoffs, and the effective use of checklists highlight several key themes of practice-based learning. These include collective competence (Lingard, 2012), intersubjectivity (Billett, 2014; Teunissen, 2014) and reciprocal interdependence (Edmondson, 2012). Talk links these themes because it intertwines learning and working within the social fabric of workplaces. Collective competence involves making collective sense of workplace events, developing and using a collective knowledge base, and cultivating a sense of interdependency (Boreham, 2004). Thus, groups negotiate competence collectively through work and talk (Lingard, 2012). Viewing effective clinical practice through the lens of collective competence, it becomes clear that quality improvement work brings trainees and practicing clinicians together and nurtures meaningful collaboration and communication by focusing on patient outcomes achieved by the collective rather than on the competence of individuals. When teams have successfully implemented interdisciplinary rounds, an important component of their intervention has been co-leadership by physicians and nurses (O'Leary et al., 2014; Stein et al., 2015), which mitigated the tradition of dominance by doctors and made space for truly interprofessional care (Bleakley, 2013a). They shifted "multi-professionalism to interprofessionalism" (p. 461) (Bleakley, Boyden, Hobbs, Walsh, & Allard, 2006) and co-promoted collaborative learning and patient-centeredness (Bleakley et al., 2011). Although entailing communication between physicians only, the effective practices orchestrated by Starmer and colleagues (2012, 2013; Starmer, O'Toole, et al. 2014; Starmer, Spector, et al. 2014) reframed handoffs as collective events that integrated socio-cultural and adaptive elements of healthcare environments. When checklists are implemented as part of a care bundle, they promote dialogue by opening channels of communication that make health workers collectively responsible for outcomes.

The term intersubjectivity means that people working together share common understanding (Billett, 2014). This understanding involves sensing what others intend, think, and feel as well as imagining what impact their actions may have on those around them. Interactions are fundamental for creating shared realities (Teunissen, 2014). Further, intersubjectivity helps explain how members of established healthcare teams understand and make sense of individual preferences and idiosyncrasies. This makes constant negotiation for routine tasks unnecessary while reserving it for grappling with non-routine or novel problems (Sheehan et al., 2005). One can envision high degrees of intersubjectivity on medical wards with nurse-physician co-leadership and processes that promote collaboration. Billett (2014) highlights that intersubjectivity itself can be viewed as a desirable learning outcome among interprofessional teams.

Edmondson (2012) advocates reciprocal interdependence, which denotes a shared understanding that professionals cannot work and learn without each other. This notion is at the very core of interprofessional practice. Specifically, she states that healthcare is at times so complex that processes must constantly adapt to the unique needs of patients, providers, and workplace contexts. As all of these are in constant flux, providers need to work together to promote collective learning on a daily basis. Edmondson's conceptual model uses the term 'teaming' to highlight the behaviours rather than the people (Edmondson, 2012). Notions of complexity (Lingard et al., 2012) and team working (Bleakley, 2006) as 'liquid' and 'fluid' (Bleakley, 2013c) support this approach. Individuals coming together to solve collective problems should engage in 'teaming behaviours' to 'organize-to-learn' rather than 'learning to execute' (Edmondson, 2012). Those behaviours include:

- Explicitly framing activities as learning opportunities
- Making it safe to learn
- Learning from failure
- Spanning occupational and cultural boundaries

These behaviours are enacted through the discourse of workplaces; specifically, by asking questions, sharing information, seeking help, talking about mistakes, and seeking feedback. Leaders in Edmondson's 'teaming' model—lead nurses and doctors—frame their own roles in the process by espousing reciprocal interdependence and acknowledging their own fallibility in the service of psychological safety. Feeling safe to learn means feeling safe to disagree, to question, to be wrong (Edmondson, 2012), which is not typical of clinical practice. Indeed, even when we feel safe, we still engage in self-censorship and often remain silent, which inhibits knowledge sharing and group learning (Detert & Edmondson, 2011). Although we have focused on talk here, silence is discourse too (Lingard, 2013), especially when it comes to 'speaking up' and giving voice to ideas or concerns (Milliken & Morrison, 2003; Van Dyne et al., 2003; Eppich, 2015). The teaming behaviours outlined by Edmondson promote discourses of collective competence, intersubjectivity, and reciprocal interdependence. We now discuss ways forward by exploring how to enhance productive discourse in clinical practice to address communication breakdowns.

3.4.5 Use of Simulation to Promote Productive Discourse

The 2000 Institute of Medicine report recommended team training in simulated settings (Kohn et al., 2000), which promoted simulation-based education (Eppich et al., 2013). The team training literature, in general (Weaver et al., 2010) and simulation-based team training (SBTT) in particular (Weaver et al., 2010) is beginning to show that simulation is effective in domains such as obstetrics (Draycott et al., 2008). This work has supported the expanded use of SBTT to promote teamwork and interprofessional collaboration (Tofil et al., 2014). More robust needs assessment is required to ensure that simulation-based experiences align with the demands of clinical practices that depend upon interprofessional communication and collaboration (Eppich, Howard, Vozenilek, & Curran, 2011). Recent trends emphasize the importance of an interprofessional approach (Hammick, Olckers, & Campion-Smith, 2009; Thistlethwaite, 2012; WHO, 2010). We see potential for learners in team and interprofessional simulations to engage in types of talk that promote collaboration and team-working and the forms of communication that comprise substantive elements of the work (Iedema & Scheeres, 2003; Scheeres, 2003). Exploring simulation experiences in post-event debriefings (Cheng et al., 2014; Eppich & Cheng, 2015; Fanning & Gaba, 2007) prepares health care providers to reflect on critical events in clinical settings (Kessler, Cheng, & Mullan, 2014), which has been beneficial in paediatric intensive care units (Wolfe et al., 2014). Voices are emerging that call for the greater integration of simulation-based strategies in the educational paradigm of clinical practice (O'Leary & Woods, Woods, 2014; Weller et al., 2014), while ensuring that sufficient theory guides practice and integrates simulation within existing curriculum (Bleakley et al., 2011). So although healthcare simulation holds promise, it is not a panacea. How to best design and implement simulation-based activities during medical school and clinical training needs further study.

3.4.6 Aligning Simulation and Workplace Learning

It has been suggested that "learning by simulation can become a simulation of learning" (p. 606) and that simulation may, in some instances, no longer accurately reflect actual clinical practice (Bligh & Bleakley, 2006). These authors call for greater dialogue between practitioners in work-based learning and simulation-based learning, noting that advocates of work-based learning may glean important lessons from strategies simulation educators use to structure learning environments, integrate scaffolding, and facilitate feedback (Bligh & Bleakley, 2006). Team research could usefully address concerns about complexity including the need to study interprofessional teams in clinical settings during patient care (Salas et al., 2008). A pressing research agenda is to explore how healthcare providers learn collaborative practice and the personal and situational factors that influence this capability (Thistlethwaite, 2012).

Mechanisms to incorporate sociological factors such as hierarchy, power relations, professional identity, and interprofessional conflict (Kitto, Gruen, & Smith, 2009; Lingard, Reznick, DeVito, et al., 2002) in interprofessional team simulations are relatively underexplored. Some authors point out that current approaches to SBTT focus primarily on enhancing individuals' team orientation, and propose increased emphasis on collaboration, negotiation, and communication skills (Sharma, Boet, Kitto, & Reeves, 2011). One strategy to align simulation with workplace learning is to rely less on resource-intensive simulations using computer controlled manikins and expand the use of simulated patient methodologies. The latter approach uses real people trained to mimic patient conditions to recreate clinical events (Cleland, Abe, & Rethans, 2009). Using such trained people to serve as unannounced or 'incognito' simulated patients in real primary care practice (Rethans, Gorter, Bokken, & Morrison, 2007) and for phone consultations (Derkx, Rethans, Maiburg, Winkens, & Knottnerus, 2009) demonstrates promise. Unobtrusive data collection in actual clinical practice can serve as a starting point for simulation scenario building and inform subsequent feedback/debriefing. More targeted work is needed in this area; and it seems particularly promising to align the needs of practitioners and their patients with an educational strategy to improve discursive practice.

3.5 Summary

In outlining learners' paths towards becoming doctors, this chapter has highlighted the essential role of discourse in learning, identity formation, and patient care. Shared understanding and co-construction of clinical experiences—and learning—are mediated through talk. We have argued that most forms of CPD, which focus on the 'learning as acquisition' rather than the 'learning as participation' paradigm, are divorced from authentic clinical practice. We have provided examples of structures that strengthen collective learning processes--the space, the actors, the talk—and steer the discourse of practice in productive directions. Although adding structure may reduce agency (Teunissen, 2015), it likely augments learning from practice. We suggest that patient-focused quality improvement projects and simulations aligned to workplace needs could meet requirements for continuous professional development are both measurable and linked to authentic practice. Future work could usefully further explore how steering the talk of practice can promote learning.

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Chapter 4
Organizing for Deliberate Practice Through Workplace Reflection

Gunilla Avby

4.1 Introduction

In recent decades, evidence-based approaches for making decisions have been marking a new era of progress in different welfare sectors and offer great promise for the development of a range of professional practices. The notion that research should be able to tell us what works and, thus, contribute to improve work stems from the assumption that research has the potential to secure the effectiveness of interventions as well as legitimize a choice made by a rational individual (Biesta, 2007; Kvernbekk, 2011). The focus of the use of evidence-based approaches has thus far primarily been on practitioners' instrumental use of knowledge (Broadhurst, Hall, Wastell, White, & Pithouse, 2010; Nutley, Walter, & Davies, 2007). That is, a focus on actual changes in work practices, rather than on conceptual use in the form of enhanced awareness, knowledge and understanding of one's work and shifts in ideas and attitudes concerning various work aspects. Hence, caution has been raised that evidence-based practice that lacks the advantage of careful analysis or reflection and ethical considerations may have unforeseen and potentially harmful effects when intervening in the lives of service users (Gray, Plath, & Webb, 2009). The quest for evidence-based practice has highlighted the importance of workplace learning and reflection, as practitioners are increasingly expected to critically appraise research studies that inform their work and integrate new findings into their practice (Nutley et al., 2007; Thomas, 2004; Trinder, 2008).

This chapter addresses the issue of workplace reflection as a means of deliberately promoting professional learning and the remaking of practice. A basic assumption in this chapter is that professional learning has the potential to be enhanced when practitioners make use of different knowledge sources, such as practice

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experience, policy and research. A key argument is that when tacit knowledge (i.e. wisdom, experience and personal beliefs) is articulated and externalized, it can be shared by others, and can possibly be challenged using explicit knowledge (i.e. research and regulations) and function as the basis for learning (Nonaka & Takeuchi, 1995). Learning is understood here as transformation between tacit and explicit knowledge.

However, against the backdrop of previous research, learning in work presupposes a workplace designed to promote learning (Ellström, Ekholm, & Ellström, 2008; Gustavsson, 2007), in other words, has "learning readiness" (Billett, 2001). Therefore, the assumed reflection processes may not happen by accident; rather they have to be intentionally promoted (Dewey, 1917). Reflection on and in practice "is insufficient unless it is connected to deliberation and action-taking" (Evans, in press); humans are not created to just sit and reflect (Alvesson & Spicer, 2012).

In making its case, the chapter is structured in three sections. Following this introduction, the first section begins with a brief elaboration of the notion of reflection, as it is important to qualify and position this construct as a deliberate act. Then, a distinction is made between two different but complementary knowledge forms, research-based and practice-based knowledge. The distinction is made to underline the importance of the challenge that the interaction of different knowledge sources may create. In addition, two modes of learning in work, adaptive and developmental learning, are explored to gain a better understanding of the learning processes at work. By conceptualizing four levels of action: (i) skill-based or routinized action, (ii) rule-based action, (iii) knowledge-based action and (iv) reflective action, the different learning modes show how knowledge and reflection are used to different degrees to handle a certain task in the course of daily work. The first section concludes in a conceptual model that illustrates how reflection can be used to enhance professional learning at work. In the second section, two mini cases involving professionals in the public sector in Sweden serve as examples of how organized reflection can provide a mechanism for practitioners to interact with research-based and practice-based knowledge. In the third, some of the challenges involved in achieving reflection at work in order to support professional learning and the reworking of practice are addressed. These challenges are helpful for managing a broad strategic environment for learning at work.

4.2 Theoretical Framework

The concept and practices of reflection have generated considerable interest over the last decades, especially in the wake of the publication of Schön's book, *The Reflective Practitioner* (Schön, 1983). When the book was published, the literature on reflection was largely focused on its enactment in the context of education, training and preparing for work. The role of workplace reflection for practitioners in work had received far less attention (Boud, Cressey, & Docherty, 2006; Gray et al., 2009), which made the book a valuable contribution to the field.

The foundation for the concept of reflection originates from the philosopher and pragmatic John Dewey and his writings in the early part of the twentieth century

(Dewey, 1910, 1917, 1938). Reflection is typically described as a mechanism to translate experience into richer learning than might otherwise occur if reflection was not entertained through examining one's attitudes, beliefs and actions, to draw conclusions to enable better choices or responses in the future. Dewey attaches great value to the act of reflection and conceptualizes it as "active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusion to which it tends" (Dewey, 1910, p. 9).

If we elaborate further on the notion of reflection, with a focus on reflective practice, it has as its starting-point where "the taken for granted is questioned so that a potential learning situation is generated" (Jarvis, 1992, p. 178). Reflection can be understood to interrupt the flow of experience to produce knowledge. Dewey (1917, p. 9) suggests that there is "no conscious experience without inference; reflection is native and constant". Experience means living, and living takes place in an environment not in a social and physical vacuum. Individuals constantly interact with the environment to effect changes that would not otherwise occur. Reflection needs to take into consideration data beyond our personal, interpersonal and organizational taken for granted assumptions to enable an understanding of how knowledge has been constructed (Reynolds & Vince, 2004). Dewey turns against the notion of experience as a matter of individual consciousness based exclusively on the past, which indicates that a genuinely objective world enters into individuals' actions and is modified through their responses. Instead, he suggests that experience is intersubjective, communicative and social; it is a process of "undergoing", where private consciousness is an incidental outcome of experience (Dewey, 1917). Capacity to infer is precisely the same as the use of natural occurrences for the discovery and determination of consequences, which according to Dewey (1910) is the ability to act intelligently. Ryle (1945) suggests that there is no gap between intelligence and practice that corresponds to the gap between theory and practice, rather, to do something intelligent, whether internally or externally, that is, through thinking or doing, is to do *one* thing in a certain manner. To act intelligently and acquire knowledge through the power of conscious reasoning and deliberate analytical thought (i.e. reflection) symbolizes a rational individual (Sadler-Smith & Sheffy, 2004). The rational action lies within the individual to integrate the knowing of *what* is the case with the knowing *how* to perform (Ryle, 1945).

Reflection has long been regarded as a personal matter, but today we can see increasing emphasize on the social collective aspects of reflection. The demand for professionals to continuously engage with learning and renewal of professional capacity has been reinforced and opportunities for critical reflection and reflexive awareness of the impact of informal work processes are held to be necessary for promoting and supporting developments in practice (Baldwin, 2004; Boud et al., 2006; Broadhurst et al., 2010; Evans, 2011; Otto, Polutta, & Ziegler, 2009; Reynolds & Vince, 2004). Otto et al. (2009) have suggested the need for a second generation of evidence-based practice that recognizes the importance of reflexive professionalism, which entails the ability to draw on both research-based and practice-based knowledge to make justified judgements and decisions about what is desirable and

appropriate in various work situations. Subsequently, the interplay between different forms of knowledge are held to play an important role in achieving high quality in different work processes (Gray et al., 2009; Trinder, 2008), and in the development of capabilities to justify these judgments and contribute to sustainable development in the organization (Evans, 2015).

4.2.1 Two Different but Complementary Knowledge Forms

Like all phenomena, knowledge must be related to the time and context in which it is placed. Since Aristotle's tripartite theory of knowledge (i.e. episteme, techne and phronesis), several knowledge typologies have been consistently reported in the literature (Eraut, 2004; Estabrooks et al., 2005; Lindblom & Cohen, 1979; Ryle, 1945). Today, rapid changes in society and the increasing demand for transparency and accountability in work have undoubtedly challenged the existing knowledge base of many professions (Svensson & Evetts, 2010). While the evidence-based movement has highlighted the importance of basing practice on the most up-to-date and trustworthy scientific knowledge to promote an explicit and improved process for decision making, research has shown that practitioners put high trust in experience when it comes to dealing with the often complex situations encountered in daily practice. In this debate of what constitutes valuable knowledge for practice, a common distinction is made between two forms of knowledge: research-based and practice-based knowledge (Table 4.1).

Research-based knowledge is derived from empirical research as well as concepts, theories, models and frameworks. Practice-based knowledge is gradually built up from practitioners' experience, which is manifested in the expertise and skills in their craft. The source is often a specific problem that requires a solution, such as how to handle a service user's complaint.

Research-based knowledge is scientifically grounded and generated in a highly structured and systematic process, which generally begins with a thorough analysis of the problem under study before research questions and the issue to be investigated are formulated. If, for example, an increase in mortality among infants was found in a certain area, it would be necessary to take a range of different factors into account before actually targeting the root of the issue. While research-based knowledge rarely provides quick solutions to problems, practice-based knowledge predominantly serves to solve the problems that occur in everyday life and work (Nilsen, Nordström (Avby), & Ellström, 2012). The subjective and context-bound nature of practice-based knowledge limits its generalizability, whereas research-based knowledge in general aims for relevance beyond the immediate boundaries of the specific study (Ellström & Nilsen, 2014).

Research-based knowledge is explicit and is usually articulated in writing, which facilitates communication and knowledge exchange. Other forms of codified knowledge, such as different types of reports, may be considered research-based knowledge although they have not been subjected to a rigorous quality control process.

Table 4.1 Key characteristics of research-based and practice-based knowledge

Characteristics	Research-based knowledge	Practiced-based knowledge
Rationale for knowledge development	Obtaining improved understanding or explanation of problems	Finding solutions to problems
Desirable knowledge attributes	Possible to generalize	Content-specific, hands-on use in concrete, everyday situations
	Accessible to and understandable by others	Unique, personal, usually tacit knowledge
	Primarily expressed in writing	Expressed in action
Knowledge diffusion	Accessible and available	Embedded individuals and organizations
	Easy to share	Difficult to share
Content dependent	Not generally	Yes
Other terms in use	Scientific knowledge	Ordinary knowledge
	Research-based evidence	Practice-based evidence
	Theoretical knowledge	Everyday knowledge
	Codified or explicit knowledge	Tacit or implicit knowledge
	Know-that, Know why	Know-how
Means to develop knowledge	Learning-by-studying	Learning-by-doing
	Empirical studies	Pragmatic activities
	Theorizing	Experiencing

Practice-based knowledge, on the other hand, tends to be tacit, expressed through action rather than words (Nilsen et al., 2012). It is most easily picked up through imitation; it entails the acquisition of professional common sense knowledge and understanding of what means (actions) may lead to intended results (Kvernbekk, 1999). Without this general knowledge of action-result linkages, Kvernbekk holds that practitioners would have no knowledge that works and would have to start from the beginning in every situation they face. Thus, practice-based knowledge is a form of procedural knowledge that becomes increasingly embedded in the individual based on the results of study, experiences and personal encounters; it is also termed "know-how" (Garud, 1997; Ryle, 1945; Schön, 1983). Tacit knowledge is viewed as implicit thesis, often consisting of habits and culture that we do not recognize in ourselves and can therefore be difficult to access and communicate to others (Polanyi, 1966; Schön, 1983). But if this embodied type of knowledge remains tacit, it becomes impossible to expose its basis to critical testing.

Although analytically distinct, in practice the ways of knowing are not mutually exclusive; different forms of knowledge may work in tandem (Ellström & Nilsen, 2014). It is rarely an either/or choice for practitioners, but more often a question of making sense of many different sources of knowledge, some of which may be research-based and others that are practice-based. Neither is it possible nor desirable to isolate these two types of knowledge or knowing; the two knowledge forms reinforce each other and become the making of each other, and therefore neither one can be valued higher than the other (Dewey, 1910). Under different circumstances,

either knowledge source may dominate depending on factors such as the type of activity, education or profession. What is valid and counts as knowledge will differ from context to context and knowledge will be publicly accepted if it is believed to be true or to have a reasonable probability of being true; either it is based on research, other scientific procedures or on practice knowledge (Eraut, 2004).

Knowledge use tends to be a complex process that requires the individual's awareness of existing knowledge, motivation to use the knowledge, resources, such as time and money, and change at both an individual and organizational level (Backer, 1991). It is held that successful organizations have the ability to bring different knowledge together and organize learning at and between organizational levels (i.e. individual, group and system levels) (Garud, 1997). To better understand the knowledge use and learning processes in work, I turn to Ellström's (2001, 2006) distinction between two major modes of learning: adaptive and developmental learning.

4.2.2 Two Modes of Learning in Work

A basic assumption behind Ellström's (2001, 2006) model of learning is that different work tasks require different degrees of awareness that can be described on a continuum, from being conscious and deliberate to being routinized and performed with little or no conscious control. Here, the importance of action is identified in connection with learning. That is, learning in work is "a result of actions and interactions of individuals engaging in certain work practices" (Ellström, 2011, p. 109). Indeed, previous research in the field of workplace learning has identified that learning and work are intimately linked to daily practices (Billett, 2002; Ellström, 2001, 2011; Eraut, 2000, 2007).

In Ellström's (2001, 2006) action-oriented model of learning, a distinction is made between four levels of action: (i) skill-based or routinized action, (ii) rule-based action, (iii) knowledge-based action and (iv) reflective action. Learning is assumed to occur as interplay between routinized and reflective levels of action, which entails the use of knowledge and reflection to different degrees for optimal handling of a certain task encountered in the course of daily work. Consequently, the notion of learning means transformation of knowledge based on interactions between tacit and explicit knowledge (Nonaka & Takeuchi, 1995). Polanyi (1966) proposes that an individual's act of knowing exercises a personal judgement in relating evidence to an external reality of which he is seeking to apprehend. He argues against the belief that science is somehow value free. Rather he presupposes that many bits of tacit knowledge, such as informed guesses, hunches and imaginings, are essential in an exploratory act and when brought together, new knowledge may be formed. From a constructivist perspective, this integration process suggests that individuals construct new personal knowledge by combining different forms of knowledge. Thus, before research-based knowledge actually leads to changes in thinking and behaviour, the knowledge has to be actively related to what individuals already know.

Based on the idea that the four levels of action entail different levels of knowledge use and reflection, a distinction can be made between adaptive and developmental learning. The notion of adaptive learning encompasses the development of skills for handling routine tasks or problems that occur in daily practices (Ellström, 2006). In the learning process, the learner progresses from a reflective or knowledge-based level of action to a skill-based level of action and the learning is foremost based on experience (e.g. through processes of imitation and trial and error) and yields efficient, effective and reliable task performances that are stable over time (Ellström, 2011).

In contrast, the process of developmental learning moves in the opposite direction, from the level of skill-based and routinized actions to the level of knowledge-based and reflective actions (Ellström, 2011). Developmental learning has its focus on more radical changes of a prevailing situation and is assumed to be triggered when individuals or groups within an organization act to develop new ways of handling tasks, situations and often complex problems involved in a job (Ellström, 2011). This mode of learning is broadly similar to concepts such as Argyris and Schön's (1978) "double-loop learning" and Mezirow's (1991) "transformative learning".

Although experience-based adaptive learning may serve as a basis for daily practices, it is insufficient to challenge the existing state of well-learned and routinized thought and action patterns. Organizations as well as practitioners are required to deal alternately with well-known tasks and handle new problematic situations, thus, both adaptive and developmental learning are needed (Ellström, 2006). The challenge is to provide opportunities for developmental learning in organizations without sacrificing the necessary adaptive learning, or vice versa. To capture the learning processes at work is however difficult because learning and work are closely intertwined in daily practices and most learning within the workplace is actually found in the challenge of the work itself (Billett, 2002; Ellström, 2001, 2011; Eraut, 2000, 2007). But, as argued above, not only is it impossible to criticize an individual's unarticulated knowledge and skills but also there is a risk of underestimating their competence and their contribution to the organization. Thus, anchored in previous research on learning in work (Billett, 2001, 2004; Ellström et al., 2008; Rainbird, Fuller, & Munro, 2004), the workplace requires a design, not only for production, but also for supporting learning.

4.2.3 Workplace Reflection as Means for Professional Learning

There appears to be considerable consensus among researchers that contextual factors, such as how work is organized, are conditions for the learning process (e.g. Malloch, Cairns, Evans, & O'Connor, 2011; Rainbird et al., 2004). But, too high a focus on the situated character of learning can underestimate the importance of other forms of knowledge, such as theoretical ideas that are not context dependent,

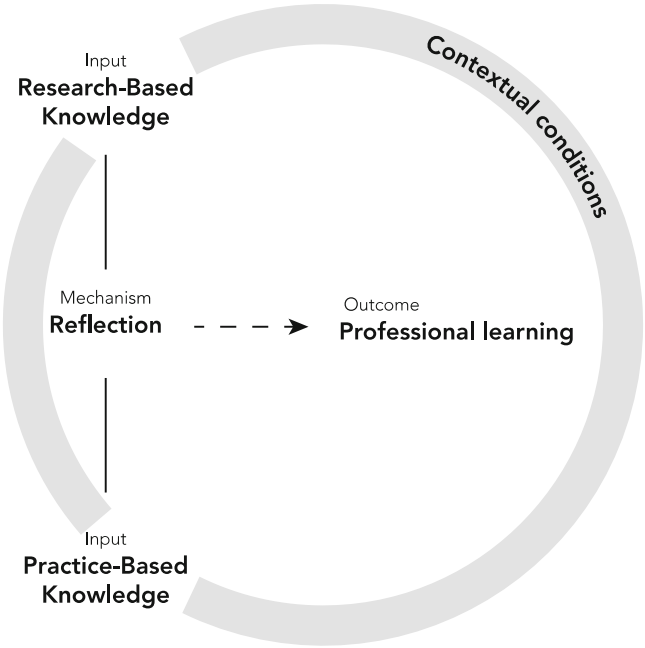

Fig. 4.1 Conceptual model. Reflection as a mechanism for the practitioner to interact with research-based and practice-based knowledge for professional learning

and thus constrain the interaction of theory and practice (Fuller, Munro, & Rainbird, 2004).

The basic assumptions behind this chapter are illustrated in Fig. 4.1. Professional learning has the potential to be enhanced when the practitioner use (interacts with) different knowledge sources, such as practice experience, policy or research, but only if some degree of awareness is involved. Importantly, clarification is necessary regarding the use of the word "professional". Basically, professions are knowledge-based occupations and professionals are held as agents and carriers of a knowledge society, which implies that practices are built on scientific principles (Brante, 2013). However, the professional turf and traits tend to change over time. The use of professional and professionalism have become attractive attributes that warrant a particular standard of work (Evetts, 2014) rather than merely symbolizing a practice based on science. Thus, being a professional is associated with the notion of expertise, which entails an individual being competent, accountable and experienced in a specific field (Svensson & Evetts, 2010). In light of the changing turf, doubts have been raised concerning the value and importance of drawing a sharp line between professions and other occupational settings (Evetts, 2014; Svensson & Evetts, 2010). Evetts suggests that both social forms share many common characteristics; for example, the strong dependency on organizational environments and that occupational identity is produced via specific work cultures, training and experience.

Here, the attribute "professional" is used to accentuate the expertise that is developed gradually in and through work.

A simple conceptual model illustrates how reflection can provide a mechanism for the practitioner to use different forms of knowledge to support professional learning. This chapter underlines the importance of how research-based knowledge may challenge established assumptions and practice-based knowledge among practitioners, and thereby also trigger learning. The contextual conditions are assumed to both enable and constrain knowledge use, and thus the opportunities for the individual to engage in and be supported for learning.

The figure has tentacles in the critical appraisal model of evidence-based practice, which emphasizes the importance of assimilating different knowledge sources to reach justified decisions (Sackett, 1996). The figure is also grounded in Dewey's (1910) philosophy, which underlines the importance of intelligent action, suggesting that action alone does not create learning but rather reflective thinking is essential; and the pragmatic belief that theoretical knowledge and practice-based experience are the making of each other, and therefore neither one can be valued higher than the other. Ultimately, the figure has been informed by previous research on learning in work (Billett, 2001, 2004; Ellström et al., 2008; Rainbird et al., 2004), which suggests that learning in work requires a workplace designed not only for production of goods or services but also to promote learning.

4.3 Organizing for Reflection at Work

In this section, two cases illustrate how practitioners in the public sector in Sweden deliberately drew on research-based knowledge to challenge existing practice-based knowledge regarding everyday situations and problems encountered in the workplace. Organized activities created a space for practitioners to distance themselves from their everyday work, thus triggering developmental learning.

The first case concerned reflection groups consisting of managers from three sectors (social work, health care and education) in a medium-sized municipality in Sweden. Each group consisted of nine managers, internally recruited by the management of each organization. The managers all had responsibility for both economic and personnel issues in their respective organizations. The group met on a monthly basis over 1 year, with a break in the summer. Generally, the reflection meetings lasted 3 h, including a coffee break. The reflection programme was initiated as an executive tool with the aim of facilitating the managers' learning for improved handling of everyday decision making in situations they considered particularly challenging or difficult.

The groups were all supervised by a facilitator whose task was to observe, provide a structure for the meetings and encourage the participants' activities as well as actively contribute to the discussions with theories, models and experience in the areas of leadership and organizational development. With a starting point in topics derived from the participants' real-life situations and dilemmas encountered at

work, the facilitator used challenging questions to enable the participants to examine their assumptions or opinions and discuss alternative ways of viewing the issues that were brought up. The discussions touched upon issues such as workload, problem solving in everyday work, feedback from managers and colleagues, conflicts among the staff, goal clarity and the execution of leadership at work, but also broader issues, such as changes in the surrounding environment, were discussed. Everything that was discussed was always carefully followed up at the next meeting to enable learning from any actions that had been taken in practice or additional concerns that had evolved concerning the topic.

In the second case, reflection groups were part of a trainee programme in social work in one of Sweden's ten largest municipalities. The first programme was initiated in 2006, with one succeeding programme so far. Each group consisted of five candidates. The first group of candidates was selected from 130 applicants aged between 25 and 33 years with disparate educational backgrounds. The group of candidates in the second programme was similar in composition.

The purpose of the trainee programme was to prepare the candidates for future managerial tasks in social work and the municipality sector. By allocating the candidates to different organizational departments, the programme aspired to achieve improved conditions for boundary-crossing work practices and networking within social work. Furthermore, broad marketing of the programme had a more long-term goal to change general public attitudes towards social work and make it more attractive to pursue a career in this sector. The candidates were seen as important ambassadors for the role of social work and the public sector in general. The first programme lasted 5 months; the second programme was extended to 9 months based on the evaluation of the first programme.

The programme comprised professional training and various forms of work practice. Group meetings devoted to reflection on issues that the candidates had encountered in work practice and that were relevant to management and leadership in social work were an important element. These reflection meetings were held monthly, with a facilitator providing a structure for the discussions. The meetings were arranged around the candidates' questions and logbooks from work practice. Articles and web lectures prepared by the facilitator were used to provide a broader and more theoretical view of the wide range of topics brought up, from abstract concepts such as learning to dilemmas experienced in the workplace. For example, discussions about workplace conflicts drew on theories and research findings on mechanisms behind conflicts and how individuals react in conflicts. This integration of practice-based experiences and research-based knowledge helped the candidates to view the issues from new perspectives.

Both reflection programmes provided a formal, scheduled opportunity to meet and discuss matters of relevance to the professionals' learning. The participants had full support from their respective management and their participation was encouraged, which gave this activity some priority. The reflection meetings lasted for several hours and the programmes were carried out over an extended period of time.

The programmes were evaluated by means of interviews. Analysis of the responses to an open-ended question on the participants' perceived impact of organized reflection on their regular work practice resulted in three overarching themes:

1. the participants experienced an enhanced capability concerning their role as leaders,
2. the participants felt acknowledged for their intellectual capacity to reason and to handle different work situations,
3. the participants believed that the reflection increased their general understanding of their work as their assumptions and experiences were challenged.

4.4 Discussion

The cases described above point to the relevance of a conceptual use of research, in contrast to the tendency of an evidence-based practice agenda focusing on practitioners' instrumental use of research-based knowledge. The findings from the analysis suggest that reflection improved the participants' overall understanding of their work, enhanced their security in their work roles, and made them feel acknowledged for how they reasoned and acted concerning various work situations. Research-based knowledge did not necessarily contribute to solving specific short-term problems at work, but was important in improving their understanding of the problems they had encountered, which could potentially lead to improved handling of similar situations in the future.

Evidence-based approaches are often described in terms of instrumental rationalism prescribing explicit and rational processes for decision making that deemphasize intuition and unsystematic professional expertise (Broadhurst et al., 2010). Adherence to a regulated and structured decision-making process (workflow) tends to be emphasized, that is, adaptive learning. In contrast, this chapter highlights the potential importance of using research-based knowledge to challenge established patterns of thought and action to achieve developmental learning. This type of learning may be particularly important for unlearning as practitioners tend to hold on to an intervention experienced to work (Lindblom & Cohen, 1979), rather than rely on new evidence of its ineffectiveness. To establish routines and habits through learning from experience is one way to cope successfully with the daily flow of events while maintaining a sense of security and stability in life (Giddens, 1984), also referred to as "habits of mind" (Brehmer, 1980, p. 226). A recent study lends support to the notion that behaviours are quite stable and habits are easily generated (Avby, 2015). If the cognitive system has a model developed through experience, which in addition has been proven to work, there is simply no need to find any better model to be used in a similar situation (Brehmer, 1980). Thus, to neglect negative information (i.e. contradictions to a belief or principle) makes sense under the so-called real-world conditions in which people usually have to learn. Because "belief is not a momentary mode of consciousness; it is a habit…mostly (at least) uncon-

scious; and like other habits, it is…perfectly self-satisfied". Doubt, on the other hand, is not a habit "but the privation of a habit" (Pierce, 1905, p. 168).

Unquestionably, there is a huge body of work suggesting that organizations and their members have great difficulty with intelligent mobilization of cognitive capacities (Alvesson & Spicer, 2012; Kahneman & Klein, 2009; Stanovich & West, 2000). People tend to interpret action-result linkages in terms of causal connections. Alvesson and Spicer (2012, p. 1196) have coined the term "functional stupidity", which refers to organizationally supported lack of reflexivity, substantial reasoning and justification. Functional stupidity puts constraints on individuals' employment of their own cognitive activities and thus can save the organization and its members from the frictions provoked by doubt and reflection; however, there is a risk of foregoing potential developments.

Despite the fact that practitioners tend to rely heavily on the same ordinary techniques of speculation practiced casually in everyday life (Lindblom & Cohen, 1979), the cases suggest that reflection made it possible to externalize aspects of knowledge that the practitioners had taken for granted or were unaware of, thus offering deeper and more useful understanding of their work practice. Thus, the findings lend support to the notion that organized reflection can offer a more thoughtful practice, a so-called deliberate practice (Ericsson, Krampe, & Tesch-Römer, 1993). Deliberate practice provides opportunities for training, professional learning and social problem solving that are designed and arranged with a focus on improving particular tasks and skills (Ericsson, 2008; Ericsson et al., 1993), such as in this case, the role as a leader.

The reflection programmes in the two cases had several characteristics associated with successful deliberate practices, such as individual motivation, a well-designed project, training opportunities (i.e. to reflect on the role as a leader) and feedback. First, without feedback, performance improvement is viewed as only minimal even for highly motivated learners (Ericsson et al., 1993, p. 367). Feedback was indeed a thread that ran throughout the meetings, in acknowledging the participants' ways of handling dilemmas in practice, encouraging the participants to test their concerns in the safe setting provided by the reflection meetings, and challenging and offering alternative views on the topics under discussion. Second, the participants in the reflection programmes were highly motivated to be part of the reflection groups. The reflection literature has emphasized that this type of activity requires the individual's active engagement (Boud, Keogh, & Walker, 1985). Mezirow (1991) states that conscious awareness and deliberate choice are prerequisites to reflection. Third, some researchers have cautioned that guided reflection may inhibit the dynamic and unpredictable nature of reflection processes, potentially turning reflection into a situation similar to responding to a questionnaire or following a recipe (Cressey, Boud, & Docherty, 2006). But Gray (2007) argues that a facilitator, coach or mentor is essential to facilitate managers' reflection, because this is an activity or skill that managers must learn; managers typically place a higher premium on action than on reflection. In these cases, the facilitators played key roles in structuring the discussions and linking the participants' experiences to relevant research-based knowledge. Without the facilitators' active input, it would

have been impossible to draw on research-based knowledge to the extent that was done in the two cases. Research on practitioners' use of research findings has highlighted the importance of facilitation (i.e. enabling strategies that provide practical assistance for individuals and groups) in the remaking of practice (Reynolds & Vince, 2004).

In times of intellectual capitalism, understanding how to create knowledge, maintain it and put it to strategic use concerns both practitioners and academics (Garud, 1997, p. 93). In the cases described here, it appears that the deliberate use of research-based knowledge can provide practitioners with analytical tools that make it easier to go beyond their specific here-and-now circumstances of current work practices or problems. The findings suggest that conflicts and ambiguity in the form of encountering other possibly new viewpoints are not potential threats to learning; rather they provide potential opportunities for learning (Dewey, 1910), and may possibly yield alternate perspectives and new ways of reasoning and behaving.

The cases demonstrate how workplace reflection *can* be used to cross-fertilize different knowledge forms. The extent to which expectations of a more evidence-based practice in various fields have actually led to an increased focus on workplace learning and reflection in practice is currently unknown. Matters relevant to workplace reflection and the evidence-based agenda include several research challenges. These include investigations into the extent to which reflection in the workplace that specifically draws on research-based knowledge occurs in various practice settings and the extent to which it is part of the management agenda. To what extent can the use of research-based knowledge facilitate learning and a more deliberate practice? To what extent can reflection activities challenge the knowledge that is taken for granted at the individual and organizational levels? And how is reflection that specifically draws on research-based knowledge best organized? There are many research questions that need to be solved for improved understanding of the role of research-based knowledge in reflection at work.

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Chapter 5
A Sociocultural Model for Mid-career Post-secondary Teacher Professional Learning

Annique Boelryk and Cheryl Amundsen

5.1 Teacher Learning and Quality Enhancement in Post-secondary Education

Around the world, governments have introduced quality assurance processes to enhance academic achievement and encourage continuous improvement in higher education (Higher Education Quality Council of Ontario (HEQCO), 2010; Quality Assurance Agency for Higher Education (QAA), 2012). Although there are many dimensions to the quality agenda (Krause, 2012), a significant focus on teaching and learning enhancement has led to growth of the educational development field and an increased emphasis on promoting and supporting post-secondary teacher learning related to the development of teaching practice (Christensen Hughes & Mighty, 2010; Randall, Heaslip, & Morrison, 2013; Sorcinelli, Austin, Eddy, & Beach, 2006).

Although the actions, activities and processes of educational development are varied, promoting and supporting teaching enhancement to improve student learning is a common focus (Amundsen & Wilson, 2012). This focus is grounded in empirical evidence that teachers' approaches to teaching directly impact student learning (Trigwell, 2010; Trigwell, Prosser, & Waterhouse, 1999). Specifically, it is claimed that teaching focused on the transmission of information leads to more 'surface' learning and that teaching focused on promoting learning beyond memorization leads to deeper learning (Entwistle, 2010; Kreber, 2003). When students adopt deep learning approaches, they extract meaning, engage with the subject matter actively, and generally reach a more thorough understanding. Although this

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dichotomized view of approaches has been criticized as culturally based (Kember, 2000), learning aimed at achieving a deep understanding is generally considered important because it prepares students for participation in a complex and changing world (Barnett, 2009). Supporting teachers in adopting instructional practices to increase deep learning amongst their students is considered an important goal for improving the quality of learning in higher education (Biggs & Tang, 2011). However, intentionally teaching for deep learning involves more complex instructional practices (Entwistle, 2010; Ramsden, 2003) and inspiring and motivating such changes to teaching practice is an undertaking that has achieved mixed results (Knapper, 2010).

Teaching for deep learning is a challenging, demanding, and continually evolving professional practice that comprises many interrelated elements in individual, social, and contextual dimensions (Kreber, 2010; Trowler, 2008). The individual dimension includes personal elements such as values, goals, life experiences, epistemologies. The social dimension includes interpersonal elements such as classroom dynamics, collegial interactions, and departmental culture. The contextual dimension includes elements such as classroom design, access to resources including technology, policies and procedures, and curriculum expectations. The effects of the interrelationships amongst elements in these three dimensions on teaching practice and on how teachers evolve as professionals is rarely part of educational development discussions. Furthermore, the learning processes of teachers who make changes to their practices in order to promote deep learning are poorly understood and under researched, particularly at the post-secondary level, and specifically for mid-career teachers. The authors of this chapter argue that without a theoretical foundation to aid in understanding teachers' learning processes and empirical evidence to inform the design of educational development approaches, the ability of this field to effect changes to teaching practice and improvements to student learning is compromised.

This chapter presents a model of teacher professional learning that addresses this gap. The model emerged from a phenomenological investigation of mid-career college teachers' experiences of development in teaching practice (Boelryk, 2014). The chapter begins by emphasizing the importance of adopting sociocultural lens in conceptualizing teacher professional learning and argues that Billett's (2002) sociocultural theory of co-participation is a particularly valuable lens. This is followed by a brief overview of the research from which the sociocultural model of teacher professional learning emerged. More specific details of the primary research leading to the development of the model can be found elsewhere (Boelryk, 2014). Next, it advances the idea of teacher professional learning as a multi-phased, multidimensional process through an examination of four distinct phases of the model and the interrelated individual, social, and contextual dimensions of each phase. The chapter concludes by discussing the implications for the design of educational development based on what the model uncovers about teacher learning processes.

5.2 A Sociocultural Lens for Teacher Professional Learning

Sociocultural learning theories contend that learning processes need to acknowledge interdependence between the individual and the sociocultural environments (Engeström, 2001; Wertsch, 1991). As Fenwick (2001) explains,

> Sociocultural perspectives understand learning to be fundamentally rooted in activity, tools (including language), relationships, and communities of practice. They look carefully at how learning is interrelated with the systems in which people work: the cultural, political, economic, and social dynamics of particular groups and contexts. (p. 1)

Post-secondary teaching practice occurs within the contexts of the classroom, the institution, and the broader culture (Trowler, 2008) and involves interactions between multiple individuals with diverse goals and identities. The authors of this chapter argue that teaching practice needs to be understood through a sociocultural lens and that educational development needs to adopt such a lens in designing support for development of this practice.

Billett's theory of co-participation (2002, 2004b) is a specific sociocultural theory that stresses the relational interdependence between the individual, social, and contextual dimensions of workplace learning. Billett (2004b) defines the learning process of co-participation as "the reciprocal process of how the workplace affords participation and how individuals elect to engage with and participate in work activities and interactions, and learn co-constructively through them" (p. 191). As the workplace is the primary location for continuous professional learning of post-secondary teachers, co-participation offers a powerful lens for examining the learning process underlying development in teaching practice. In the individual dimension Billett (2009) argues that individuals' engagement is "shaped by their intents, interests, access to particular kinds of discourses, values, and social sentiments" (p. 38). According to Billett, individuals ultimately exercise agency in how they engage in workplace learning activities and their individual intentionalities powerfully direct participation that results in learning. In the social dimension, Billett (2002) identifies the following affordances or invitational qualities that support learning: "(i) access to other workers; (ii) time to learn; (iii) inclusion in knowledge-sharing; (iv) discussion groups; (v) access to knowledge; (vi) implementation of training programmes; (vii) encouragement; (viii) attitude and skills of co-workers; and (ix) opportunity to practice" (p. 470). The social dimension influences how knowledge is constructed, how problems are presented, framed, and solved, and the kinds of expertise, support, and guidance available to individuals. Adopting a sociocultural lens generally, and Billett's theory of co-participation specifically, affords a richer understanding of the learning process underlying development of teaching practice. Such lenses provide a framework for investigating the interrelated individual, social and contextual dimensions of this process and for informing educational development approaches. In the post-secondary teacher learning literature, acknowledgement of such relationships is rare and not empirically well-developed. The sociocultural model of teacher professional learning presented in this chapter, and

the research on which it is based, offer insights into the nature of co-participation in the context of mid-career, post-secondary teacher professional learning.

5.3 Research Approach

The study from which the model in this chapter emerged, employed a descriptive phenomenological research approach (Giorgi, 2009). This approach allowed the researcher to document the authentic experiences of development in teaching practice and enabled investigation of the interrelated individual, social, and contextual dimensions of those experiences. Although a brief overview of the research approach is provided here, complete details of the methodology and findings are presented elsewhere (Boelryk, 2014).

Participants in the study were recruited from two mid-sized colleges in Ontario, Canada. The initial phase involved completion of an online survey and the second phase involved face to face interviews. The 12 interview participants were a subset of the 24 survey respondents. Both the survey and the interviews were designed to elicit rich descriptions of participants' experiences as is consistent with a phenomenological approach (Giorgi, 2009; van Manen, 1997). Open-ended questions were used to probe for experiential details (i.e. thoughts, feelings, and behaviours) related to a specific phenomenon of development in teaching practice. In addition, participants were asked explicitly about social and contextual influences on their experience. The interview participants came from a variety of disciplines including Health Sciences, Social Sciences, Business, Graphic Design and Technology. As is typical in phenomenological research, the interviews were all at least 1 h long and constituted the primary descriptive data for the study.

The 12 interviews were transcribed and analyzed following Giorgi's (2009) descriptive phenomenological approach. This approach is comprised of a rigorous four step process for analyzing participants' descriptions of experience. The goal of phenomenological research data analysis is to "integrate the data from various participants into one structure" (Giorgi, 2009, p. 132). In the first step, the researcher (first author) read through all the data for a sense of the whole. Then, the data of each transcript was divided into meaning units, which were determined by noting every time there was a shift in thought or focus. Meaning units were then transformed into phenomenological expressions or expressions that reflected the core idea of each descriptive segment. The assumption of a phenomenological approach is that core elements of the experience are embedded in individuals' concrete descriptions. The phenomenological expressions of all the interviews were then examined for higher level invariant essences. In descriptive phenomenology, essences are words or phrases that describe the structural elements of the phenomenon, as they appear in the consciousness of the study participants. In the phenomenological tradition, many essences can exist for a phenomenon since they reflect how the phenomenon appeared in the participants' consciousness, rather than a single objective truth (Giorgi, 2009). Once essences are determined, they are used

to generate an overall structure of a phenomenon, in this case the experience of development in teaching practice. This structure represents the experience across multiple individuals. In this case, the structure that emerged was the sociocultural model of teacher professional learning, which is described in the next section.

5.4 A Multi-phased, Sociocultural Model of Teacher Professional Learning

The model identified in Fig. 5.1 depicts a phenomenological structure of the experience of development in teaching practice that emerged from a study of mid-career college educators in Ontario, Canada. In the model, this experience is comprised of four phases: catalyst, idea development, implementation, and outcomes. Each phase is comprised of three interrelated dimensions: individual, social, and contextual. In each phase, essences are associated with each of the dimensions. These essences are high level descriptive words or phrases that emerged from the data analysis and represent an individual, social, or contextual dimension of the experience across all the study participants. Besides depicting the four phases and essences for each

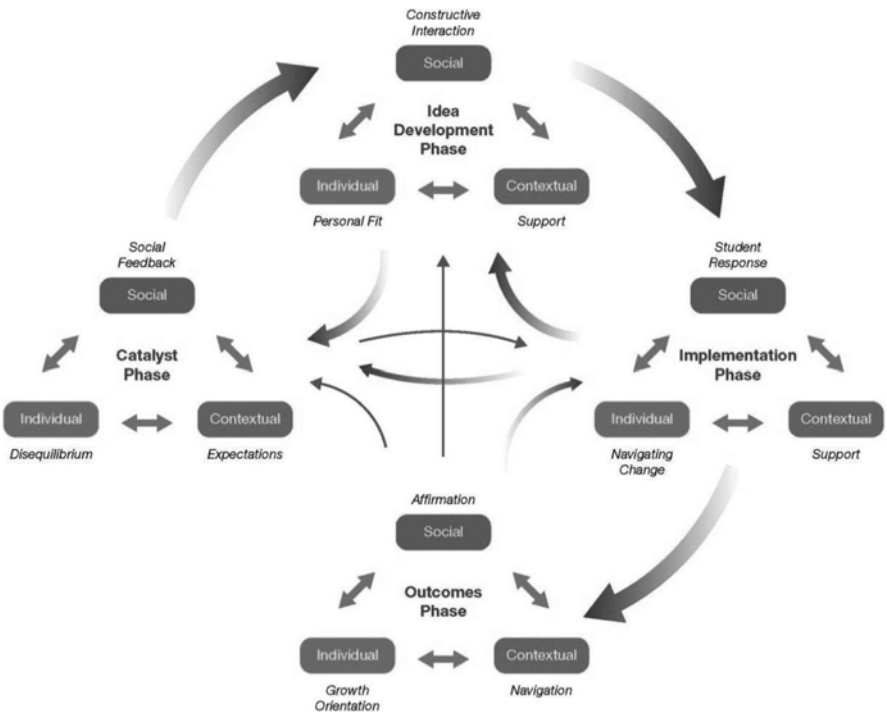

Fig. 5.1 A sociocultural model of teacher professional learning

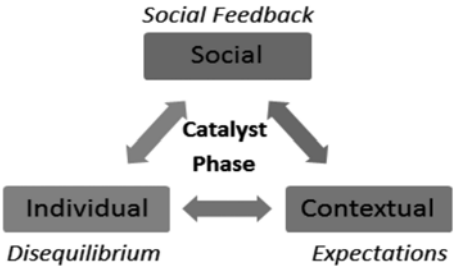

Fig. 5.2 Catalyst phase of the sociocultural model of teacher professional learning

phase, the model shows movement between the phases. Analysis of the research data revealed dominant pathways but no singular linear flow of movement between phases. The arrows in Fig. 5.1 depict this movement: the heavier the arrow, the more dominant the movement was in a particular direction. More research is needed to better understand the flow of movement between phases in the learning process. In the next section, each phase and the associated essences are described and then discussed in relation to Billett's (2002) theory of co-participation and other research on post-secondary teacher learning.

5.4.1 Catalyst Phase

The catalyst phase of the model, shown in Fig. 5.2, is comprised of the following essences: the essence of the individual dimension was disequilibrium related to one's teaching practice; the essence of the social dimension was social feedback; and the essence of the contextual dimension was expectations. In this phase, the essence of disequilibrium was dominant in participants' experiences and the desire to resolve one's sense of disequilibrium instigated the learning process. Disequilibrium as a catalyst for learning has been previously identified in both the child development (Dewey, 1938; Piaget, 1971) and adult development (Kegan, 1982; Mezirow & Associates, 2000) literatures. In the research informing this model, participants' experiences of disequilibrium were expressed in variations of the expression, "this can't go on". Research participants reported experiencing a sense of disequilibrium as a result of things such as disappointment in student performance, lack of student engagement, feelings of inadequacy in the classroom, and a general lack of satisfaction with the course or with the learning results based on their efforts. Although the exact nature of the disequilibrium varied, it involved experiencing misalignment between one's values, beliefs about learning, expectations, and/or goals and observations or perceptions of practice. The social dimension in the catalyst phase was characterized by the essence of social feedback (Fig. 5.2). Social feedback involved validation of one's disequilibrium and was described by the research participants using variations of the expression, "It's not just me". Social feedback affirmed for the study participants that their feelings of disequilibrium

were not just in their own minds and that such feelings were not a reflection of their competence as a teacher. Social feedback came primarily from teaching colleagues but also from students or professional colleagues and contributed as a catalyst to development because it made it safer for individuals to acknowledge their disequilibrium. The contextual dimension in the catalyst phase was characterized by the essence of expectations for learning related to the disequilibrium. These expectations came from a variety of sources including provincial and institutional mandates, professional accreditation bodies, or advisory committees. Contextual expectations contributed as a catalyst to development because they reinforced the teacher's need to address the disequilibrium.

In this model, the interrelationships between the individual, social, and contextual dimensions of the catalyst phase are described as follows. Individual teachers experience disequilibrium, which they would like to resolve. Feedback from the social environment that affirms the disequilibrium and contextual expectations related to the disequilibrium catalyze effort towards its resolution. For example, Krista, a health sciences teacher, struggled with the workload and overall effectiveness of mid-term performance evaluations for her nursing students (disequilibrium). When Krista raised this concern with her colleagues, she found that many of them had similar concerns (social feedback). Krista knew that the professional expectations for students in her program involved the development of reflective practice and self-assessment skills and she felt that there had to be a more effective way to conduct these evaluations (contextual expectations).

In the educational development literature, disequilibrium as a prompt for development in teaching practice is explicitly identified by Pickering (2006). She found that day-to-day experiences that disturbed university teachers' core beliefs produced uncertainties or tensions causing them to adjust their pedagogic perspectives. The model described here supports Pickering's finding that disturbances are just the beginning of the pedagogic change process and that student encounters are the most powerful source of disturbances. Prior to her study, evidence of disturbances, tensions or disequilibrium as a catalyst for development in teaching can be found in narrative accounts of this process (Amundsen, Saroyan, & Frankman, 1996; Entwistle & Walker, 2000). Both of these accounts provide evidence that a sense of disequilibrium related to student learning and feelings of discontent prompt post-secondary teachers to explore alternative approaches to teaching.

In Billett's (2010) discussions of co-participation, he identifies the importance of maintaining equilibrium for one's "sense of self" (p. 7) and explains how important it is for individuals to "secure personal coherence in encounters with the social and brute world and to overcome or reconcile disequilibrium" (p. 7). The results of this study support Billett's argument in the context of teaching. In the sociocultural model of teacher professional learning, the essences of social feedback and contextual expectations align with examples of workplace affordances described by Billett. For example, in Krista's description of her experience, although she had felt for quite some time that the mid-term evaluations were not as effective as they could be, she became more intentional about finding another way to conduct them when she realized that her colleagues had similar concerns (social essence). Knowing that the

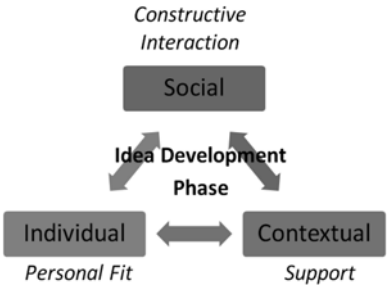

Fig. 5.3 Idea development phase of the sociocultural model of teacher professional learning

curriculum for her program expected her to facilitate learning related to self-assessment and reflective practice (contextual) also contributed to prompting development. These findings support Billett's (2004b) argument that the intersecting and "relational interdependence" (p. 191) between the social and the individual cognitive experience is what ultimately results in learning and change in the workplace. Although individual goals and intentionalities will direct learning, the invitational qualities of teachers' workplaces (social and contextual elements) are significant in shaping and directing the learning.

5.4.2 Idea Development Phase

The idea development phase of the model, depicted in Fig. 5.3, is comprised of the following essences: in the individual dimension, there is the essence of personal fit; in the social dimension, there is the essence of constructive interaction; and in the contextual dimension, there is the essence of support. The idea of constructive interactions occurring with respected peers was prevalent in all participants' descriptions of experience. Respected peers included departmental colleagues, professional colleagues, colleagues within the institution, educational developers, or other learning professionals. In the individual dimension, the essence of "personal fit" is used to describe the process participant teachers went through to figure out how various pedagogical ideas or strategies aligned with their personal construct of teaching (i.e. vision and values, disciplinary context, goals, perception of students). For many participants, the process of finding personal fit took a significant amount of time because they found it challenging to conceptualize how a new practice translated to their specific teaching context. Making changes to practice involves conceptualizing the implications for particular students and particular subjects, considering how it fits with curricular expectations, and determining how to make it manageable from a preparation, delivery, and marking perspective. In the contextual dimension, the essence of support refers to the perception of support from contextual factors such as time, curriculum and policy frameworks, departmental cultures, technological capabilities, and classroom space.

The interrelationships amongst the individual, social, and contextual dimensions of the idea development phase for participants in this study are described as follows.

Individual teachers explored ideas that had surfaced through constructive interactions with respected peers in relation to the disequilibrium they were experiencing. The individual goal of such constructive interactions was to address the disequilibrium in a way that fit with their personal construct of teaching. Participants had to perceive contextual support for ideas in order for them to be entertained. Access to constructive interactions with respected peers and perceived support from the work environment was essential in the process of idea development and working out ways to address one's experience of disequilibrium. For example, George, a social science teacher, was struggling to make adjustments to his classroom delivery in order to support a student with special needs (catalyst – disequilibrium). Legislation in Canada mandates such adjustments (catalyst – contextual expectations). George discussed how to navigate such adjustments with a variety of student service professionals that he respected (idea development – constructive interactions). With the support of these professionals and collegial dialogue (idea development – constructive interactions), George was able to conceptualize classroom adjustments that honoured his values and goals for the classroom (idea development – personal fit). George worked out his ideas knowing that his supervisor trusted him to do what was best for the students (idea development – contextual support).

In Billett's (2009) work on co-participation, elements of the individual dimension (i.e. life history, values, goals and beliefs) direct engagement in workplace learning. The essence of personal fit that emerged in the idea development phase of this model supports Billett's argument that the individual and who they are, powerfully affects the nature and direction of workplace learning. One teacher participant described how she was on "high-alert" when she attended professional learning workshops for ideas around debriefing group work, something that just wasn't working in her classes. The social essence of constructive interaction aligns with Billett's (2004a) conceptualization of "workplace participatory practices" (p. 312). In such practices, individuals engage with ideas they encounter through "relational, interaction with a social source" (p. 315).

The notion of teachers trying to resolve disequilibrium in their practice in ways that fit with who they are as individuals, what they are trying to achieve in the classroom, and how they conceptualize their practice has been examined by other researchers. Kreber (2010) refers to this sense of personal fit using the term authenticity and, based on a study of nine academics, has linked authenticity to individual elements such as educational goals, conceptions of learners, values, and self-concept as well as social elements such as discipline, sociocultural context, and institutional context. In the educational development literature, the idea that teachers powerfully affect the nature and direction of their professional learning is also supported by the work of Åkerlind (2005) and McAlpine and Weston (2000). Akerlind's research reveals five different approaches to development amongst university teachers and determines that the approach teachers take is related to "both their contextual circumstances and their personal intentions underlying their work as an academic" (p. 26). McAlpine and Weston place personal goals at the centre of their model of reflection because "goals represent the teacher's expectations or intentions about what is to be accomplished in terms of instruction and form the basis for actions to

be taken in order to achieve this" (p. 368). Although goals and intentions are central to the notion of personal fit, there are also practical elements such as what the students are like, the classroom logistics, and the subject being taught. Pickering (2006) uses the term "pedagogic perspective" to describe these practical aspects and found that they were an important influence on novice university teachers' decision making because they influenced their sense of what was "possible, plausible, and desirable" (p. 323). Findings from the study described in this chapter suggest that the notion of pedagogic perspective is not unique to novice teachers.

The social essence of constructive interaction is significant in idea development and represents what Warhurst (2008) refers to as "purposeful pedagogic interactions" (p. 459). In the educational development literature, Roxå and Mårtensson (2009) uncover the importance of constructive interactions in the development of teaching. Based on 106 questionnaire responses about teaching and learning conversations, they found that "most teachers rely on a small number of significant others for conversations [about teaching]" (p. 547). According to Roxå and Mårtensson, it is the "atmosphere of privacy and trust that allows them to open up in a way that makes learning possible (p. 555). In this study, such interactions helped participants address disequilibrium in a way that achieved personal fit. The significance of departmental culture in promoting development in teaching practice is empirically supported by Gibbs, Knapper, and Piccinin (2008). In their study of outstanding teaching departments at 11 universities, they found that department leaders were instrumental in the support and development of teaching. They identified several leadership activities which contributed to such development: establishing credibility and trust; identifying teaching problems and turning them into opportunities; building a community of practice, and supporting change and innovation. In the idea development phase, the essences of constructive interaction and contextual support affirm the important role of departmental culture in teaching development.

5.4.3 Implementation Phase

The implementation phase of this model, depicted in Fig. 5.4, is comprised of the following essences: in the individual dimension there is the essence of navigating change; in the social dimension, there is the essence of student response; and in the contextual dimension, there is the essence of support. In this phase of the learning process related to development in teaching, the social essence of student response is dominant in the participants' descriptions of their experiences. Teachers in the study were very concerned about and very attentive to student responses to changes in practice (i.e. attitudinal responses, engagement, and performance in relation to the overall goals). Support from colleagues or supervisors helped teachers with confidence and risk tolerance in the implementation phase. In the individual dimension, the essence of this phase is described as "navigating change". In the research described here, development in practice involved a variety of changes such as new roles for the instructor and/or the students, new instructional or assessment

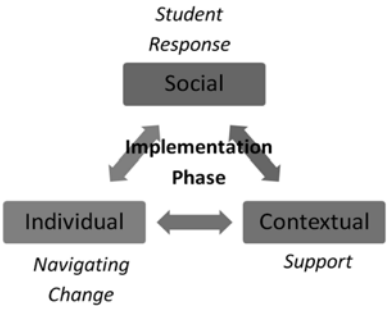

Fig. 5.4 Implementation phase of the sociocultural model of teacher professional learning

processes (such as those required for problem-based learning, project-based learning or peer assessment), new technologies, or new classroom logistics (i.e. larger class sizes, working in small groups, undertaking individualized projects). The process of navigating change elicited various combinations of emotions including anxiety and excitement. In many cases, participants explicitly calculated the risks versus the rewards related to navigating change. They recognized that changes to their teaching practice also involved changes for the students and that dialogue with students about rationale and purpose were important. In the contextual dimension, the essence is characterized again by support. A supportive context for implementation included things such as supervisory support for trying new things, departmental support, supportive curriculum and policy frameworks, access to technology, access to resources and funding, and access to appropriate learning spaces.

The interrelationships between the individual, social, and contextual dimensions of the idea development phase are described as follows. When implementing a change to practice in the classroom, participants reported being very attuned to their individual thoughts, feelings, skills, and knowledge related to navigating this change as well as their students' responses to the change. Although a supportive departmental or institutional context was important in this phase, the interrelationship between the student response and the teacher's process of navigating change was dominant. For example, Mac, a sociology teacher came through the catalyst and idea development phase deciding to make changes to his assessment strategy that gave students more choice, that respected their diverse backgrounds and interests, and that made his course less teacher-centred. To achieve this, he changed the traditional major research paper to a final assignment that still involved research in an area of sociological interest but that gave students options for sharing that research with the rest of the class (i.e. presentation, web site, artistic expression, etc.). In the implementation phase, Mac did everything he could to try and help learners understand the rationale and process for this change (navigating change). He found that he had to really believe in his new approach in order to overcome some of the criticism from students and colleagues (navigating change). The first time Mac implemented this approach, although it wasn't perfect, he found that students became more confident in their area of research, more excited about their learning, and more engaged in the course overall (student response). The results fit Mac's vision of the type of learning environment he wanted in his classroom. In Mac's case, he was not supported by his

immediate department but found support for his ideas and vision in the teaching centre at his institution (contextual support). The educational development support and the positive responses from his students enabled him to persist despite the criticism in his department.

The participants in the study reported that navigating change in the classroom was an emotional, behavioural, practical, and conceptual change process. Although research exists informing the cognitive aspects of such change (Ho, Watkins, & Kelly, 2001; McAlpine, Weston, Timmermans, Berthiaume, & Fairbank-Roch, 2006), there appear to be many other aspects to navigating change including risk management, skill development, anxiety and fear, confidence, and role definition that are under researched. Sadler (2013) identified links between the anxiety of change, the risk taking required to try new things in the classroom, and one's self-confidence in a particular teaching context. Sadler also revealed the significant role that confidence plays in "taking risks and trying out new ways of teaching" (p. 164). Although his research focused on novice university teachers, a crisis of confidence appeared to be part of the process for most of the mid-career educators in this study as well. Kelchtermans (2005) argues that vulnerability is a "structural condition" of teaching and that changes in teaching practice are never just a "simple question of changing one set of practices for another" (p. 996) because they are deeply rooted in elements of one's personal interpretive framework and cannot be separated from the emotional, social, and cultural aspects of that framework. The authors of this chapter argue that the process of navigating change is a poorly understood aspect of development in teaching practice.

In this study, positive student responses, alongside contextual support, created the workplace affordances for the implementation phase. For the participants, contextual supports had a positive influence on the implementation phase because they supported both the teacher and students in navigating change and they contributed to a positive student response. These contextual supports are part of what Billett (2009) refers to as the "pedagogic properties" (p. 40) of the workplace, a term which powerfully conceptualizes the instructional environment in which teachers work and develop their practice.

5.4.4 Outcomes Phase

The outcomes phase of this model, depicted in Fig. 5.5, is comprised of the following essences: in the individual dimension there is the essence of growth orientation; in the social dimension, there is the essence of affirmation; and in the contextual dimension, there is the essence of navigation. The individual essence of "growth orientation" dominated the descriptions of teachers' experiences in this phase. Participants expressed this as being inspired to learn more and as becoming more aware of various aspects of teaching practice (i.e. how students learn, themselves as a teacher, the relationship between teaching actions and

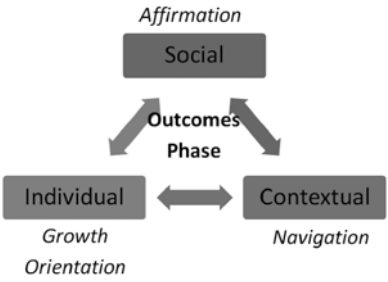

Fig. 5.5 Outcomes phase of the sociocultural model of teacher professional learning:

student learning). As part of a growth orientation, teachers in the study reported an increased interest in reflecting on one's practice, increased curiosity about aspects of teaching practice, increased enthusiasm or motivation to develop more effective instructional tools to enhance student learning (i.e. assignments, scaffolds, and activities) and increased comfort level with experimentation in the classroom. The essence of a "growth orientation" reflects the teachers' desires to engage in further professional learning following a positive experience with a change in teaching practice. The social essence of this phase involved various types of social affirmation such as colleagues buying into ideas, former students providing feedback on the value of their learning, professional opportunities to expand one's influence through committees and peer mentoring, and a more positive learning atmosphere in classes. These social affirmations were generally linked by participant teachers to the original experience of disequilibrium (student performance, student engagement, confidence as a teacher).

The essences of the outcomes phase in the research described here support Baldwin and Chang's (2006) claim that collegial support, resources, and reinforcement are essential elements to support mid-career teacher professional learning. This model extends our understanding of this claim by providing insight on how specific types of support, resources, and reinforcement contribute to the purpose of promoting a growth orientation. Participant teachers reported being inspired to learn more and try more, provided they were able to navigate the contextual realities of their workplace. Contextual realities in the work of teaching included things such as access to appropriate classroom space, access to required technology, scheduling blocks for classes, access to resources, and supportive policies. Several of the factors listed above are similar to those identified by Gregory and Jones (2009) as "forces of the environment". According to Gregory and Jones' research, such forces affect development in teaching practice and either serve to encourage or inhibit learning.

The findings in the outcomes phase of the sociocultural model of teacher professional learning support Billett's argument that neither the individual or social intentions alone are enough to promote "learning and the remaking of cultural practices that constitute work" (p. 221). In support of the essence of a growth orientation, Billett (2002) explains how, despite the fact that individual goals and intentionalities

drive learning in the workplace, experiences of improved performance and satisfaction with the outcomes of performance can also help generate further engagement in learning.

5.4.5 Contributions of the Sociocultural Model of Teacher Professional Learning

Although several essences of the model described in this chapter have been identified in other research, this multi-phased, sociocultural model makes several contributions to our understanding of the learning process involved in the development of post-secondary teaching practice. First, it offers a model that emerged from teachers' authentic experiences of development rather than something based on a priori notions of that phenomenon. Second, it explicitly acknowledges the interrelationships between individual, social, and contextual dimensions in four different phases of the learning process – catalyst, idea development, implementation, and outcomes. This contributes significantly to our knowledge of the overall learning process as well as provides more specifics about the process in each phase. Third, explicitly identifying the interrelationship between disequilibrium, social feedback and contextual expectations in prompting teacher professional learning expands our conception of the catalyst phase of this learning process. Fourth, recognizing the idea development phase as a distinct phase in the process of development in teaching practice and uncovering the essences of this phase offers insight into what occurs in the space between thinking and action. Finally, specifically identifying "navigating change" as an individual essence in the implementation phase expands our awareness of the challenges of implementation. Overall, the sociocultural model of teacher professional learning offers a more comprehensive and holistic framework for designing educational development approaches.

5.5 Implications for Educational Development: Conceptualization and Approaches

The sociocultural model of teacher professional learning, discussed in this chapter, has significant implications for the way we conceptualize and approach the main learning process that educational development aims to support – that of professional learning related to the development of teaching practice. With this model, both the conceptualization and approaches of educational development need to account for multiple phases in the process (i.e. catalyst, idea development, implementation, and outcomes) and for the interrelationships between the individual, social, and contextual dimensions of each phase.

The post-secondary educational development literature predominantly conceptualizes development in teaching as an individual, cognitive process (Kreber & Castleden, 2009; McAlpine et al., 2006), or as the decontextualized acquisition of knowledge and skills related to teaching (Wilson, 2012). A few researchers have adopted a sociocultural lens to investigate development in teaching (Knight, Tait, & Yorke, 2006; Roxå & Mårtensson, 2009; Warhurst, 2008) and acknowledge the powerful influence of the social context in this process. A limitation of these studies is that they neglect or minimize the role of individual intentionality in this professional learning process, a limitation addressed frequently by Billett (2002, 2009). Researchers who have acknowledged the interaction between the social, contextual, and individual dimensions of development in teaching (Gregory & Jones, 2009; Kreber, 2010; McAlpine & Saroyan, 2004) have not been explicit about how these interactions relate to teachers' professional learning process.

The model described in this chapter offers a conceptual framework for teacher professional learning that is based on empirical research and that provides explicit insights into the nature of the interrelationships between individual, social, and contextual dimensions of that process. In the following section, we examine considerations for approaches to educational development in each of the four phases. The purpose of this discussion is to clearly show how the sociocultural model of teacher professional learning can be used to rethink, revise and extend existing educational development approaches.

5.5.1 Educational Development Implications for the Catalyst Phase

Individual disequilibrium is a powerful catalyst for development in teaching practice, reinforcing the need for problematizing aspects of practice in the professional learning process, an idea first introduced by Schön (1983). Pickering (2006) suggests that problematization creates a point where beliefs can be interrogated and alternative actions considered. The research upon which this model is based reinforces the importance of using teachers' experiences of disequilibrium as the starting place for professional learning related to the development of teaching practice.

The role of social feedback in affirming individual disequilibrium is also an important consideration for educational development. This aspect of the model points to teachers' need for safe opportunities to surface experiences of disequilibrium and to receive respectful, affirming feedback that promotes enhanced student learning. As such, problem or inquiry-based investigations into common educational challenges through sociocultural lenses are essential for supporting the learning process. Although well designed collaborative discussions can support cognitive aspects of development in the catalyst phase, this model brings attention to the importance of the social feedback element. As well, building on the work of

Gibbs et al. (2008), it seems important that such investigations occur at all levels of the organization (department/program, school/faculty, institution) and not just through the activities of an educational development department.

Another aspect of the catalyst phase that has implications for educational development approaches is the influence of contextual expectations in prompting action related to the disequilibrium. In the context of Ontario colleges, expectations for student learning are clearly expressed through curriculum documents from the provincial ministry of education, professional accreditation bodies, and advisory boards made up of industry professionals. The mid-career college teachers, whose experiences informed the model described here, were tuned in to these expectations and knew whether they were being met. Based on the essence of contextual expectations, educational development approaches should ensure that teachers understand these expectations and that they reflect on their practice in light of them.

If we conceptualize the post-secondary teaching workplace as constantly evolving (Trowler, 2008), then we acknowledge that educational development approaches have to help teachers navigate disequilibrium throughout their careers. When designed with purpose and intention, approaches to continuous professional learning such as Learning Communities (Cox & Richlin, 2004), Communities of Practice (Wenger, 1998) and Open Space Technology (Owen, 2008) seem appropriate because they explicitly acknowledge social aspects of this learning process. To support mid-career teachers in developing their practice, such approaches need to be designed to address disequilibrium, as experienced by the teachers themselves, as well as provide social feedback that affirms disequilibrium and raises awareness of contextual expectations.

5.5.2 Educational Development Implications for the Idea Development Phase

The essences of the idea development phase in the model described in this chapter have several implications for educational development approaches. First, in order to support teachers in finding personal fit, approaches need to acknowledge the many individual elements that comprise who they are as educators (i.e. intentionalities, goals, values, life histories, personalities). Educational development approaches must help teachers become self-aware and navigate a sense of fit between their own intentionalities, the realities of the classroom and the larger educational context. The crafting of teaching philosophies is one activity that aims to promote this type of exploration through self-assessments and other reflective activities related to perspectives, goals, or values of teaching. Based on the model described in this chapter, significant gaps in the practice of writing teaching philosophy statements are twofold. First, such statements generally focus on only a few of the individual elements that make up who one is as a teacher, such as values and beliefs, and disregard other significant elements such as personality, confidence, and life history.

Second, they generally fail to examine the implications of one's philosophy in the complex context of the classroom and the broader educational context.

Constructive interaction in the idea development phase is a social essence that points to the importance of opportunities to interact with peers and explore new ideas related to teaching in the development of teaching practice. This essence reinforces the need to cultivate participatory practices (Billett, 2004a) in teachers' workplaces. Intensive educational development workshops such as the Course Design Workshop provide the types of interactions that support idea development. This workshop is grounded in the belief that, "the intellectual and social coming-together of faculty is the basis for effective…development" (Saroyan & Amundsen, 2004, p. 216) because "collaborative interaction among colleagues helps individuals make greater sense of some of the issues they are confronted with personally" (Saroyan & Amundsen, 2004, p. 208). However, opportunities to engage in "purposeful pedagogic interactions" (Warhurst, 2008, p. 459) and collective meaning making need to be integrated into various aspects of teachers' practices (i.e. departmental meetings, curriculum discussions, strategic planning activities), rather than occurring only in activities facilitated by centralized educational development departments.

The perception of support is an important contextual essence in the idea development phase and suggests that educational development approaches should involve surfacing teachers' perceptions of contextual support and if possible and appropriate, trying to address issues of support. In the study described here, teachers engaged in the reflective processes and constructive interactions of the idea development phase when they perceived contextual support. Based on the findings of this study, the authors of this chapter argue that the leadership activities identified by Gibbs et al. (2008) are needed at all levels of the organization to support and promote development in teaching practice. These include: establishing credibility and trust, identifying teaching problems and turning them into opportunities, articulating a convincing rationale for change, dispersing leadership, building a community of practice, recognizing and rewarding excellent teaching and teaching development effort, supporting change and innovation, involving students. These activities constitute the "pedagogic properties" (Billett, 2004a) of a workplace intentionally designed to promote development in teaching practice.

5.5.3 Educational Development Implications for the Implementation Phase

Based on the essences identified in the implementation phase, educational development approaches need to help teachers navigate changes involved implementing new teaching practices. For the participants in this study such implementations involve changes to the teacher's role, the students' roles, the instructional process, the assessment process, etc. and had cognitive, behavioural and affective

components. Gregory and Jones (2009) found that maintaining professional competence was a primary concern of teachers in higher education. Instructors want to feel comfortable in the classroom and they want students to feel comfortable. Educational development approaches that help teachers work through the behavioural logistics of new practices (i.e. what will the teacher do, what will the students do, how will that look, what might go wrong, how can that be addressed) provide important support in the implementation phase. As in the idea development phase, contextual support needs to be addressed as part of the implementation phase. Similarly, issues of contextual support need to be surfaced and addressed. Institutional leaders need to act as partners with teachers in providing such support.

5.5.4 Educational Development Implications for the Outcomes Phase

In the outcomes phase of the sociocultural model of teacher professional learning, educational development approaches need to consider how to create experiences of social affirmation for teachers and support them as they navigate the contextual realities of persisting with practices that enhance student learning. When teachers receive affirmation from either their graduates, from students in the course related to their learning, or from their peers, they are inspired to share their practices with colleagues and pursue further learning. As well, when teachers have easy access to the schedules, equipment, or classroom spaces that support their practices, they are more likely to persist than if they have to continually fight for appropriate contextual support. Educational approaches that offer social affirmation include various ways of recognizing and celebrating effective practice – symposiums of student work, symposiums of teaching practices, newsletters highlighting teaching efforts, and other meaningful forms of recognition. Similarly to the implementation phase, educational development approaches ought to help teachers by advocating for appropriate scheduling, equipment, and classroom spaces that support the continuation of effective teaching practices.

5.6 Conclusion

The sociocultural model of teacher professional learning described in this chapter makes a significant contribution to our understanding of the authentic professional learning process of mid-career college teachers, as it relates to development in teaching practice. It offers a conceptual tool for better understanding this learning process and its interrelated individual, social, and contextual dimensions. Given that mid-career teachers are generally the largest group of full-time academic employees in an institution (Baldwin, DeZure, Shaw, & Moretto, 2008), it follows that this is

an important group to better understand, support, engage and motivate towards continuous improvement in teaching practice in order to address some of the quality assurance mandates that have become a global reality in post-secondary education.

This model makes contributions in addressing calls in the educational development literature for a deeper "understanding of the process of learning to teach, situated as it is in multiple contexts ….within the complex lives and careers of….faculty" (Wilson, 2012, p. 138). First, it contributes empirically to the elusive question of "What constitutes effective design of educational development?" by grounding such a discussion in authentic experiences of teacher learning. Second, it provides a sociocultural lens for articulating and focusing learning purposes through a four phased learning process with interrelated individual, social, and contextual elements. Such articulation and focus on learning purpose can powerfully inform discussions regarding the design (and re-design) of educational development approaches. Having a model of the learning process related to development in teaching practice can support discussions about intentions, goals, processes, approaches and alignments which are based on authentic learning. Based on these contributions, it begins to respond to a significant critique of the educational development literature identified by Amundsen and Wilson (2012), which is that this literature focuses predominantly on the format of educational development initiatives and ignores the "critical link among conceptual or theoretical grounding, core characteristics of the design, and learning" (p. 94).

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Chapter 6
Driving Forces of Welfare Innovation: Explaining Interrelations Between Innovation and Professional Development

Charlotte Wegener

6.1 Introduction: Innovation on the Agenda

This chapter discusses the potential and necessary interrelations between professionals' ongoing development and their engagement in innovative practices at work. A growing number of countries and organizations are putting great effort into integrating innovation in school curricula, as well as in staff and manager training programmes. Innovation strategies and government-sponsored documents throughout the world have stressed the need to accelerate innovation (Osborne & Brown, 2011). Innovation is no longer reserved for research and development departments or so-called creative professions. It has become a key goal towards which on-going professional development needs to be directed. Now perceived as germane and even necessary in almost all kinds of work, the innovation potential in everyday practices and ways of allowing for employer creativity have become highly relevant objects of study. As noted by Johansson (2010, p. 139):

> The important issue is not to find those few people with creative talent or capacity, for all humans have this capacity. What is important is that innovations are allowed. Culture and structure tend to prevent creative behaviour. An innovative society is a society which allows creative actions to become innovations.

From this perspective, innovation can take place as a part of professionals' creative everyday problem solving, improvisation, and reflection at work. Thus, innovation requires employees to have access to and feel motivated to develop their creativity in the workplace (Glăveanu, 2010; Tanggaard, 2011). However, there is a need to know what people actually do in these potentially innovative practices (Johansson, 2010) and how cultural factors and managerial priorities can support creative actions to realize large-scale innovations.

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According to Ingerslev (2014), innovation research traditionally regards innovation as a set of phases comprising: (i) the invention, (ii) implementation, and (iii) dissemination of new products, services or processes. There are different ways to describe this threefold process of innovation: e.g. as a new idea, which is taken up and acknowledged as useful or valuable (Mulgan, 2007). Hartley (2013) advocates for the value of analysing the significantly different phases of innovation and describes the cycle of innovation as an analytical tool to help understand innovation as a complex and iterative process. However, the description of innovation in 'phases' throughout the literature might give the impression of linear change processes (Osborne & Brown, 2013). Although most phase models acknowledge the complex and iterative nature of innovation, this chapter proposes that phase models may be insufficient for studying and supporting the interrelations between professionals' ongoing development and their potentially innovative practices at work.

What is proposed here is to enhance 'phase' models by adding to them a 'driving force' model which may provide an appropriate strategy for studying and supporting the innovation potential in professionals' everyday work. The term driving force refers to the motivational, managerial, and structural factors that influence innovation potential in the workplace. The term 'driving forces' thus points to everyday creative actions that hold innovation potential if acknowledged and supported. First, the chapter will outline current international innovation strategies. Second, it will examine welfare innovation. Third, the chapter will present a field study of elderly care in Denmark. The field study will illustrate how the interrelations between professionals' ongoing development and their engagement in innovative practices at work operate under three driving forces: (i) craft (i.e. professional skills and knowledge), (ii) levers (i.e. tools and routines), and (iii) purposes (i.e. values and long-term visions). To conclude, the chapter will propose how the three driving forces can be addressed in practice and further theorized.

6.2 Strategies for Innovation

According to Hartley, Sørensen and Torfing (2013), there is no agreement in the literature about how to define innovation. In order to separate innovation from creativity, they suggest that innovation involves not only the generation, but also the practical realization of new, creative ideas; that is, new ideas translated into new products and practices:

> Hence, innovation can be defined as a complex and iterative process through which problems are defined, new ideas are developed and combined, prototypes and pilots are designed, tested and re-designed, and new solutions are implemented, diffused and problematized (Hartley, Sørensen, & Torfing, 2013, pp. 5–6)

What most definitions including this one do not address, however, are workplace cultures and managerial priorities that may restrict, permit, or support creativity becoming an innovation: in other words, the factors that mediate how innovation is

permitted to progress. Thus, these definitions restrict our gaze to specific phases that may or may not lead to innovation, while overlooking the driving forces that affect these activities.

Conceptualizing innovation in terms of phases is prevalent in policies as well as in research. Many national innovation policies are based on the OECD Innovation Strategy (OECD Publishing, 2010), which regards innovation as necessary for economic growth and job creation. The OECD Innovation Strategy encourages educational policies and practices to support innovation policies. In general, innovation is understood and addressed as competencies taught and learned in schools and higher education. Innovation is regarded as a competency or an outcome that can be achieved, exchanged, and measured. The 2014 Global Innovation Index report has the subtitle 'The Human Factor in Innovation' and states, "Innovation depends on people who are able to generate and apply knowledge and ideas in the workplace and in society at large" (Dutta, Lanvin, & Wunsch-Vincent, 2014, p. 69). The report stresses that although links between specific skills and innovation are difficult to establish, educational institutions play a key role in enhancing employee involvement in innovation processes. Employees with the necessary competencies are crucial to innovation in companies, public organizations, and national authorities. The report argues that enhanced focus on innovation in schools and higher education is the first step towards more innovative employees. Hence, 'the human factor' of innovation is mainly associated with competency building through school-based education and teaching, and less with professional development and how workplace culture and local management supports creative actions to become innovations.

Similar to these policies, contemporary innovation research mainly considers the generation and circulation of new knowledge as determinants of the capacity to innovate products, processes or services (Gherardi, 2012). This approach can be criticized as being preoccupied with school-based knowledge and innovation competencies acquired through education and teaching; however, there is also a growing body of literature that regards innovation as imbedded in social practices. A social practice, such as a workplace:

> … needs to be understood in terms that include (a) participants' interest, identities, and subjectivities; (b) the degree of consonance between these; and (c) the goals and continuities of the social practice, including the possibility for an active role in its remaking. (Billett, 2006, p. 62)

This making and remaking of practice involves continuing sensemaking and construction of knowledge (Billett, 2006), and not solely the transfer of knowledge in phases of invention, implementation, and dissemination. The research field of workplace learning offers promising perspectives such as employee-driven innovation (Høyrup, Bonnafous-Boucher, Hasse, Lotz, & Møller, 2012) and practice-based innovation (Ellström, 2010). These approaches engage with the practical conditions that make creativity and innovation possible, as well as the differences that can prevail among creative practices in different social fields and cultures (Tanggaard & Wegener, 2015). These research paradigms address innovation as a function of workers' professional development that takes place through the production of goods

and services within and across organizations and through interaction with colleagues, users, and the tools involved in the work (Høyrup et al., 2012; Wegener & Tanggaard, 2013). Workplace learning and practice-based innovation research advocates paying attention to the innovative potential in professionals' everyday work practices and their problem solving in complex and dynamic work contexts. The main concern is that such practices might be overlooked by those whose frame of reference is traditional product and process innovation (Evans & Waite, 2010; Hillier & Figgis, 2011). In other words, employees may perform creative actions with innovation potential without knowing it and without managers, politicians, or researchers acknowledging these efforts as potentially innovative (Lippke & Wegener, 2014). Accordingly, innovation potential may be present while managers or politicians mistakenly conclude that an innovation policy has failed. This paradox can assist alternative conceptions of how innovation can be studied and supported. Therefore, approaches to generating innovation need to go beyond institutional practices and include human bases and processes of engagement.

6.3 Innovation in Welfare Domains

Welfare work requires adapting to changing circumstances through evolving practices, which makes it a particularly helpful model for studying how to foster innovation at work. The need for alternatives to phase models of innovation is relevant in many welfare domains because the contexts for welfare innovations are mainly everyday interactions with people in need of care or support. As 'outcomes' of innovation are not solely new and measurable products, services, or processes, the matters of concern accordingly become human-to-human interactions, ways of collaborating in problem solving, and the quality of relations (Aakjær, 2014). That is, innovation is not restricted to processes and outcomes that are 'de novo', entirely novel. These matters of concern are reflected in the literature in efforts to translate conceptions of firm innovation to welfare organizations (Halvorsen, Hauknes, Miles, & Røste, 2005; Hartley, 2005; Mulgan & Albury, 2003). A literature review on social innovation in Europe (which includes health, education and welfare services) notes that distinctive features of social innovation are (i) the *relational* dimension, as the relationship between the user and the service provider is direct, (ii) the *processual* dimension, as the process of innovating and the diffusion of innovation is never fully accomplished, and (iii) the *interactional* dimension, as the generating and dissemination of innovation unfolds within a complex system and amongst different systems, contexts, or implementing environments (Crepaldi, De Rosa, & Pesce, 2012). The authors conclude that the goals of such changes (i.e. more effective services, enhanced knowledge and skills building) may be difficult to identify, manage, and assess.

Due to the abovementioned features of welfare innovation, some researchers argue that there is an underdeveloped appreciation of what welfare innovation might mean in practice and how it can best be supported (Bessant, Hughes, & Richards,

2010). Everyday problem-solving practices in complex, demanding, and dynamic contexts tend to become invisible if professionals and innovation researchers associate innovation with phases leading to a measurable 'outcome' (Rogers, 1962/2003; Wegener & Tanggaard, 2013). Strategies for studying welfare innovation, thus, need to challenge the idea of innovation as the invention, implementation, and dissemination of new ideas. Rather, welfare innovations are comprised on one hand of interdependent change processes of professional development, and on the other, changing needs and conditions of work practices (Billett, 2012). Welfare innovation does not solely require distinct professional competencies and a managerial strategy based on phases. Welfare innovation strategy involves sensemaking and issues of professional identity and thus the support of experimentation, critical dialogue, and risk taking on an everyday basis. According to Gherardi (2012), innovation springs from the constant elaboration and refinement of the methods and meaning of the work and is, thus, closely linked to professional development (e.g. knowledge building and identity formation).

The following section illustrates these ideas by focusing on one specific welfare sector, to which innovation policies are directed: elderly care in Denmark.

6.4 Elderly Care Innovation

Based on pragmatic and situated notions of doing and knowing with reference to Lave (1993/2009) and Holland and Lave (2009), the study investigated the innovation imperative as it unfolded in everyday practices of elderly care work (Wegener, 2013). The study aimed to understand innovation through the shifting lenses of micro and macro perspectives, privileging sources of data from professionals and students in their everyday work practices in the light of the abovementioned innovation policies. In the words of Lave (1993/2009, p. 204), human doing and knowing are flexible engagements with the world in 'open-ended processes of improvisation with the social, material, and experiential resources at hand'. Lave (1988) proposes that there are no fixed boundaries between activity and its settings; between cognitive, bodily, and social forms of activity; and between problems and solutions. The context and the individual constitute each other and cannot be studied as separate units. Thus, research on everyday practice should focus on the relations between persons acting *and* the social world; that is, the 'improvisational, future-creating character of mundane practice' (Lave, 1993/2009, p. 201). From a pragmatic and situated perspective, the *relation* between context and activity is the unit of analysis. In this case of elderly care innovation, this is precisely the relation between ongoing professional development and innovative practices addressed here. As the analysis below illustrates, innovation is studied by paying attention to workers' changing participation in everyday shifting workplace practices. However, these everyday changes take place in the light of political-economic circumstances and rhetoric requiring innovation. Holland and Lave (2009, p. 2) aptly capture the shifting lenses between micro and macro perspectives, stating, 'Our studies begin with ongoing,

everyday life and its differently located participants, historically related, always in conflict and tension through different political stances and relations of power.' However, these local, everyday situations must be understood in light of activities on a wider scale as 'local struggles are also always part of larger historical, cultural and political-economic struggles, but in particular local ways worked out in practice' (Holland and Lave, 2009, p. 3). This means that those who aim to understand or support innovation in specific professional practices (e.g. researchers, policy makers, or local managers) must take into consideration that these practices operate within national and international innovation rhetoric and policies. Accordingly, a macro perspective on elderly care innovation is useful for understanding the actual local practices which will be presented subsequently.

6.4.1 A Macro Perspective

The emergence of the innovation concept in elderly care domains is part of a general movement within public welfare where innovation has both economic and social purposes (Shapiro, Haahr, Bayer, & Boekholt, 2007). The demands on innovation in elderly care practices are a more or less constant concerns among politicians and top managers in the field (Wegener, 2013). One reason is that the elderly care sector is subject to the so-called triple challenges: caring for an aging population, embracing costly technology (e.g. robots and new medical or surgical treatments), and responding to the rising public expectations of access to these innovations (Bevan, 2012). Baldock and Evers (1991) argue that the appeal for innovative ways to support patients and dependent older people reflects a shift from the passive care recipient to the active co-producer of care, a more pluralistic mix of care providers (i.e. state, family, and voluntary sector) and a service level increasingly determined by cost calculations.

Elderly care workers in Denmark, like in many countries, are low waged and thus often considered low skilled and not capable of innovation (Wegener, 2012). While elderly care used to occur in families, it is now largely a paid activity in a growing sector organized inside and outside of the welfare state. In Denmark, the government organizes elderly care and provides all aged people with basic help for household tasks, personal hygiene, and health care in their homes. If an aged person becomes too weak to stay at home, the government provides placement at a nursing home (Kamp & Hvid, 2012). Certainly, the sector has undergone gradual professionalism in the form of government-regulated education within the vocational education system and a variety of management principles have been tested both locally and nationally. Danish (and Scandinavian) elderly care may be interesting from an international perspective due to a wide range of organizational, managerial, and educational experiences. Within vocational education (which elderly care education is part of), the national innovation strategy has been transformed into curricular requirements, with a legislative stipulation that college teaching must provide students with the kinds of competencies that aim to promote and realise innovation.

Within the context of elderly care education and elderly care practice, however, it is unclear what is exactly meant by 'innovation' and in which areas of the work practices innovation is supposed to take place. So far, educational textbooks have applied phase models of innovation. One textbook provides training exercises structured in three phases: (i) creativity ('the new'), (ii) innovation ('the useful'), and (iii) the entrepreneurship ('the utilized'). Another textbook suggests four phases: (i) understanding, (ii) ideation, (iii) realization, and (iv) evaluation. These phases reflect the most common innovation definitions, which require that innovations be new, implemented, and exert a positive impact on value creation. The following section reporting from the field of elderly care practice illustrates through micro analyses why these phase models found in innovation strategies and taught in class may not sufficiently acknowledge and support innovation in practice.

6.4.2 A Micro Perspective

The field study of Danish elderly care consists of 16 semi-structured interviews, polices documents, and teaching material. Subsequently, ethnographic observations were conducted over the course of 6 months at (i) a vocational college, (ii) elderly care facilities, and (iii) national seminars for elderly care professionals and educators. The initial aim was to study ways in which innovation was taught, learned, and practiced by elderly care professionals. However, it turned out that few local managers, home help assistants, and students were involved in activities explicitly referred to as innovation. Yet, simultaneously, they experienced innovation as a ubiquitous, but unintelligible, imperative from those 'above' them (e.g. media, top management, or politicians). In other words, they knew that they were expected to be innovative, but they did not know how and in which areas of their work they could be innovative. Additionally, many of the informants expressed concerns about not knowing the exact meaning of the innovation concept. A certain apathy and scepticism towards innovation imperatives was evident. Innovation was associated with product development and financial profitability: 'It's more about money than it is about people', as one nursing teacher said. Meanwhile, another teacher associated innovation with New Public Management thinking, saying that innovation is about turning everything into 'a big business' and complaining that it is 'the business language that's conquering the care world'. Innovation imperatives gave rise to both "scepticism about the claim for improvement and concerns about one's capability to handle it", in the words of Mc Kee and Eraut (2012, p. 3). However, similar to the study reported here, Mc Kee and Eraut found that professional competence building and value-based activities led to small change initiatives in the short term as well as radical changes in the long term.

The present study eventually came to address innovation as a multifaceted concept that may evolve both through focused innovation efforts and through problem solving in situations requiring creative experiments or adjustment of routines. As pointed out by Billett (2009), provisions for vocational and professional learning

often fail to take sufficient account of those who engage with initiatives that attempt to motivate or direct their learning in particular ways. When professionals in the study rejected innovation, the most common explanation was that the concept was foreign to their profession and brought unwanted values into the elderly care sector. Thus, there seemed to be no well-working attempts to motivate and direct these professionals towards innovation in ways that corresponded with innovation policies. At the same time, during the field study, it was evident that students and staff did experiment and try to get involved in change efforts. Here, we will take a closer look at three situations where creative change efforts were observable. The situations serve as illustrative examples of professional experiment and development with innovation potential.

In watching people implement small change initiatives with innovation potential, we can observe the student intern, Winnie:

> Winnie is carrying out her round of morning care for three residents at the elder care center. She enters George's room, says, 'Good morning,' draws the curtains and asks how he is feeling. Did he have a good night's sleep? After a while, George sits up on the bedside. Winnie says that she will be back in a little while to assist him to the bathroom. Winnie proceeds into Jennifer's room. Jennifer is already awake. After some small talk, Winnie and Jennifer go into the bathroom, and Winnie puts out two toothbrushes.
>
> 'This one is for your dentures, and this one is for your own teeth,' Winnie explains. 'When you have finished brushing, you must put on your dentures.'
>
> 'Yes, yes,' Jennifer says, 'but I'm not sure I can remember it.'
>
> 'You'll do fine, I'm sure,' Winnie insists. 'I will be back soon to help with the clothes.'
>
> We leave Jennifer's room, and Winnie explains to me that she was instructed to do the morning care with one resident at a time. She did this for a while, but then she realized that she was pushing them to hurry up and that she carried out tasks that they were actually able to do by themselves.
>
> 'Now I mix up the morning care between the three of them', she says. 'They get more time, and I do not have to hurry them up anymore. Leaving them for a while also empowers them because they get the chance to do more themselves.'

Here, Winnie describes how she encountered a problem and how she solved it. She alters the workplace routine and explains this in terms of her professional knowledge of 'empowerment'.[1] She definitely did not get a new bright idea, decided how to carry it out, and then evaluated it. Her practice is deeply rooted in everyday work tasks and a vision to slow down the pace for her and the residents. Winnie would be surprised if we termed her behavior to be 'innovative'. However, Winnie's small-scale, but professionally well-argued adjustment, can serve as an important source of innovation. These kinds of change initiatives arise from everyday problem solving that constantly takes place in workplaces. However, if innovation strategies focus mainly on innovation competencies as knowledge acquired through school-based education and training activities, these change initiatives are easily overlooked. Yet, the study identified several situations in which managers nurtured a culture in which reflection and experiment became the norm thereby paving the way for innovations. In the interview below, the manager Beate explains how she works

[1] Empowerment in health care refers to the balancing of rights and responsibilities of the individual, the community and the health-promoting agency.

to create a workplace culture based on basic values of the profession (i.e. inclusion, meaning and comfort). When asked how she supports the student interns, she explains that she does not separate student development from staff development. She organizes the staff meetings as mutual reflection processes within a framework of person-centered care:

Beate: When I started as a manager here, the staff might say: 'This lady with dementia who cries all the time that she must go to the toilet… there's nothing we can do about it. It's damn annoying to look at and listen to, but it's due to her illness.' Today, they know that the social context and how they interact with the residents have a crucial impact on the residents' behavior. We use Tom Kitwood.

CW: I'm not familiar with him.

Beate: No, and that's a crying shame. He is the pioneer in the field of dementia, and we use his ideas in our work with all residents because what is valuable for a person with dementia may be valuable for all the other residents as well. With Kitwood's analytical model, we address the person as a whole. Often, you think that you know enough, and then you forget to be curious. With Kitwood, we can look at a range of things and support the identity when these persons may not be able to do everything on their own anymore.

CW: Identity?

Beate: Identity, yes. Do you feel you belong to a community? Do you feel included? Do you feel that you have meaningful things to do? Do you feel that comfort is there when you need it? These are the basic things that Kitwood says we need in order to thrive as human beings.

Beate attempts to implement a cultural change based on one tool, Kitwood's analytical model. Over time, the model becomes familiar to the staff as they are invited into value-based dialogues about their professional work. Beate does not use the term 'innovation'. However, in research on innovation in the elderly care sector, Kitwood's ideas of person-centered care are highlighted as an innovative service and care form (Verleye & Gemmel, 2011). The staff are invited to engage in reflection practices, where they have the opportunity to gradually reconstruct their professional values and identity while simultaneously experimenting in their work practices. Hence, a phase model of invention, implementation, and dissemination seems rather inadequate as an analytical tool, if the activities are directed towards ongoing critical investigation and shared experimentation in everyday practice.

The final example highlights a similar managerial effort that may not be captured by phase models. However, this effort is explicitly addressed as an innovation. The nursing home manager, Susanna, is using the purchase of two laptops to direct the staff towards a new paradigm for work. Although at first sight this may look like a dull routine or even a misconception of innovation, this is not the case, as Susanna explains here:

We had lots of adverse events. Our staff is responsible for giving or adjusting the residents' medication, and there were lots of errors. We realized that these errors happened because of the timespan from giving the drug until reporting. Now we have purchased two laptops. The nurse assistant brings a laptop to the resident and reports on the medication on the spot. Our aim is that all reporting takes place as part of the care work together with the resident. Earlier, they had to walk long corridors and report at stationary computers in a noisy room interrupted by colleagues talking to them. They forgot what to report. Now they have the

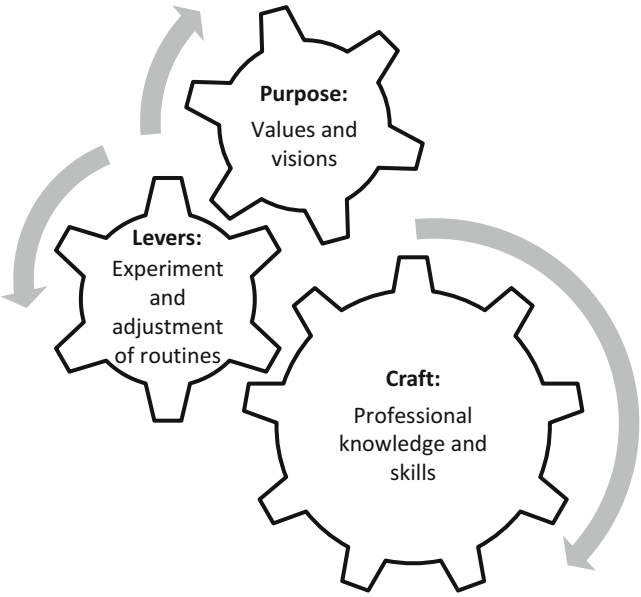
> possibility to report instantly and avoid getting distracted. This innovation has several unanticipated outcomes, as well. They have more time because they walk less, and they are starting to learn that the residents – and their relatives – are important informants. This corresponds with the municipal strategy of citizen involvement and person-centered care. However, some of the care workers are reluctant to actually act out this new practice. They feel that writing requires more time and privacy. My responsibility as a manager is to make them realize that this is not something entirely new. It is closely linked to what we already do.

This interview quote illustrates how change efforts based on (i) an explicit need to reduce adverse events, (ii) adjustment of routines by the purchase of laptops, combined with (iii) a vision of person-centered care and citizen involvement makes it possible to link professionals' ongoing development with strategic innovation. These kinds of change processes may have taken place within contexts free from innovation imperatives and without the innovation concept being invoked to explain it. However, this manager is obviously supported by innovation terminology. We might even explain her leadership as a result of an innovative mindset. Does her staff develop innovation competencies? Will they be able to apply these innovation efforts to other areas in need of change? We cannot tell at this point. What she is doing, however, does involve three elements which can be generalized as: (i) professional knowledge and skills, (ii) experiment and adjustment of routines and (iii) a clear value-based vision. These three elements are translated into a generic model of welfare innovation that is displayed and explained below to augment those experiences.

6.5 A Driving Force Model

This section explicates a 'driving force' model for context sensitive research and management of innovation in welfare workplaces. The above situations of creative change efforts with innovation potential involve three elements which can be regarded as driving forces: (i) craft (i.e. professional skills and knowledge), (ii) levers (i.e. experiments and adjustment of routines), and (iii) purposes (i.e. values and visions). These are all required to initiate and support welfare innovation and can, accordingly, be the object of welfare innovation studies (Model 6.1).

The term 'craft', firstly, is based on Sennett's notion of craftsmanship as the basic human impulse to do a job well for its own sake. His proposed craft involves developing skills and knowledge and focusing on the work (Sennett, 2008). Craftsmanship points towards virtues such as hard work and collaboration, while craft as a driving force suggests an embedded perspective that places innovation in specific contexts of professional identity and professionalization. Thus, innovation strategies are of little relevance if they are not rooted in professional knowledge and skills (e.g. Winnie's knowledge of empowerment) and the awareness of problems and needs in the domain (e.g. avoid hurrying the resident during morning care). Secondly, levers as a driving force refers to adjustments of routine and the tools involved in change efforts. Based on a concept developed by Lévi-Strauss, Fuglsang



Model 6.1 Three driving forces of everyday innovation

(2010) suggests 'bricolage' as a term for elderly care professionals' everyday adjustments, as they evolve through interactions with the care recipients and their dialogues with colleagues. Innovation as bricolage points to the idea of utilizing familiar and recognizable tools and routines to initiate change and solve problems (e.g. Beate's continuous use of Kitwood's model at staff meetings and Susanna's introduction of laptops to the reporting routine). Purpose as a driving force for innovation, thirdly, indicates that the innovation imperative articulates real changes and differences in professional identity, values, and visions. Research on elderly care innovation concludes that a full account of innovations must not only illuminate strategic choices and management but also take into account the motivations and values of innovators" (Ferlie, Challis, & Davies, 1984). To do so, Weick's (1995) concept of 'sensemaking' is useful, as it describes how changes, uncertainty, and ambiguity result in the active construction and negotiation of meaning. Sensemaking is an active process, involving individual energy and commitment (Weick, 1995). In this way, innovation strategies must continually be negotiated and practiced in relation to long-term purposes and goals (e.g. Winnie's wish to empower the residents and Beate's vision to make the staff acknowledge that they have a crucial impact on the residents' behavior).

The model depicts the overarching elements that must be addressed to inspire welfare professionals to be innovative. The last section will return to the model and its practical and theoretical implications for professionals' ongoing development and their engagement in innovative practices at work. The model indicates that innovation cannot solely (and sometimes not at all) be learned or performed through

phases, iterative or not. Rather, the concept of driving forces points to the necessity of basing innovation efforts on adjustments of existing routines (i.e. levers). In addition, the model acknowledges that professionals initiate new work practices and routines on the basis of their knowledge (i.e. craft) and values (i.e. purposes), and these efforts, sometimes subtle and unrecognized, contain the potential for innovation on larger scales. When innovation is regarded as integrated in work practices, professionals become key stakeholders in decision-making processes, and in the organization and development of professional roles and tasks (Chiatti, Fry, & Hanson, 2011; Ferlie, Fitzgerald, Wood, & Hawkins, 2005; Hanson, Magnusson, Nolan, & Nolan, 2006). What they must practice and what managerial and policy strategies must address are the ways in which these professionals can become informed stakeholders: professionals who are willing to experiment, engage in critical dialogue, take risks, and who have the skills and knowledge required to do so on the basis of the core values of their profession.

6.6 Practical Implications and Concluding Remarks

Which kinds of local management strategies support professionals in being or becoming informed stakeholders? The triple challenges referred to earlier explains that welfare professionals must continuously meet the needs and requirements from a growing and diverse group of care recipients, they must learn to handle new technology and treatments, and they must react to rising expectations, often with limited resources. In these ever changing contexts, the necessity of attaching innovation efforts to existing knowledge (i.e. craft), routines (i.e. levers), and values (i.e. purposes) becomes crucial. Innovative practices and innovation competencies in the context of ongoing professional development are thus distinct from those in the context of initial occupational preparation. While innovation competencies in primary school and high school can address a wide range of topics and contexts with the aim of supporting generic innovation competencies, innovation competencies in the context of professional development must be aligned with occupational goals and available resources at the workplace (Billett, 2012). The innovation efforts in this context are inextricably bound to work situations where problems must be solved and new needs emerge. Winnie's new way of organizing the morning care, Beate's continuous use of Tom Kitwood at staff meetings, and Susanna's purchase of two laptops are prime examples of initiatives with innovation potential. Winnie, Beate, and Susanna do not transfer innovation policies or perform innovation in phases of invention, implementation, and dissemination. The skills and knowledge involved in their efforts are not taught in educational institutions and transferred to the workplace; rather, these professionals are involved in processes of constant refinement within a texture of practices (Gherardi, 2012). They reflect, combine, and interact with people and things at hand. They adjust routines based on professional knowledge and values, and they try to increase the value of their practices and make them valuable to others.

Thus, the necessary interrelations between professionals' ongoing development and their engagement in innovative practices at work can be supported by including in local innovation strategies questions based on the following driving forces:

(i) Craft: Which knowledge and skills already exist among staff and collaborating partners? In which ways do we support ongoing professionalization? Which professional knowledge and skills do we need to develop to meet new needs and requirements?
(ii) Levers: Which routines are operating well, and which ones need to be changed? How do we encourage experiments and critical dialogue about our daily work? Which tools and strategies can support adjustments of routines?
(iii) Purposes: What are the visions for our profession and for our workplace? Which values are at stake during professionalization or new routines? Which values do we wish to preserve or strive for? How can we support and make explicit sensemaking processes and issues of professional identity?

These questions based on the three driving forces are closely connected and interdependent. They also make explicit that all three driving forces need to be addressed for an innovation strategy to inspire professionals to be innovative. Thus, the model can assist the acknowledgment of initiatives that hold a potential for innovation, but risk being overlooked by phase models. The model points to the necessity to anchor innovation strategies in existing knowledge, routines, and values that are not necessarily perceived, performed, and changed in phases of invention, implementation, and dissemination. A pragmatic and situated perspective on welfare innovation suggests theoretical and empirical ways to support and study the interrelated macro and micro perspectives of innovation. This perspective acknowledges everyday adjustments of routines through experimentation and reflection as innovation strategies that can potentially materialize in practice. A conception of welfare innovation which is not translated from firm innovation, but derived directly from welfare contexts, might, then, involve theories of craftsmanship (Sennett, 2008), bricolage (Fuglsang, 2010; Lévi-Strauss, 1966), and sensemaking (Weick, 1995, 2009). Such conceptions of innovation involve the ongoing development of professionals and workplace cultures and management strategies where experimentation and critical dialogues are nurtured and supported. In other words, the craft, levers, and purposes inherent in each professional practice are key components in the creation of an innovative workplace culture. Hence, 'the human factor' as mentioned in innovation policies should include professional development and ways in which workplace culture and management strategies can allow everyday experiments and adjustments to become innovations.

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Chapter 7
On Nurses' Learning from Errors at Work

Johannes Bauer, Veronika Leicher, and Regina H. Mulder

7.1 Introduction

Learning from errors is a way of learning at work that receives increasing attention in workplace learning research (Bauer, Gartmeier, & Harteis, 2012; Wuttke & Seifried, 2012). Many scholars have argued that errors – although undesirable events – can be important sources of professional learning (Collin, Paloniemi, & Mecklin, 2010; for an overview, see Harteis & Bauer, 2014). Therefore, research on learning from errors seeks to address pertinent questions concerning how errors can be conceptualized, what errors are relevant for learning, how the learning process can be modeled and investigated empirically, what conditions support learning from errors, and how outcomes of learning from errors can be assessed.

In this chapter, we will summarize several of our studies that investigated processes and conditions of learning from errors at work in hospital and elder care nursing. Nursing is a profession that has gained a lot of attention by researchers with interest in professional development and workplace learning. Next to the societal importance of nursing, the knowledge-intensive and dynamic nature of this field of work makes it particularly interesting for researching continuing professional development (CPD) and workplace learning (Pool, Poell, & ten Cate, 2013; Valleala, Herranen, Collin, & Paloniemi, 2015). Learning from errors has a particular relevance in this field, because quality management and patient safety are key issues in health care and learning from errors may contribute to reducing the probability that specific errors reoccur (Tucker & Edmondson, 2003). Following the stated issues of

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research on learning from errors, we will summarize our studies in relation to the following questions:

1. What are examples of knowledge- and rule-based errors in hospital and elder care nursing that may serve as starting points for learning?
2. What are relevant learning activities to engage in after errors?

To answer these two questions, we will elaborate on the theoretical background of different types of errors and learning activities at the workplace. Moreover we will show examples of knowledge- and rule-based errors and related learning activities which we collected in interview studies with experts in both domains.

3. Under what conditions do nurses engage in such error-related learning activities?

Concerning this third question, we suggest a model of individual and organizational conditions that may foster or hinder error related learning activities at work. We developed and tested this model in two studies in hospital and elder care nursing.

Below, we will elaborate on nursing as a profession with high demands for human resource development including CPD and workplace learning. In this regard, we will highlight the potential contribution of learning from errors. Next, we present theory and evidence from our studies to respond to the three research questions. We will close the chapter with drawing conclusions on how nurses' learning from errors may be supported.

7.2 Background: Nurses' Work and the Importance of Learning from Errors

Nurses face a dynamic field of work requiring continuous learning to update their professional knowledge and competences (Skår, 2010). As in other health care professions, nurses' work is characterized by frequent changes in professional knowledge, procedures, methods, and standards (Pool et al., 2013; Tynjälä, 2008; Valleala et al., 2015). Hospitals and nursing homes experience increasing pressure because of the demographic change and ageing population, public expectations, and the introduction of new technology (Aiken et al., 2012). Moreover, nursing practice varies by different organizational conceptions (e.g., functional vs. primary nursing; Manthey, 2002) which involve differences in nurses' responsibilities, work activities, and professional collaboration. Finally, the nursing workforce structure seems to be changing, e.g. in age (Pool et al., 2013), but also in terms of qualifications (Collins & Hewer, 2014). More and more, the occupational field of nursing is moving from a vocation to a profession, including a transition to higher education.

With such rapid changes, CPD is needed for nurses to maintain and develop their knowledge and skills (Spouse, 2001). "Although the principles of lifelong learning and professional development have always been a part of nursing, the meaning of learning at work has grown even more in changing health care organizations due to

changing and developing knowledge, technology, content of work and organization, and procedures" (Lammintakanen & Kivinen, 2012, p. 36). Therefore, thinking about and investigating nurses' professional learning and development requires taking a broad perspective on CPD that includes individual learning activities at work and learning through work (Pool et al., 2013; Tynjälä, 2008). That is, in dynamic fields of work such as nursing, professional learning cannot be considered as restricted primarily to traditional (often classroom-based) forms of initial and continuing professional training. Instead, learning activities that are embedded in daily work seem at least equally important for maintaining and developing nurses' professional competence. Though learning through work can occur in many forms (e.g. Billett, 2004; Tynjälä, 2008, 2013), we believe that errors are important in this regard. Errors are salient occasions that may give reasons to question current practices (as well as the underlying dispositions) and suggest a need to revise and improve (Bauer, 2008). So, they can be important triggers for individual and social learning activities at work.

The discussed features of nurses' work, however, also make learning from errors a particular challenge. Frequent changes and requirements to adapt increase the likelihood of errors to occur, making error management and learning from errors especially relevant (Cramer, Pohlabeln, & Haberman, 2013; Van Dyck, Frese, Baer, & Sonnentag, 2005). Indeed, recent studies indicated that high risk for patients' safety may arise from how care is provided in hospitals and retirement homes (Cramer et al., 2013; Dubois et al., 2013). Because errors may lead to serious adverse effects on a patient's health, they are a delicate topic in health care pertaining to quality management and patient safety (Collin et al., 2010). Health care organizations are typically work environments in which high-level, accurate performance is crucial and services are supposed to be delivered while upholding high standards of quality and professionalism (Aspden, Corrigan, Wolcott, & Erickson, 2004). Nurses – as the largest group of professionals in health care – have a central role in this regard. Additionally to their growing importance for patient care, nurses have to take increasing responsibility for ensuring the quality of care services, for example by planning, assessing and evaluating patients' needs (Mendes & Fradique, 2013). Therefore, nurses' activities at work constitute major contributions to implementing strategies of quality and risk management in health care organizations, including the identification and prevention of errors.

For the reasons presented above, dealing with errors in a learning-oriented way has been subject to intensive debate in health care. Error management and learning from errors are increasingly recognized as tools of quality management and securing patient safety (Pfeiffer & Wehner, 2012). Such error-related learning processes can occur and be analyzed at the individual, the team, and the organizational level (Russ-Eft, Watkins, Marsick, Jacobs, & McLean, 2014). At the organizational level, recent developments have aimed at the introduction of a patient safety culture including perceptions, behavior, and competences of individuals and groups to determine an organization's commitment, style, and proficiency in safety management (Putz, Schilling, & Kluge, 2012). Tools for anonymous critical incident reporting have been introduced to foster such a culture and organizational learning from errors (Pfeiffer & Wehner, 2012; Zhao, 2011). Moreover, a shift from

a culture in which individuals are blamed for errors towards a culture offering the opportunity to use errors to improve the system and prevent harm has been welcomed (e.g., Bonner, Castle, Perera, & Handler, 2008). Regarding the team level, one has to bear in mind that the work structure in nursing requires nurses to work together in teams. To ensure high standards of quality and professionalism and to accomplish work tasks effectively, they have to exchange information and develop strategies in social cooperation (Timmermans, Van Linge, Van Petegem, Elseviers, & Denekens, 2011). Nurses' engagement in social learning activities is important for enabling team learning processes. Such team learning processes can be seen as a continuing effort of knowledge sharing, or providing and receiving feedback (Edmondson, Dillon, & Roloff, 2007; Timmermans, Van Linge, Van Petegem, & Denekens, 2012). Finally, on the individual level, learning can occur in the form of reflections on causes of errors or the development of new or revised action strategies to avoid errors in the future (Bauer & Mulder, 2007). As discussed in the next section, such individual and collective processes of learning from errors seem to be narrowly intertwined.

In summary, whereas a lot of research on quality management initiatives focus on the organizational level, there is a growing interest in conditions under which nurses learn from errors they encounter in daily work and how they apply learning activities to do so (Abusalem & Coty, 2011; Bauer & Mulder, 2008; Cannon & Edmondson, 2001). Research on this could improve our understanding of how learning from errors contributes to the development of knowledge and skills within professional contexts, but also contribute to issues of organizational learning and development of strategies (Edmondson, 2004). In the following section we summarize our studies with a focus on individual learning from errors and also indicate how this extends to the team level.

7.3 Nurses' Learning from Errors at Work

7.3.1 What Are Examples of Knowledge- and Rule-Based Errors and Relevant Activities to Learn from Them?

Understanding how learning from errors can contribute to nurses' professional development requires clarifying conceptually and empirically what is meant by *error* and how the learning process can be modeled. In this section, we sketch our theoretical perspective on these questions and summarize the studies in which we applied it to hospital and elder care nursing.

Errors can be defined as individual actions or decisions that result in a deficient deviation from a desired goal and that endanger the attainment of dependent goals (Reason, 1990). An inadequate action establishes a critical situation in which the achievement of the desired goal is endangered (Bauer & Mulder, 2007). Subsequently, the error may be detected and corrected, or defences in the environment may work. Otherwise, an adverse outcome concerning the patients' health may occur. For

example, consider a nurse preparing a patient for a colonoscopy. A mistake in choosing an appropriate dosage of laxative for the specific patient may result in the patient's bowel not being entirely empty for accurate examination. The mistake creates a critical situation because – even though the goal is endangered – no adverse event has occurred, yet. If the medication was cross-checked by another nurse or physician, the error might be detected and corrected. Next to this generic definition, types of errors on different levels of cognitive action regulation can be distinguished: slips, lapses, and knowledge- and rule-based errors (Reason, 1990). Whereas slips and lapses result from problems in unintentional memory and attention processes, knowledge- and rule-based errors concern the action plan and result from problems in the application of knowledge and rules. The latter type of error involves several sub-classes, such as the misinterpretation of a situation and subsequently making a wrong decision. Medication errors are typical examples for slips and lapses in health care (e.g. mixing up medications; Kohn, Corrigan, & Donaldson, 1999). Examples of knowledge- and rule-based errors are given in Table 7.1. This differentiation of types of errors is important because several authors have argued that knowledge- and rule-based errors provide a particular potential for learning (Keith & Frese, 2005). These types of errors enable individuals to deliberately revise their knowledge and practice through engagement in learning activities.

By engagement in learning activities, we refer to a self-organized effort to improve performance (Tynjälä, 2013). Drawing upon experiential learning theory (Kolb, 1984), error-related learning activities can be modeled to comprise the reflection of potential causes after the experience of an error, considering ways to prevent them in future, and experimenting with and implementing the new or revised strategies (Bauer & Mulder, 2007). Each of these activities can be performed individually or in social cooperation with others at work. For a number of reasons learning activities performed in social interactions (i.e., joint analysis of causes and development of new action strategies together with peer colleagues or supervisors) seem particularly relevant to learning from errors (Bauer et al., 2012). Theoretically, this is consistent with the finding that interaction with other people constitutes one of the most significant sources of learning at work (Billett, 2004). Practically, as mentioned above, the structure of nurses' tasks frequently requires team work which is facilitated by shared knowledge. Hence, from a quality and patient-safety perspective it seems desirable that more than a single nurse should learn from an error. Communication and exchange can foster the development of shared knowledge and understanding of errors, as well as of solutions and strategies with which to handle them (Cannon & Edmondson, 2001; Van Dyck et al., 2005). In line with this, there is evidence to suggest that social learning activities are crucial in nurses' learning through work and CPD (Bjørk, Tøien, & Sørensen, 2013; Skår, 2010; Timmermans et al., 2011). Therefore, engagement in social learning activities after errors can be regarded as beneficial for learning at both individual and team levels.

In our research, we investigated the nature of errors and error related learning activities in the field of nursing. We conducted two interview studies with experts in hospital nursing (Bauer & Mulder, 2007) and elder care nursing (Leicher, 2011; Leicher, Mulder, & Bauer, 2013), in which we elicited typical examples of knowl-

Table 7.1 Categories and examples of knowledge- and rule-based errors in hospital nursing and elder care nursing

Category	n/ex
1. ***Hospital nursing***	***(N = 10)***
Inadequate interpretation of a situation	6/7
Critical values on a screen are not cross-checked with the overall physical state of the patient, so that an inadequate or unnecessary intervention is applied	
Non-application of a new or up-to-date method (i.e. non-application of a correct rule)	4/4
Instead of a new or up-to-date method an old one is applied, because the nurse is not used to the new one, or does not feel confident enough in the application, and also does not dare to ask	
Application of out-of-date "rituals" and methods, although they have been proven to have adverse effects (i.e. application of a bad rule)	3/5
Wrong treatment of bedsore: applying ice and blowing dry	
Lack of knowledge about current guidelines and standards (i.e. deficient knowledge)	3/4
Wrong preparation of a patient for an operation because the nurse has insufficient knowledge about current standards	
Wrong application of a method because of lack of knowledge (i.e. wrong application of a good rule)	3/5
Errors in the preparation of a colonoscopy may mean that the patient's bowel is not entirely empty and the examination cannot take place. This results from a lack of knowledge in the individual dosage of laxative for a specific patient	
Not asking someone experienced in case of uncertainness	3/3
Wrong estimation of the risk surrounding a situation and not asking more experienced colleagues for help	
Errors in interpersonal relationships	2/2
Giving up the professional distance from patients	
Not to challenge orders from a supervisor or a physician	1/1
2. ***Elder care nursing***	***(N = 3)***
General deficiencies in knowledge (i.e. deficient knowledge)	3/9
Failing to recognize a danger of bed sore	
Planning failures of nursing (i.e. non appliance of a correct rule)	2/3
Omitting necessary nursing measures	
Lack of knowledge about current guidelines and standards (i.e. deficient knowledge)	1/1
Treating patients with dementia	
Inadequate interpretation of a situation	1/1
Consulting a physician too late or too early	
Errors in interpersonal relationships	1/1
Not showing empathy in conversations with relatives	

Note. Part (1) is reprinted from Bauer and Mulder (2007) with permission from Blackwell Publishing/Wiley; part (2) is based on Leicher (2011); *n* number of participants mentioning an error in the respective category, *ex* number of given examples within the category; sub-categories of knowledge- and rule-based errors (Reason, 1995) are indicated where adequate in parentheses after the respective category names

Table 7.2 Categories and examples of error related learning activities in hospital nursing

Category	n/ex
1. ***Non-formal learning***	–/28
(a) *Learning in social exchange*	–/16
Exchange with colleagues	7/8
Exchange with more experienced colleagues (6)	
Asking colleagues for advice or help	
Mutual control and critique	
Exchange with the supervisor	4/5
Discussing the issue with the supervisor (2)	
Asking the supervisor for help (2)	
Root cause analysis together with the supervisor	
Open discussion within the team	3/3
Open discussion in team meetings, so that all team members have the opportunity to learn from the error (3)	
(b) *Individual reflection*	–/6
Root cause analysis	4/4
(Self-) reflection about possible causes of the error (4)	
Reflection on alternative action strategies	2/2
Reflection on what has do be done differently the next time (2)	
(c) *Deliberative self-regulated learning*	4/6
Closing gaps in one's professional knowledge by oneself and taking care that one is up-to-date (3)	
Reading professional journals (2)	
Updating one's knowledge about current standards	
(2) ***Formal learning***	5/6
Attending training and professional development courses (5)	
Identifying one's need for further training	
(3) ***Emotional reaction***	4/4
Emotional conditioning through the error (2)	
Remaining in a state of brooding	
Talking to colleagues in order to salve one's conscience	

Note. Table reprinted from Bauer and Mulder (2007) with permission from Blackwell Publishing/Wiley; *n* number of participants (of $N = 10$) mentioning a learning activity in the respective category, *ex* number of given examples within the category, *numbers in parentheses* number of participants mentioning the same activity

edge- and rule-based errors. Experts were identified based on their long professional experience (>10 years), a supervisory position, and peer-assessed as being highly qualified. We asked the participants to describe concrete examples of knowledge- and rule-based errors which occur in nursing practice according to their experiences. In the hospital nursing study, we asked the participants additionally to identify activities that a person would have to engage in after an error, such as the one(s) they had just described, in order not to repeat a similar error again (i.e., learning activities). Tables 7.1 and 7.2 summarize and classify the experts' statements.

Concerning our first research question, the exemplary errors provided by the experts draw a rich picture of knowledge- and rule-based errors in both domains of nursing. They reflect a broad range of nurses' responsibilities in planning, organizing, and implementing nursing activities. Across both domains, the experts assigned errors due to the inadequate interpretation of a situation, deficiencies in knowledge, and the non-application of correct rules, a relatively high importance (cf. Table 7.1). Overall, the findings from the interviews are largely consistent with the theoretical assumptions about sub-classes of knowledge- and rule-based errors (Reason, 1990; cf. Bauer & Mulder, 2007). Though the examples provided cannot be considered representative for errors in nursing, the findings are useful for thinking about relevant learning activities as well as for identifying potential needs for CPD. For example, the issue of prophylaxis and treatment of bed-sore (decubitus) was a prevalent concern in many interviews.

Regarding the second question on learning activities after an error at work, the experts' answers hinted at the relevance of engaging in systematic reflection on causes of an error as well as developing revised action strategies. These findings are consistent with modeling error related learning activities as an experiential learning cycle (Bauer, 2008; Bauer & Mulder, 2007). Moreover, the experts stressed the role of social exchange as crucial for these learning activities. This finding adds to the evidence base that social learning activities are particularly relevant for learning from errors (Harteis, Bauer, & Gruber, 2008) and in the domain of nursing (Bjørk et al., 2013; Skår, 2010; Timmermans et al., 2011). An interesting point here is that the experts' statements referred to exchange both with peer nurses and supervisors (cf. Table 7.2). Given that the interviewed experts all had a supervisory position, this perspective seems plausible. The hierarchical nature of the relationship to supervisors and the inherent power imbalance, however, may complicate open exchange about errors with supervisors. Indeed, several studies have emphasized the importance of supervisors' characteristics and behavior for dealing errors at work in a learning-oriented way (unsympathetic and unjust vs. helping and protective reactions, espoused vs. enacted attitudes, etc.; for an overview, see Bauer & Mulder, 2008). Hence, for organizational development initiatives, it can be concluded that the development of an organizational culture that supports a learning-oriented, open discussion of errors seems a necessity (Edmondson, 2004).

7.3.2 Under What Conditions Do Nurses Engage in Error-Related Learning Activities?

In the previous section, we conceptualized learning from errors based on experiential learning theory and our interview studies. Moreover, we emphasized that the engagement in social learning activities (ESLA) – i.e., jointly reflecting with colleagues on potential causes of errors and ways to prevent them in future – seems particularly relevant in nursing. A natural follow-up question is under what

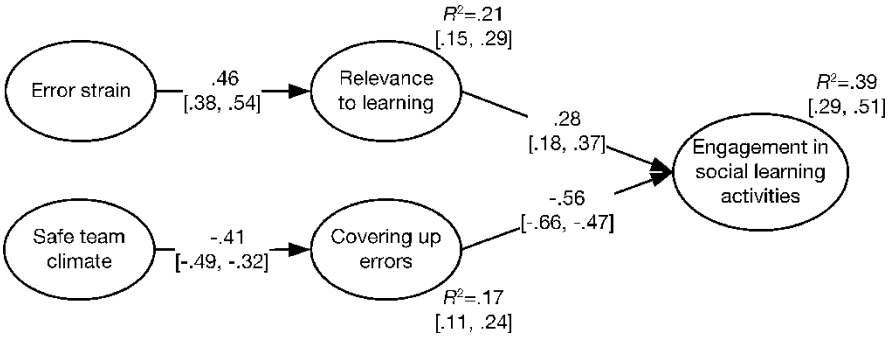

Fig. 7.1 Standardized estimates [95 % confidence intervals] of the meta-analytic structural equation model for nurses' engagement in social learning activities synthesizing the models in Bauer and Mulder (2013) and Leicher et al. (2013); model fit indices: $\chi^2(83) = 225.03$, $p < 0.001$; RMSEA = 0.063, CFI = 0.993, TLI = 0.992, SRMR = 0.087; indirect effects: error strain $\beta = 0.13$ ($p < .05$); safe team climate $\beta = 0.23$ ($p < .05$); measurement part of the model omitted

conditions nurses engage in such social learning activities after an error at work. In this section, we will summarize theory and evidence from two surveys in hospital nursing (Bauer & Mulder, 2013) and elder care nursing (Leicher et al., 2013) regarding this question.

Research suggests that the perception of a positive cost-benefit balance is required for reporting errors (Zhao & Olivera, 2006). The benefit of engaging in social exchange after an error can be seen in the potential learning gain and the possibility to avoid similar errors in future. In contrast, subjective cost can occur in the form of fear of repercussions and loss of face if admitting an error. More tangible costs can be at stake in health care, too, e.g. in the form of disciplinary or legal proceedings. Based on this idea, two strands of factors that may drive nurses' ESLA can be distinguished: (1) the nurse's individual reaction and appraisal of the error situation as relevant to learning (benefit) and (2) the nurse's perception of a trustful and psychologically safe social climate at work that permits disclosing an error with reduced psychological cost. Drawing on these considerations, we developed a mediation model of nurses' engagement in ESLA that includes hypotheses about relationships among four relevant variables relating to these two strands (Fig. 7.1). Focusing on the individual perspective, *error strain* refers to nurses' emotional reaction to having committed an error, and in particular to negative emotions, like anger, fear or shame (Rybowiak, Garst, Frese, & Batinic, 1999). Such emotions have to be regulated (Keith & Frese, 2005; Rausch, 2011; Zhao, 2011) and may affect learning. A particular relevance for learning may be felt if an error situation is perceived as emotionally stressful, because this may create a subjective need not to repeat the error (Oser & Spychiger, 2005). Hence, the second variable on level one is the estimation of an error as being relevant to learning (*relevance to learning*). This subjective relevance refers to the cognitive interpretation of an error as a starting point for inquiry about underlying causes, and can be seen as taking a learning orientation toward an error. Regarding the perception of the social context, the

model concerns the anticipated reaction of others at work to reporting and discussing an error. On this perspective, the model contains the perception of a safe and trustful climate in the work team (*safe team climate*). A safe team climate characterized by interpersonal trust, mutual respect and the possibility to openly address errors may alleviate potential concerns about psychological costs and, thus, facilitate an open discussion of errors within the social context of a team (Cannon & Edmondson, 2001). Therefore, a safe team climate may reduce the individual tendency of *covering up errors*, a motivational orientation that may prevent communicating with others about an error (Rybowiak et al., 1999).

In summary, the described model poses two mediation paths on nurses' ESLA representing the two mentioned perspectives, respectively. Concerning the individual reaction, the subjective learning relevance mediates the effect of negative emotions associated with the error situation (i.e., error strain) on ESLA. Concerning the perceived social context, the tendency to cover up errors is a mediator between the perception of a social team climate and ESLA. In our research, we developed and tested the mediation model in a study on hospital nursing (Bauer & Mulder, 2013) and then replicated the findings in another study with elder care nurses (Leicher et al., 2013).

Both studies were cross-sectional surveys in which nurses answered questions with regard to vignettes describing error examples. Vignettes are short, descriptive stories of an incident of practice presented to elicit rich but focused opinions and reactions to its content (Finch, 1987). By using the vignette technique, we investigated the nurses' intended learning activities with regard to specific error situations rather than their general assumptions about errors and learning from them (Bauer & Mulder, 2007; Mulder, 2015). The vignettes had been created on the basis of the findings on typical nursing errors described in this chapter. The focused type of error was the misinterpretation of a nursing situation and the subsequent making of a wrong decision. The questionnaires started by presenting the vignettes. The nurses were asked to choose one of them, imagine the situation vividly, and to then rate their intention to engage in joint reflection with colleagues on potential causes of the error and the development of strategies to avoid similar errors in future. In both studies, the nurses estimated the error vignettes as authentic and relevant. Moreover, we found the outcomes concerning nurses' ESLA independent of the individually chosen error vignettes.

To test the variable relationships hypothesized in the mediation model, we used structural equation modeling (SEM) in both studies. For the purpose of the present chapter, we synthesized the findings from both models using meta-analytic SEM (MASEM; Cheung & Chan, 2005). Though meta-analysis is frequently believed to be restricted to large-scale research syntheses, "combining even two studies can give a useful increase in precision" (Cumming, 2012, p. 184; cf. Valentine, Pigott, & Rothstein, 2010). Because structural equation models typically provide less than perfect fit to the data in each individual study, MASEM can help to reduce bias. Hence, the added value of this integration lies in providing more precise and trustworthy estimates as compared to the individual studies. For the reader's convenience, technical details of the MASEM analysis are given in the appendix.

Concerning question three posed in the beginning of the chapter (Under what conditions do nurses engage in such error-related learning activities?), the findings demonstrate the relevance of the individual reaction to an error and the perception of a safe social climate at work and clarify the relationship of these variables with nurses' ESLA. As can be seen from the estimates in Fig. 7.1, the results of both studies corroborate the assumptions "(…) that (1) the estimation of an error as relevant to learning depends on the amount of emotional strain suffered from an error and, in turn, predicts engagement in social learning activities; moreover, […] (2) the tendency to cover up an error depends on the perception of a safe team climate and, in turn, predicts engagement in social learning activities" (Bauer & Mulder, 2013, p. 109). That is, emotional strain felt as reaction to having committed an error relates to a subjective need to address the putative causes of the error and therefore motivates ESLA (Oser & Spychiger, 2005; Rausch, 2011; Zhao, 2011). Moreover, the findings are consistent with the assumption that taking the risk of communicating an error to others at work seems to require the perception of a safe social environment which reduces the expectation of repercussions or punishment (Edmondson, 1999; Zhao & Olivera, 2006). These findings are in line with the discussed proposal that reporting errors and discussing them with colleagues depends on a positive subjective cost-benefit balance (feared social repercussions vs. learning relevance; Zhao, 2011). In terms of practical significance, the effect sizes yielded in the MASEM analysis indicate that the assumed relationships are at least medium to large. Overall, the variables in the model explain 39 % Variance in ESLA. In particular, the mediated effect of a safe team climate on ESLA seems substantial, given its indirect nature.

An interesting finding is that the two discussed strands (i.e., mediation paths) of the model seem to work independently from each other. In both studies the estimated emotional reaction and subjective relevance of errors to learning were uncorrelated with the perception of a safe team climate and the tendency to cover up errors. This may be surprising, because one might assume that a psychologically unsafe team climate would go along with increased error strain. The findings, however, suggest that factors concerning individual reaction to errors and factors concerning the social context constitute different aspects when it comes to the decision whether to discuss an error with colleagues, or not. This observation is relevant for quality management to raise employees' preparedness to report and discuss errors. Apparently, such interventions need to take into account both levels separately.

Finally, the findings show that the mediation model applies to both domains of nursing. Descriptively, the results in the elder care nursing study were completely consistent with the hospital nursing study in terms of the effects' direction and statistical significance (Leicher et al., 2013). The MASEM analysis added further evidence to this by showing that the pattern of relationships among the variables, indeed, does not differ substantially across the studies (see stage one of the MASEM analysis in the appendix). This indicates that – regardless of the differences in tasks and work structure between hospital and elder care nursing – factors that are related to ESLA work in a comparable way in both domains. Evidence from recent studies in the chemical industry (Seifried & Höpfer, 2013) and in retail banking (Leicher &

Mulder, 2016) indicates that the mediation model may even have a broader applicability.

7.4 Conclusion

In this chapter, we gave an overview of qualitative and quantitative studies on learning from errors at work in hospital and elder care nursing. These studies addressed three questions about important errors and related learning activities, as well as about conditions for engagement in social learning activities. The findings, first, provided a rich picture of relevant classes of knowledge- and rule-based errors (Reason, 1990; cf. Bauer & Mulder, 2007). As discussed, these types of errors have been claimed to be particularly relevant for learning (e.g., Keith & Frese, 2005). Second, the expert interviews contributed to the validity of the suggestion to model learning from errors as experiential learning cycle. Moreover, they add to existing claims that social learning activities are important for learning from errors in general (Harteis et al., 2008) as well as in the domain of nursing (Bjørk et al., 2013; Skår, 2010; Timmermans et al., 2011, 2012). The importance of such learning activities can be substantiated both from a theoretical and a practical perspective, because they enable learning processes on the individual level but also may extend it to the collective level. Third, the MASEM analysis, which integrated findings from two surveys in hospital and elder care nursing, demonstrated that ESLA is related to the individual reaction to an error and the perception of a safe social climate at work. Specifically, the relationship between error strain and ESLA seems to be mediated by the perception of an error as relevant to learning, while a safe team climate predicts ESLA through a motivational tendency to cover up errors (Bauer & Mulder, 2013; Leicher et al., 2013).

In interpreting these findings, at least three limitations should be considered. First, the qualitative and cross-sectional designs prohibit taking the results as evidence for causal relationships. That is, though causal connections among the investigated variables may be assumed for theoretical reasons, the present data cannot corroborate them. Second, the self-report nature of our measures may be criticized. To constrain self-report biases, we used the described vignettes-approach in the survey studies. Third, our studies focused specifically on knowledge- and rule based errors. Further research should also include other types of errors like slips and lapses which also occur in real work life. Comparing how different kind of errors lead to differential learning activities could advance our understanding and provide further implications for practice.

Though the focus of our chapter has been on learning from incidental errors, we close with some broader implications and recommendations for organizational development as well as for nurses' CPD. Concerning organizational development, as mentioned, our findings are consistent with calls to establish a learning-oriented culture that facilitates reporting and open discussion of errors in hospitals and elder care institutions (Aspden et al., 2004; Edmondson, 2004). For achieving this,

Harteis and Bauer (2014) recommended a strategy that integrates three types of efforts concerning (a) organizational safety, risk and quality management to estimate the risk of occurrence of certain errors as well as measures to reduce their probability; (b) organizational learning from errors by means of systematic collection and analysis of errors and critical incidents with the purpose of revising and improving current organizational structures and processes; and (c) team and individual efforts to analyze own errors and their potential causes, as well as the development of strategies to avoid similar errors in future. The integration of these efforts aims at reconciling the seemingly disparate or even contradictory goals of error prevention, error management, and learning from errors both at the individual and collective levels.

Regarding nurses' CPD, the potential of errors for learning extends to more traditional forms of training. We consider two exemplary goals, here: increasing nurses' knowledge about typical errors in their field of work, and building up their skills in managing occurring errors efficiently. Regarding the former, working on authentic cases of typical errors can enhance (future) professionals' awareness of what errors frequently occur in their field of work. This knowledge may help them to anticipate and avoid such fallacies. Moreover, scaffolding learners' reflection on errors and their causes can assist them in acquiring the skills required to systematically learn from errors. Hence, exploring and analyzing authentic error cases, elaborating their general and specific causes, as well as action strategies to handle them may contribute to error prevention and improve task performance. Relevant errors for these purposes can come from academic research – such as the collection of error cases that we developed from our interview studies – as well as from analyses of critical incident reporting systems. Regarding the second goal, vocational education and training as well as CPD should support learners in developing and applying appropriate strategies for managing errors efficiently. That is, professionals should have automatized strategies to detect errors, correct them if possible, and to contain their adverse consequences. Because errors may impose severe stress and time pressures, having developed such skills is necessary for responding quickly and efficiently to the situation (Zapf, Frese, & Brodbeck, 1999). For both stated goals training simulations can be helpful because they provide explicit opportunities to explore errors in a safe context. Such simulations already constitute a major element of professional learning in several fields of work (e.g. aviation) and become increasingly important in health care as part of workers' continuing professional education.

Appendix

MASEM is a recent development in the field of model-based meta-analysis aiming at the integration of findings from structural equation models (Cheung & Chan, 2005). For synthesizing the findings from Bauer and Mulder (2013) and Leicher et al. (2013), we used the two-stage structural equation modeling (TSSEM) approach

to MASEM (Cheung & Chan, 2005). This approach proceeds in two steps. In stage one, the homogeneity of the correlation matrices of the individual studies' variables is tested using multiple group SEM (i.e., with studies as groups). If a model imposing equality constraints on the correlation matrices across studies fits the data well, as judged by SEM fit indices, then there is sufficient evidence of homogeneity. In that case, a pooled correlation matrix can be estimated across the studies. In stage two, this pooled correlation matrix is used to fit the substantive model.

We used the metaSEM package version 0.9–1 (Cheung, 2015) in the **R** statistical environment version 3.1.2 (R Core Team, 2014) to fit the MASEM. In stage one, a fixed effects model was used because only two studies entered the analysis.

The results of stage one indicated sufficient homogeneity of the two studies' correlation matrices ($\chi^2(105) = 213$, $p < 0.001$; RMSEA = 0.069, CFI = 0.970, TLI = 0.940, SRMR = 0.059). In the stage two analysis we specified the model as depicted in Fig. 7.1. To avoid clutter, the measurement part of the model is omitted in the figure. ESLA is a second-order factor comprising the social learning activities *general cause analysis*, *specific cause analysis* and *development of new strategies* as first order factors (cf. Bauer & Mulder, 2013). Fit indices from the stage two analysis indicated acceptable fit for the mediation model (see Fig. 7.1). First order factor loadings range between 0.53 and 0.99, second order factor loadings between 0.67 and 0.74.

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Chapter 8
Sustaining and Transforming the Practice of Communities: Developing Professionals' Working Practices

Christy Noble and Stephen Billett

8.1 Further Developing Occupational Capacities: Individual and Collective

This chapter discusses how practice-based experiences can be used to build further individuals' occupational capacities (i.e. professional development), whilst concurrently sustaining and transforming the practices of work communities. It considers how both of these forms of individual and collective change can be brought about through interactions between professional practitioners within their particular work community (i.e. medical doctors) and individuals with specific expertise from outside of that community (i.e. pharmacists). The central concern here is to understand further how individual capacities can be further developed concurrently with productive changes to work practices. The case selected to illustrate and elaborate the concurrence of these changes is that of pharmacists engaging with junior doctors to develop further prescribing skills of the latter. Understanding the possibilities for this concurrence is important as the ongoing development of occupational capacities across working life is often closely aligned with changes to practice. Moreover, it includes a consideration of collective change. Processes referred to as professional development, continuing education and training, or continuing professional development are usually seen as being focused on individuals and their employability (Coffield, 2000; Cohn & Addison, 1998), which can extend to their advancement, or even progression into another occupation. In contemporary times, this

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individual focus on ongoing occupational development has become closely associated with workers demonstrating the currency of their occupational capacities to maintain occupational licensing and certification (Hodkinson & Bloomer, 2002; Longworth & Davies, 1996). Noteworthy, processes supporting this ongoing development are often those associated with participation in taught courses or other kinds of educational experiences that are of the schooling kind (Schuller & Watson, 2009), largely focused on educating individuals and assessing their capacities.

However, such an approach tends to be restricted in three ways. The first is that it is very much focused upon explicit educational experiences, rather than those in practice settings, where many aspects of occupational performance can be best learned and validly assessed. Instead, orthodox approaches tend to focus on intentional educational interludes within programs intended to achieve particular specified learning outcomes. Often overlooked or ignored in such approach is the potential significant learning that arises from workers' engagement in the everyday work activities and the promise which these hold for the development of their employability, including advancement (Colin, 2004), and the health care sector is no exception (Teunissen et al., 2007, Teunissen & Dornan, 2008).

The second concern is the individual focus. Much is made of work increasingly being a collective and collaborative endeavour (Molyneux, 2001). That is, groups of individuals working together to achieve particular outcomes, which they alone would not be able to achieve. These groups are not always engaged in the same occupational activities, but might include collaborations of workers from a number of occupations. Indeed, much of professional practice is characterised by workers making particular contributions to specific work tasks, albeit within hierarchical or peer relations. One example of this is the inter-professional work that constitutes much of what occurs in the healthcare system (O'Keefe, McAllister, & Stupans, 2011). That is, patient care is realised through teams of healthcare professionals each with quite specific capacities and roles working to secure patient outcomes. So, while each occupations has its own specialisms and need for further development, much of their application can arise collectively, albeit sometimes in contested ways (Hall and Chandler 2005). It follows, therefore, that more than individuals' ongoing development, the kinds of changes required for effective work enactment of occupations extends to remaking and transforming workers' collective practice (O'Keefe et al., 2011). In particular, where reliance on close collaboration for effective work performance and the need for change exists, ongoing professional development becomes a collective and an individual endeavour.

Thirdly, the ongoing development of occupational capacities is also related to changes to both the occupation itself and transforming work practices. Hence, as workers come to develop further their occupational capacities, they are also actively engaged in the process of remaking that occupational practice. This remaking often arises from changes in the practice's occupational goals and processes. Hence, it is important to understand how both the further development of individuals' capacities (i.e. professional development) and the remaking of occupational practice can arise through workplace activities and interactions that focus on bringing about changes in the workplace.

In this chapter, the case of pharmacists working with junior doctors is used to describe how such ongoing professional development of both individual and collective kind can best arise through collaborative work practices. That is, how pharmacists either co-working or co-supervising with junior doctors in hospital settings can support the further development of their prescribing capacities. Prescribing is the process of making decisions about which medication to use, how to use it, how this usage is communicated and then how this usage is monitored and reviewed (Lum, Mitchell, & Coombes, 2013). This task is a crucial aspect of medical work and requires solid foundational knowledge of human physiology, pharmacology, pathology and therapeutics, and procedural capacities to ensure that patients are given medicines appropriate for their conditions. Prescribing also needs to take account of the range of healthcare issues patients are facing and other kinds of treatments in which they are engaged. Also, as pharmaceutical products and procedures for their use are constantly changing, that ongoing learning is aligned with changes in health care practices that extends to how prescribing is organised and enacted in clinical settings. In this particular instance, collective learning is also evident and necessary. Beyond developing further junior doctors' capacities, there is also an important role in developing further the capacities of other members of medical teams, including more senior clinicians (i.e. registrars and consultants), who might not be positioned as 'learners' in the way that are junior doctors.

This development is premised on teams of healthcare workers being engaged in a shared practice that has particular preferences, approaches, practices and values, and hierarchies. That is, to be effective, health care teams require a collective sentiment and processes supporting shared work, even if this is not wholly overwhelming or deterministic. There is likely to be what Gherardi (2009) refers to as a practice of the community. That is, a community-based set of norms and practices that, in the case of healthcare or groups of medical practitioners, is likely shaped by medical hierarchies, and often for good reasons. Not the least of these is the particular nature of collective or team work which might be as much about discontinuity as continuity. For instance, in teaching hospitals there are often large numbers of junior doctors who spend relatively short periods of rotation time in various clinical settings learning about particular aspects of medical and healthcare work. Therefore, there is constant individual learning and a dynamic community of practitioners in which that learning occurs. In such circumstances, securing professional development outcomes will need to have both individual and collective dimensions.

It follows that part of the professional development in the work context needs to be about sustaining the practice of the community, despite the frequent rotations of junior doctors. So, the ongoing development of junior doctors is necessary to assist the quality of medical practice on hospital wards per se, yet also provide effective patient care in the clinical setting. However, it is also necessary for the practice of this work community to be itself remade when changes in the requirements for effective practice arise. So, for instance consider the changes in patient isolation procedures which occur in hospitals across the world in response to the Ebola virus. Existing practices had to be revisited and change dramatically to ensure the safety of health-care workers from an insidious virus. In the study presented and discussed

here, the changing nature and requirements of prescribing bring constant changes to healthcare practice. In this way, ongoing professional development needs to co-occur with both sustaining and transforming the practice of the work community.

To understand how these processes can co-occur, data from interviews of 34 healthcare practitioners (i.e. pharmacists, junior doctors and consultants) about pharmacists providing guidance and/or close supervision for junior doctors to develop further their prescribing skills are presented. This data is used to illustrate and discuss how healthcare professionals (i.e. pharmacists) from outside of the practice community can engage with its practitioners to both assess the learning, whilst also sustaining and transforming the practices of the community. The structure of the chapter is as follows. Firstly, some consideration is given to the concept of the practice of communities and also the interface between individual and collective learning. Then, the case is introduced and findings and conclusions associated with both sustaining and transforming individual and collective capacities are discussed in turn.

8.2 Developing Individuals' Practice and That of Their Work Communities

What is proposed here is a departure from an 'individualist' approach to junior doctors' professional development to elaborate an account of how individual and collective means by which these junior doctors develop as prescribers through interactions in health care workplaces with pharmacists who sit slightly outside these healthcare teams. Yet, before proceeding, it is important to set out some premises for how these experiences are understood and can be appraised. In overview, consideration is given to the duality comprising workplace affordances and individuals and engagement (Billett, 2001). That is, the degree by which junior doctors are afforded opportunities to engage in activities associated with prescribing and as guided by members of the medical team and the pharmacists with whom they work. These affordances can be both potentially supportive and/or inhibiting. These doctors can access close support of more senior doctors, yet may be concerned about making errors which could have professional consequences for them and their patients. Beyond these affordances is how these junior doctors come to engage in the task of prescribing. This includes their participation in activities and interactions ranging from clerical tasks to making autonomous prescribing decisions.

Part of the affordances mentioned above is the degree by which guidance from more experienced or expert others is available and supportive of these junior doctors' learning. In particular here, consideration is given to how pharmacists can assist with learning that might occur within uni-professional practices of a prescribing community. This usually comprises only the doctors who make decisions about prescribing. Hence, a key premise here is that learning is not seen as either an entirely solitary or a completely socialised process. Instead, this kind of learning is

shaped by individuals who are actively remaking and potentially transforming their work practices and activities (Billett, Smith, & Barker, 2005), emphasising the interdependence between the social and the individual. The social practice needs to be remade and transformed and relies upon healthcare practitioners to do so. Yet, these practitioners need to engage in the practice so that they can learn and develop further their occupational capacities.

8.3 Conceptualising the Case

The case discussed here is situated within a large acute care hospital's intense work environment with doctors caring for many patients and with organizational pressures to discharge patients expeditiously to ensure patient flow-through this unit. In this context, prescribing medications is an essential activity for the medical profession. Whether it is prescribing medications to treat particular conditions or ensuring that patients' medications are appropriate and/or they have an adequate supply when they go home or to a nursing home. These prescriptions are central to effective healthcare work and facilities. Safe prescribing can ensure that patients receive appropriate medications. However, there are risks associated with prescribing, because if errors are made patients can be harmed. Thus, prescribing medications safely is a central concern for the health care sector and pharmacists play pivotal roles in managing the risks associated with medication errors (Roughead, Semple, & Rosenfeld, 2013). Indeed, in Australia, hospital pharmacists' underpinning philosophy of practice centres on minimising risks associated with the use of medicines:

> … the objectives of clinical pharmacy service and of clinical pharmacy activities are to minimise the inherent risks associated with the use of medicines, increase patient safety at all steps in the medicines management pathway and optimise health outcomes (SHPA Committee of Specialty Practice in Clinical Pharmacy, 2013, p. S3)

Prescribing by doctors is of interest to other stakeholders, including pharmacists who review and provide medications, and nursing staff who administer them. Prescribing decisions tend to be made within a medical hierarchy, which is sensible given safety concerns. However, the 'putting of pen' to paper (i.e. writing the prescription) is largely the responsibility of junior doctors. This means that in situations such as medical ward rounds patients are reviewed by the medical team, prescribing decisions made and these are communicated to junior doctors who actually prescribe. In other words, they are often told what to prescribe. There are often limited opportunities in this work context to ask for explanations or advice on prescribing matters. However, as the junior doctors' confidence and knowledge of a particular specialty increases through the course of the rotation, they typically start to take more responsibility for prescribing decision-making.

Yet, other factors are now contributing to make prescribing increasingly challenging (Aronson, 2009; Coombes, Stowasser, Coombes, & Mitchell, 2008).

These include costly and potent medications, rapid turnover of hospital patients and increasing elderly population. However, while the dangers associated with medication error practices seem to be less insidious than those of Ebola, for instance, the remaking and transformation of work communities to improve practices associated with avoidance of errors, such as under-prescribing, over-prescribing, inappropriate or irrational prescribing remain important concerns (Ross & Loke, 2009). The orthodox response in addressing these matters is the tendency to use individualist educational interventions. Yet, these often ignore the potential for effective learning to occur in the clinical setting and through collaborative processes both with doctors and with also those from outside the immediate practice (e.g. pharmacist). These processes are those discussed through the practical inquiry presented and discussed below.

8.4 Engaging with Specific Expertise: The Case of Pharmacists Working with Junior Doctors

This section describes the method and procedures used to investigate how individual capacities can be further developed and work practice changed to accommodate the transforming nature of occupational practice. First, the participants are described, the data collection strategies are explained and then the approach used to analyse these data are presented and discussed.

8.5 Participants

A qualitative study was undertaken comprising interviews with members of three groups of health professionals: (i) consultants, (ii) junior doctors and (iii) pharmacists working in the same teaching hospital. These categories of practitioners were selected as informants as they each make significant contributions to and the learning of prescribing practices in an acute healthcare setting. Firstly, junior doctors were invited as they are central to prescribing in the acute health care setting, usually under the direction of senior medical colleagues, but also pharmacists and nursing staff (Dean, Schachter, Vincent, & Barber, 2002; Tully et al., 2009). However, junior doctors are often the least experienced and have a high incidence of making prescribing errors (Lewis et al., 2014). This error-making is, in part, because the system of medical hierarchy can make prescribing an 'uncomfortable process' for junior doctors, especially when they are uncertain of the seniors' prescribing decisions (Tully et al., 2009). Secondly, consultants were invited to participate in the study as they tend to direct prescribing decisions and are accountable for prescribing decisions in wards. Despite this accountability, consultant supervisors often lack time to provide direct prescribing support to their trainees (Duncan et al., 2012;

Hore, Lancashire, & Fassett, 2009; Kilminster, Cottrell, Grant, & Jolly, 2007). Thirdly, pharmacists were sought as informants because previous studies suggested they make significant contributions to building junior doctors' prescribing capacities (Tamuz, Giardina, Thomas, Menon, & Singh, 2011; Tully et al., 2009). In particular, junior doctors report valuing the inter-professional supervision by pharmacists and often relied on it when making decisions about medicines (Tamuz et al., 2011). These findings suggest that, in terms of learning to practice, interactions with individuals who have particular expertise (e.g. pharmacists) yet who sit outside of the community can make important contributions to learning in that work community. However the nature of these contributions, participatory practices and interactions have not been explored in detail, nor have the opportunities to enhance these contributions been identified.

8.6 Data Collection

The practical inquiry reported here was conducted in Australia in 2014, after ethical clearance had been secured. Junior doctor, pharmacist and consultant clinical supervisor groups were identified and potential participants invited to participate in the study by email. As an intervention was planned following the interviews, the recruitment of consultants focused on physicians, and contrasting views were secured by interviewing surgical and mental health consultants. For the pharmacists, however, the concern was to secure responses from those with diverse lengths of experience. As the junior doctors worked in a rotational pool, they generally had different kinds of experiences. Consequently, both first and second year doctors were included in the pool of informants. In all, 34 focused interviews were conducted with 11 junior doctors (3 females and 8 males), 10 consultant clinical supervisors (3 females and 7 males) and 13 pharmacists (11 females and 2 males). The duration of interviews ranged between 15 and 50 min and they were recorded. The interviews were guided by a topic guide that included the following: for junior doctors, how they have developed as a prescriber and what and who has contributed to this; for pharmacists and consultants, how they contribute to junior doctors' development as prescribers, workplace factors contributing to and hampering this. The interviews were conducted until thematic saturation was achieved. The recorded interviews were transcribed verbatim and these were analyzed.

8.7 Data Analysis

The focus of data analyses was on how both individual and collective change can be brought about through interactions between professional practitioners (e.g. pharmacists and junior doctors) in that particular work community (e.g. medical team) and individuals with particular expertise, such as pharmacists, from outside of that

community. The inductive analysis followed the phases of thematic analysis described by Braun and Clarke (2006), that is: (1) becoming familiarized with the data by reading the transcripts; (2) generating the initial codes; (3) grouping these codes to develop themes; (4) the themes were identified when repetition occurred in the data through participants 'indigenous categories'(Ryan & Bernard, 2003); and (5) defining and naming the themes. Also, the data analysis entailed a process of constant comparison (Ryan & Bernard, 2003). For example, it considered differences between the individual responses related to junior doctors' developing prescribing capacities; the differences between consultants, junior doctors and pharmacist participants and contrasted individual responses within the entire data set. To ensure the quality of the data presented, the research team members independently read a subsample of the transcripts. They met regularly to discuss the data and the emerging codes, ultimately identifying and agreeing upon the main themes. Any coding discrepancies were discussed and resolved.

The following abbreviations and notations are used in all of the interviews transcriptions (Profession x – y – Gender,) where x = Participant group (e.g. Pharmacist; junior doctor; consultant) and y = Interviewee code assigned to the participant. Where words do not add to the overall sense of the comment (e.g. like, um), they have been removed and '…' have been inserted into the text. Editorial comments or clarification of discussion points are included in [brackets] when excerpts of the data are used in the manuscript.

8.8 Building Occupational Capacities and Sustaining Work Communities' Practice

As mentioned, junior doctors, consultants and pharmacists' perspectives of how pharmacists were contributing to developing junior doctors' prescribing capacities and how they also assist with sustaining prescribing practices in the work communities formed the focus of this analysis. The data presented below enable an understanding of the particular contributions pharmacists made to building junior doctors' prescribing capacities and how these contributions were perceived by the medical team. These data also illustrated how pharmacists might assist with sustaining prescribing practices in the work communities.

8.8.1 Building Occupational Capacities

There was agreement from most participants that prescribing medications safely is a complex process and requires a particular set of knowledge. This includes conceptual (e.g. factual knowledge about pharmacology, physiology), deep conceptual knowledge (e.g. associations between concepts such as selecting an appropriate

medication to treat a condition for a patient with several co-morbidities and complex social factors), and procedural capacities (e.g. writing up medication chart or discharge prescription) and dispositions (e.g. taking care to accurately document a patient's medication allergy). In terms of developing as prescribers, the junior doctors all reported having had some 'prescribing training', to address these knowledge requirements, when they were medical students (e.g. lectures, written assessments, work based experiences of writing up a medication chart and Objective Structured Clinical Examinations (OSCEs)). However, most junior doctor informants indicated that this preparation was inadequate for the actual practice of prescribing. In particular, matters requiring deep conceptual knowledge (e.g. selecting an appropriate medication for a patient with a particular condition) and specific procedural knowledge (e.g. writing up a medication chart) were not furnished through these processes. Recognizing the risks associated with making prescribing errors, for some participants, had caused a sense of anxiety about the responsibilities associated with prescribing medications.

Overall, the junior doctors, in contrast to their university- based experiences, reported that they had only began to develop prescribing capacities, especially related to the required deep conceptual, procedural and dispositional knowledge, in practice-based experiences in healthcare settings through opportunities to practice writing up prescriptions and making prescribing decisions. This opportunity is illustrated by the following quotation by a junior doctor:

> Experience. I think you get better at anything really as time goes on, a bit more efficient I'd like to think, but without the actual experience of going through and prescribing medication you're not going to get any better at it and having a pharmacist or even somebody senior in your medical team, without there being further guidance sometimes you don't know necessarily as an intern what to do (Junior doctor 1.8 – Male)

This quote also begins to illuminate aspects and structures within practice-based experiences that assist junior doctors further develop their prescribing capacities. In particular, the reference to having guidance when prescribing is noteworthy. All junior doctor informants suggested that prescribing capacities were developed through interactions with medical peers, nursing staff or pharmacists. In terms of the contributions being made by their medical colleagues, junior doctors were learning to prescribe through observing and imitating senior members of the medical team or by being told what to prescribe by the senior members of the team. The medical peers were also consulted for advice e.g. afterhours the junior doctor might call the medical registrar for prescribing advice. Moreover, prescribing resources were also used to assist decision-making, such as prescribing guidelines. The following quotations illustrate some of these approaches to learning:

> They [consultants] would tell you what to prescribe…so you pick it up eventually. Obviously, when they start giving fluclox [flucloxacillin – antibiotic] for cellulitis [infection] you obviously start putting it all together. You do have that soft - the base knowledge there in the background, but it's more a process of put them on this, put them on this, put them on this. (Junior doctor 1.2 – Male)
>
> By watching what other people do and then obviously you're doing [using] like eTG [electronic Therapeutics Guidelines] and AMH [Australian Medicines Handbook] and

> stuff. But a lot of what we prescribe is dictated to us. We get told what to do. You know like the [consultants say] send them home on this, and you just prescribe that. (Junior Doctor 1.11 – Female)

All the consultants interviewed reported making attempts at guiding and supervising junior doctor prescribing by reviewing the medication charts on the ward rounds, and asking their registrars to supervise the juniors. However, they admitted finding it difficult to provide comprehensive supervision of their junior's prescribing (e.g. they rarely reviewed the discharge prescriptions for patients who were going home) and assumed that the juniors would seek help from themselves or the registrars if they needed it. Yet, the following demonstrate the shortfalls of the current prescribing supervision:

> …because the allergy list, what the patient says and the actual reality, it doesn't tally up… for example, we saw a patient over the weekend or Monday, I think, that said penicillin allergy. But I knew and she was on Augmentin [penicillin antibiotic] and she has had Augmentin in the past. So, somehow the resident has just, like a parrot wrote what the patient says, doesn't think. That area probably needs to be tidied up. (Consultant 3.8 – Male)
>
> When in practice they [junior doctors] should ask questions if they don't know what to do, and to look things up or they should ask the ward pharmacist. (Consultant 3.6 – Male)

While these experiences assisted junior doctors develop their prescribing capacities, the interview findings suggest clear limitations and risks associated with a uni-professional approach. These included matters such as junior doctors acknowledging that they were not actively engaging in the prescribing decision-making process. Instead, they were being directed within a hierarchy and believed they had few opportunities to take responsibility for actual prescribing decisions. Also, because of hierarchies in the medical team, these juniors reported being reluctant to seek advice or guidance on prescribing matters, especially if they might appear trivial. Moreover, the medical teams were reported as not addressing certain aspects of prescribing capacities (e.g. legal, funding and continuity of care matters). Instead, it was acknowledged that pharmacists were addressing these matters. The pharmacist informants confirmed that they held themselves responsible for monitoring and supporting junior doctor prescribing because of their role in medication safety. The nature of these contributions was captured in the following pharmacist's quotation:

> We supervise their prescribing in terms of inpatient medication orders, viewing the orders, reviewing for in terms of legal – do they meet legal requirements, are they signed and things like that; then from clinical point of view whether there's any clinical issue, you know all the obvious stuff like interaction or whether the doses are adequate. So we make recommendations like that if we see any red flags or anything that's unusual. (Pharmacist 2.3 – Male)

In terms of the contributions being made by pharmacists to building junior doctors' prescribing capacities, these were reported as including: direct instruction, direct guidance, identification of medication errors and provision of feedback. Firstly, most pharmacists recounted situations where, upon recognizing that junior doctors lacked procedural and sometimes dispositional prescribing knowledge, they would offer intentional support and guidance and direct instruction. For example, they

reported taking time to sit with newly qualified doctors and provide instruction on the prescribing process and how to navigate through these processes.

> When the doctors are pretty new, so at the beginning of the year especially, most of the time you'll actually sit down with a doctor and you'll be there with them when they write their first script so I've experienced that a lot over the years. (Pharmacist 2.7 – Female)

Because of the pharmacists' contributions, junior doctors reported often coming to see them as a resource they could seek advice from when they needed it or when they encountered difficulties prescribing. Importantly, junior doctors reported viewing pharmacists as a neutral resource for prescribing guidance, because, they avoided the need to risk consulting with and being judged by more senior consultants. This is important as junior doctors seemed to believe that asking for assistance from senior medical staff cast them as being a burden or failure. The following quote illustrates how the junior doctors came to view pharmacists' contributions:

> When you do [find] a really good pharmacist…they do put the time and effort into it, explaining to you what they think is the problem and why they think it's the problem….so in that way they're developing us, I guess, because they're working through their own clinical reasoning to you. (Junior Doctor 1.6 – Female)

Secondly, pharmacists were also reported as providing direct guidance to junior doctors through regular reviews of their prescriptions. As part of their role before they dispense the medications, pharmacists review the medication charts and prescriptions. If discrepancies or errors are identified, then the standard practice is to notify the prescribing doctor and through this interaction junior doctors re-evaluated their prescribing skills and learnt from those interactions. This standard work process creates opportunities for junior doctors to learn from their mistakes in a supportive way. The following quote demonstrates this from the junior doctor perspective:

> When she [pharmacist] calls me I tend to listen or at least I know it's not a ridiculous question…so if she comes to me going, oh, this is a bit weird, instead of just going, oh, look, someone's prescribed it for a reason, I will listen and be like, oh, we should ask why they're on that. (Junior doctor 1.9 – Male)

Finally, because the pharmacists tended to contact junior doctors when they made prescribing errors, these junior doctors were using the interactions to monitor how they are performing as prescribers. The following doctor's quote captures this concept:

> The number of phone calls we got from the pharmacy [laughs], because obviously if you've done something wrong you know straightaway because they [pharmacy] confirmed it over the phone. So I guess, yeah, that was really the only way, or if the pharmacist picked you up on it. (Junior doctor 1.6 – Female)

In these ways, the junior doctor informants provided insights into how practice-based experiences enabled them to develop their prescribing capacities. Of note, was how the pharmacists were augmenting junior doctors' practice-based learning using a form of practice pedagogies that included direct instruction, guidance and

feedback on performance in prescribing, but which was part of standard work practices.

8.9 Sustaining Work of Communities

The discussions above emphasize the important contributions pharmacists are making to further develop these junior doctors' prescribing capacities. However, the findings also indicated these contributions extended to sustaining the practices of the work community. In particular, because of the rotational nature of the junior doctors' short tenures, which ranged from 5 to 10 weeks, the work community needed to find a viable means to sustain its practices, such as safe prescribing of medications and care of patients. In reference to the constant cycle of junior doctors and the subsequent challenge this posed for sustaining the practices of the work community, one of the consultants made the following observation:

> But in a system where there's lots of new people coming through, registrars are rotated constantly, interns stay only five weeks, sometimes…practices like that [prescribing], you've got to keep an eye on them because things do get, doubled doses get given, errors, so that you have to adapt to the realities of a teaching hospital because of this huge turnover, yeah, so you probably then need rigid prescribing practices or rules so that minimise the risk of errors. (Consultant 3.1 – Male)

The pharmacists were also cognizant of these complexities and each described the particular ways and strategies they used to negotiate rapid engagement with junior doctors. All pharmacist informants reported the importance of taking the time to get to know new junior doctors at the start of a rotation. The pharmacists noted that their interactions with junior doctors were less productive via phone and/or when they were unknown to junior doctor, with the most productive interactions occurring when pharmacists' contributions were legitimised by the consultant. This can be explained as a process of ontogenetic ritualization, which is "a process whereby two partners negotiate a mode of engagement and communication through social interaction" (Tomasello, 2004). The following quotation describes how pharmacists go about interacting with new junior doctors:

> … just having a good relationship with them in the sense of introducing yourself, talking to them and building that rapport definitely helps. I've been on my current ward for about three months. When I first started there, talking to the doctors was – I don't feel like I necessarily did the best job I could do because you were nervous, you were new to it, whereas I think over the time as I got to know the doctors better, as I got to know the cases and as I got better in my role as I progressed, I think that definitely helped." (Pharmacist 2.9 – Female)

Working through this process of engagement was reported as assisting the pharmacists in their interactions with junior doctors and, thus, helped them achieve their aim of ensuring that safe prescribing practices were sustained with each changeover of junior doctors. As the pharmacist above goes on to explain:

> … you've just got to make sure that you're building a rapport with the doctor so that you are confident to talk to them if you do have any suspicions and then also confident to understand that there are going be things that they know that you don't know and just that educational line of communication is also really important as well and to build on that…. I think that probably being able to talk to your team and to the people you work with on an educational basis is pretty important for building and learning and then also making those clinical decisions as to where you might think there's actually a problem to begin with is important. (Pharmacist 2.9 – Female)

The need for these types of engagements in this teaching hospital setting appeared to be a product of the rotations of junior doctors, which led to a lack of intersubjectivity (Billett 2014b) that might arise through more long-term working relationships. That is, a lack of shared understanding, between the more stable members of the work community's practice (e.g. consultants and pharmacists) and the rotational members e.g. junior doctors. Interestingly, junior doctors reported developing their own strategies, which included seeking out pharmacists, to sustain prescribing practices when they commenced a new rotation and this was acknowledged by the consultants. In this way, they were exercising their agency within the scope of a practice where they wanted to learn, but had to be selective about sources of advice. For example:

> …going into other rotations…when I didn't know, I'd just ask the pharmacist on the ward. That's why having a ward pharmacist there to…clarify things makes it a lot easier as a junior doctor. Things tend to vary in different specialties as well. You don't always know what to do and sometimes they can provide a bit of advice…for doses and medications. (Junior doctor 1.5 – Male)
>
> … one of the things that's really important is just continuity. Someone [pharmacist] who is around a lot of the time…so someone who is able to work with the junior doctor consistently I think is really important." (Consultant 3.5 – Female)

A further contribution reported by pharmacists was addressing matters which largely remained unresolved by consultants (by their own admission), yet was an essential function of the work community: discharging patients home. Prescribing the medications for patient's discharge is a key task for junior doctors, yet one fraught with risk, in terms of, continuity of care and prescribing safely. The majority of the pharmacists described the supervisory contributions they made to ensuring safe prescribing of discharge medications. The following quotation provides greater insight to the nature of the contribution:

> Sometimes if they're [patient] written for a lot of prns [when required medications] and they'll [junior doctor] transcribe them onto the discharge [prescription]…[you'll question]…why are you sending them home with this? You're sending them home with injectables [medicines given as an injection]. Have the family had any education? Oh no. You know, just things like that…because you've got to think, well, what are they [patient and family] going to do when they're at home? Are they going to be able to handle that?" (Pharmacist 2.12 – Female)

Finally, all pharmacists described how through their own practices within the work community they formed opinions and judgments about junior doctors' prescribing capacities whilst working with them. These judgments were based on their prescribing knowledge. The following quotation demonstrates this:

> … I judge a prescriber on how well they prescribe…when I ask them a question about the Metformin [medicine for diabetes] or blood sugar control or things like that, that…they can answer those questions quite quickly and we can quickly go back and see if they did because we've got all the BSLs [blood sugar levels] there. Have we maximised things out for their blood sugar control? Are they on the best medications for it? Then it comes down to – I'll say this patient has diabetes but they also have ischemic heart disease, where are the other agents like aspirin, statins and although it's probably not prescribing, it interludes with that because it will become prescribing pretty much immediately after if they are confident. (Pharmacist 2.6 – Male)

There was inconsistency, however, in terms of how these judgments were communicated to consultants. Most consultants indicated they were not made aware of pharmacists' interactions with and perceptions of junior doctors. This has important implications in terms of sustaining the practices of the work community as the pharmacists' contributions to improving junior doctor prescribing were not known about, nor being encouraged or reinforced by these consultants.

In sum, these observations suggest that pharmacists were making valuable contributions to assist with sustaining safe prescribing practices by providing consistent guidance to junior doctors' prescribing practices as they transition into new work community practices. However, it was identified that opportunities exist to augment and extend these contributions through enhancing the interactions between pharmacists and consultants.

8.10 Transforming Work Communities' Practice

The findings from the previous section indicated that pharmacists were contributing to building individual junior doctors' capacities to prescribe medication safely and sustaining the practices of the work community. Moreover, the data infer that individual pharmacist's interactions with the medical team were actually or had the potential to remake and then transform the practice of the work community. That is, to support further development of that community as the requirements for practice change. This section describes and discusses these findings.

8.10.1 Pharmacists' Transforming the Work Communities' Practice

It can be inferred from the interview data from all three categories of informants that the practices of the work communities were being transformed, or had the potential to be transformed, through interactions between pharmacists and junior doctors. This was evident from pharmacists' descriptions of their contributions, for example, developing prescribing protocols for particular conditions, auditing prescribing practices and presenting the findings to the medical team. However the informants,

from all groups, identified opportunities and changes that needed to occur before pharmacists' contributions could be truly transformational. These included: (1) pharmacists' shifting their focus from identification of medication errors to learning facilitation and (2) identifying ways to integrate pharmacists into the medical team. Each of these factors is explained below and considerations given to their transformational potential.

8.10.2 From Medication Errors to Learning Facilitation

For all of pharmacists interviewed, the stated motivation for actively engaging and working with junior doctors was to promote safe prescribing practices, which they held as their responsibility to uphold. However, this role tended to be enacted in pharmacists' practices through identifying medication errors. Moreover, sometimes the junior doctors perceived their interventions as being pedantic or 'picky':

> … I think prescribers do actually see prescribing as a clerical task in a lot of cases, which it is. A lot of the things we're getting them to do are clerical but they're not putting the dots together always that it has clinical impact on the patient. So while it's an administrative task, it still is a safety issue. (Pharmacist 2.1 – Female)

The consequence of interaction being focused on identifying errors meant that relations between pharmacists and junior doctor were often centred on errors made by the junior doctor. Whilst these were opportunities for junior doctors' learning about the prescribing process, it was perceived as a process founded on the highlighting of deficiencies, in terms of their prescribing capacity, and created a perception that pharmacists were monitoring their prescribing (which is their job). The following illustrates the influence on these interactions had on the junior doctors:

> … again, I think it's their [pharmacist's] job to be the police and the attention – and have that attention to detail, which I accept and that's fine and just unfortunately I will never have that mindset which is always going to lead to a slight clash (Junior Doctor 1.9 – Male)

This basis for interaction sometimes meant that, from junior doctors' perspective, these types of interactions had the potential to create tension and difficulties for them within the medical team, particularly, when they were following senior colleagues' instructions. In terms of redressing these concerns, there was a consensus that pharmacists' contributions could be enhanced if their interactions with junior doctors shifted from solely focusing on identifying medication errors to adopting a role as a learning facilitator. In other words, rather than reactively responding to prescribing errors, pharmacists proactively guide junior doctors' prescribing. That is, taking responsibility for shaping the prescribing learning curriculum and sequencing learning activities when new junior doctors rotate into the team. It was acknowledged by medical informants, and confirmed by the pharmacists, that, currently, pharmacists may not feel that they have the authority to engage in this way:

> … they [pharmacists] probably don't feel empowered to sit you down and say oh hey these are the things I've noticed that you're not really quite doing very well on and here's the

> ways to correct that, because if their role's not formalised in that way then it'd be an awkward conversation to have from both ends. (Junior doctor 1.10 – Male)

Moreover, it was acknowledged by medical informants that if pharmacists could adopt this role, they would be more likely to influence the prescribing norms and practices of the entire medical team. This prospect was attributed to pharmacists having a specific focus on medications and also because they sit outside of the medical hierarchy. The following illustrates this sentiment:

> Also the whole team wouldn't know [about not using abbreviations when prescribing] or the intern may have known but wouldn't have felt confident enough to say, you guys are wrong. Whereas the pharmacist who is seen as somewhat neutral from that [hierarchy can] say look, according to best [practice] we don't do that, or write that. (Consultant 3.1 – Male)

These findings suggest that pharmacists' contributions have the potential to not only assist junior doctors' learning, but also to transform the practices of these work communities. However, to achieve this goal, pharmacists' contributions may need to focus on augmenting learning rather than solely identifying and feeding back on errors.

8.10.3 Need for Greater Integration of Pharmacists into the Medical Team

Pharmacists' ability to transform the practice of the community was identified from the data as being hampered by a perception that they were not adequately integrated into the medical team and its practices. For instance, the consultants noted that while they valued the pharmacists' contributions most when they attended ward rounds, because of competing work demands and rostering issues, most pharmacists were unable to attend these rounds consistently. This was important as it presents a circumstance where most of the medical teams' decisions about prescribing are made and an optimum way for pharmacists to contribute to transforming their prescribing practices. Those pharmacists who were able to attend ward rounds confirmed this, as the following quotes illustrate:

> … a team ward round should include a pharmacist, should include a nurse, should include all the key members…it's generally better for the patient. Although we [medical team] do go through medication charts and rationalise everyone's medication during ward rounds, we may not be up to date with our drug interactions, with all the new agents that come out. Perhaps we will go back and look it up, but if we can make a decision there and then, we have the verbal resource in the form of our pharmacist, its better. (Consultant 3.10 – Male)
>
> …you can enact change [when on a ward round] and if you have an opinion on the prescription, you bring it up with all [medical] levels in one go. So I'd be saying to the resident [junior doctor], I don't know about this [prescription] and then I'd ask the consultant or the reg [registrar] or advanced trainee in one go and it gets sorted. Either you leave with it changed or you leave with an explanation. (Pharmacist 2.6 – Male)

Another perceived benefit of enhanced integration of pharmacists into the medical team was that it provided opportunities for consultants and pharmacists to role model inter-professional interactions to the junior doctors. This was reported as being important, by the consultants and pharmacists, as it communicated to junior doctors the value of productive inter-professional interactions. The following quote demonstrates this practice:

> There will be different opinions [between pharmacists and doctors] and for all practical purposes there's a respectful discussion there. So that way I think junior doctors are aware about how much we respect pharmacists' opinions and that's very important if we are discussing with the pharmacist in an open forum…But there is always healthy discussion. Like any good discussion, it will not go one way or the other always [laughs]. (Consultant 3.2 – Male)

Addressing this lack of certainty may foster pharmacist-doctor rapport, strengthen relationships that have been formed and enhance pharmacists' understanding of the medical team's practice as a community. The following quote by a consultant, confirmed by the pharmacist and junior doctor participants, demonstrates the benefits and transformational potential of enhanced pharmacist contributions:

> If a pharmacist was to become a member of my team, or they were supposed to be taking on a supervisory role for any prescription writing, then what I would expect is that they quite intensely look at all the prescriptions for the first few weeks. Then…do the correcting before they go out, and then run it through me. Then together we can approach the resident and say, have a look, this is what we've picked up on, this is the plan for the next two weeks. We're trying to make sure that these problems get fixed and then we'll evaluate after. Or you're riding along pretty good, no dramas, keep the good work up. If we can make that time to sit and have a feedback. They don't have to go to give direct feedback straightaway we can go as a team and give team feedbacks. (Consultant 3.10 – Male)

To summarise, prescribing practices are more likely to be transformed through strategies that promote pharmacists as learning facilitators and enable greater integration of pharmacists into the medical team. In this way, the hierarchical nature of the medical team's work practices is being acknowledged whilst concurrently promoting the unique contributions made by pharmacists. Moreover, these findings emphasise that for prescribing practices to be effectively transformed, expert outsider contributions need to be integrated and incorporated into situations where collective practice occurs. That is in the circumstances, where shared thinking and acting occur, decisions are considered and made and the consequences discussed openly and inclusively.

8.11 Implications for Continuing Professional Development

The findings of this study offer both conceptual and procedural lessons for continuing professional development. They suggest that the practice-based learning experiences when augmented by pharmacists' guidance and co-working can make significant contributions to building junior doctors' prescribing capacities.

Moreover, with further engagement, these contributions have the potential to transform the collective prescribing practices of the particular medical community. Hence, both individual learning and the remaking of practice can be realized concurrently through such interventions.

These findings are salient as supporting junior doctors' learning to prescribe has largely been reliant on traditional educational and assessment strategies and interventions that focus on individuals' learning and the assessment of that learning (e.g. teaching sessions, tutorials, OSCEs, written examinations) (Ross & Loke, 2009). These types of educational interventions, which are typical of continuing professional development activities, can be particularly productive when the intended outcomes are made explicit and offer a sense of certainty regarding those outcomes. However, they are often conducted in settings outside of practice (e.g. classrooms or online) and fail to acknowledge the complexities associated with practices such as prescribing. It has been suggested that these programs have had limited longitudinal success (Coombes, 2007) in term of sustaining and remaking safe prescribing practices. This lack of success could be attributed to being largely focused on the individual and not addressing the collective nature of prescribing within the practice of a healthcare community, especially in the context of junior doctors transitioning in and out of practice communities, each with their own sets of norms, specializations and practices.

What becomes apparent from this study are the features, patterns and qualities of pharmacists' engagement and co-working that sustained practice and transformed work communities as well as promoting the development of individual capacities. However, meaningful practice-based learning in the context of healthcare work and where patient safety and their outcomes are at stake cannot be left to chance. Practical and sustainable actions are needed. The findings of this study further illustrate the kinds of curriculum, pedagogies and personal practices which are likely to be effective for practice-based learning. These included: (1) building occupational capacity by creating moments for consideration and appraisal of what has been experienced in and at work; (2) strategies for effective co-working, (3) promoting pharmacists as learning facilitators, and (4) fostering pharmacist integration to the medical team. Each of these aspects will be discussed below briefly and related to continuing professional development.

Firstly, this study illustrates that professionals can develop at least some of their occupational capacities through engagement and co-working with experts beyond their immediate work team. These interactions have the potential to augment practice-based learning, in this case, by creating moments for engagement, consideration and appraisal of performance in the context of intensive work environments. This means that when considerations are being made for the development of prescribers' occupational capacities the significant learnings already occurring through practice-based experiences should be acknowledged and nurtured rather than implementing orthodox educational programs.

Secondly, while expertise from outside the practice of the community has the potential to augment learning, the outsider (in this case pharmacists) needs to identify and adopt strategies that enable them to negotiate how to engage and

communicate with the 'others', that is, ontogenetic ritualization (Tomasello, 2004). This negotiation is particularly salient and needs to be frequently available in settings where members of the practice are often transitioning in and out of the team while at the same time safe practice for patients needs to be sustained.

Thirdly, in terms of practice-based pedagogies, the study findings suggest that the role and nature of the interactions with outsider experts needs to be defined as one in which there is an emphasis on promoting and facilitating learning. That is, for pharmacists a shift in role from focusing on errors to explicitly assisting learning about prescribing, for instance. In this way, outsider contributions can be recognized and valued without being obstructive or interfere with the hierarchy in the practice community. Moreover, this approach is likely to promote the engagement of, in this case, junior doctors and enhance the agency of the outsider, i.e. pharmacists. This might mean that pharmacists, for example, consistently and proactively work with new junior doctors as part of their ordinary everyday practice and when assisting in writing their first prescriptions or through provide practical information about the commonly prescribed medications in a particular clinical setting. This warrants further investigation because the emphasis in the literature has been on error identification, rather than pharmacists' contributions to learning.

Fourthly, to achieve transformation in the practices of the work community, interventions may be required, in terms of enhancing pharmacists' integration within the medical team and promoting intersubjectivity between professions working together. In other words, there seems be an impetus to identify where the collective nature of the practices of the work team are enacted. With pharmacists and doctors in acute settings, this could be achieved through securing opportunities for co-working e.g. pharmacists attending ward rounds and engaging in shared prescribing decision-making (Billett 2014a, b). These represent opportunities where the greatest influence of the outsider is likely to be, in terms of transforming practices. Using this approach might enable practice norms to be remade in a way that is not contradictory to or supplanting the rest of the work practice (e.g. medical team) while ensuring that changes are made in response to transforming requirements associated with medication safety.

However, the challenge is to balance pharmacists' integration into clinical practice with ensuring that they retain their specific perspective and, thus, sustain an ability to contribute to transforming prescribing practices. The risk is that if pharmacists fully integrate they are more likely to normalize the practices of the medical team. In this way, helpful shared understandings may develop between professionals who need to work together as groups. In some ways, these processes can be seen as assisting the whole medical team to understand the contribution of pharmacists and vice versa.

Finally, when considering how continuing professional development opportunities might be fostered in workplaces, each feature and aspect identified (e.g. building prescribing capacity) are not isolated, rather there is an intricate interplay between each. They are interdependent. For example, prescribing capacities need to be built rapidly in order to sustain safe practices; while at the same time pharmacists

need to be working collaboratively with the consultants to ensure acceptance from juniors.

In sum, these findings demonstrate how practice-based professional development experiences can be used and augmented to build occupational capacities and, concurrently, sustain and transform the practices of work communities. These findings emphasize the important contributions made by expert practitioners from outside the community to building occupational capacities and assist in transforming the practices of that community. These lessons are important because they contribute to the argument that rather than developing more conventional education programs for prescribing continuing professional development there is an impetus to be inclusive of the kinds of experiences which are likely to promote both effective learning for individuals and advance the enactment of effective occupational practice.

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Chapter 9
Models for and Practice of Continuous Professional Development for Airline Pilots: What We Can Learn from One Regional Airline

Timothy J. Mavin

9.1 Introduction

Aviation is an industry where continuing education and training (CET) is common for all personnel. For some professionals, like airline pilots, CET is not only important, but also mandatory. For example, pilots undergo a regular biannual training and assessment program where they attend (a) classroom-based instruction, and (b) simulator training and assessment sessions. In the classroom, pilots undertake instruction to refresh knowledge of – or be introduced to new – aircraft systems, technical procedures or operational philosophy. In simulator training and assessment sessions, various emergencies will be encountered, requiring pilots to effectively work as a team. In this case, the captain (first in command) assisted by the first officer (second in command) will identify and contain a malfunction and determine the best courses of action. The simulator instructor, known as a *flight examiner* (also *check captain* or *type-rated examiner* in some countries and regions), then makes an assessment of the pilots' individual performance and that of the team. Unfortunately for some pilots, this proficiency examination does not go well, requiring focused retraining followed by a further simulator assessment. In some cases, continued poor performance is career ending.

Over many decades, the aviation industry has come to realize pilot proficiency is a complex interaction of both technical and non-technical skills. How these skills are both developed and assessed in differing training environments – such as classroom and simulator – is a question still under investigation. The purpose of this chapter is to show how two training methods were adapted to the particular needs of an airline through a unique collaboration with a university-based research team. In

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particular, I demonstrate (a) how traditional classroom-based instruction moved to a mode that increased the possibility for reflection, and (b) how post-simulator debriefings increase the possibilities of pilots reflecting on their experiences.

9.2 Reflective Practice in Training

An argument premised just over 30 years ago was that traditional training programs do not translate well into the workplace (Schön, 1983). It was proposed that improving life-long learning required a greater focus and analysis on a practitioner's experiences. At the time, reflective practice was formulated as a way for professionals to develop during and after practice. The terms reflection-in-action (reflection during practice) and reflection-on-action (reflection after practice) were coined to assist in making the learning phases of reflective practice more explicit (Schön, 1983, 1987).

Over the decades there have been numerous methods developed to improve reflective practice. One common method used within fields such as health care, human resource development and university education is the reflective journal (O'Connell & Dyment, 2011). The reflective journal requires individuals to write, often informally, about their practice. Although the reflective journal still remains an important method of professional development, it has not been without criticism. For instance, there have been arguments that writing can be superficial (Betts, 2004) or mechanical, and as such, that it does not address the deeper conceptual issues associated with professional practice (Holden & Griggs, 2011). Further critique centres around students not receiving adequate instruction on the purpose or approach to writing, thereby creating some journaling that focuses on perceived instructor expectation rather than reflecting on a writer's experiences and possible learning opportunities (O'Connell & Dyment, 2011).

Other forms of reflective practice include role playing. Here, students' abilities to deal with new situations can be enhanced by role playing possible outcomes prior to real-world practice. For instance, role playing has been used in many professional fields such as health care and aviation; more recently, it has gained increased use for returning soldiers from conflict zones to assist them in dealing with their own past experiences (Hassall & Balfour, in press). In a way, simulation training in aviation allows pilots to role play possible emergencies in high fidelity environments. Here, pilots are able to rehearse flying skills to such a level that they do not need any practice in a real aircraft prior to flying an aircraft with fare-paying customers (Mavin & Murray, 2010).

Critical incident analysis provides another approach to reflective practice. Initially developed in aviation and anesthesia, its main purpose "was on analysing and assessing failures of procedures, or human error, with a view to reducing future risk" (Lister & Crisp, 2007, p. 47). Critical incident analysis is gaining increasing use in the broader health care industry, education and also in social work (Lister &

Crisp, 2007). It has been recognized that critical incident analysis is an effective form of reflection-on-action (Schön, 1983), where participants are able to review previous practice. Furthermore, it has been established that critical incident analysis is helpful for planning future action (Holden & Griggs, 2011), recently referred to as reflection-for-action (Thompson & Pascal, 2012).

As one would expect, increasing use of technology is finding its way into the reflective practice field. Film segments from movies and documentaries become vignettes that facilitate individual and classroom-based discussions about practice. Video recordings taken from actual work practices of students and from professional performances are also used as a means to reflect (Hulsman, Harmsen, & Fabriek, 2009; Todd, 2005). For example, modern aircraft simulators video record cockpit, audio and flight instrument parameters, permit a flight examiner to replay an entire simulator session in the debriefing room; a tool referred to as a debriefing tool.

In regard to the effectiveness of videos, the findings are mixed. Studies show that medical students improve future practice if given opportunities to review their own performance via video recorded reflective sessions (Ward et al., 2003). It has also been demonstrated that improvement can be enhanced if participants are able to conduct reviews whilst accompanied by a senior or more experience person (Lane & Gottlieb, 2004; Scherer, Chang, Meredith, & Battistella, 2003). Yet, larger meta-analyses of studies investigating reflective sessions mediated by personal video fragments (referred to in aviation as a debriefing) indicate they are no more beneficial than sessions that have no video (e.g., Cheng et al., 2014; Tannenbaum & Cerasoli, 2013).

There is increasing literature supporting reflective practice for professional development, though with a caveat of improving its underpinning theory (e.g., Mavin & Roth, 2014a; Thompson & Pascal, 2012) and support via empirical studies (e.g., Koole et al., 2012). In spite of these calls, a key issue continuing to arise is that individuals, asked to reflect on their own practice, must be able to do so. Inherent in this assumption is that once a performance has been completed, individuals reviewing their own performance are capable of appraising that performance. However, considerable literature suggests many poorer performing individuals have great difficulty teasing apart the fundamental strengths and weaknesses of performance (Dunning, Johnson, Ehrlinger, & Kruger, 2003; Dunning & Suls, 2004; Gurung, Daniel, & Landrum, 2012; Sitzmann, Ely, Brown, & Bauer, 2010). That is, when people make incorrect responses, "they are also cursed with an inability to know when their answers, or anyone else's, are right or wrong. They cannot recognize their responses as mistaken, or other people's responses as superior to their own" (Dunning et al., 2003, p. 85). Despite the fact that skilled – or expert – individuals may use reflection as a means of improving performance, it is not known how lower performing individuals – either by virtue of being new to a job or simply through a reduced level of professional development commensurate with (in)experience – gain the greatest benefit from reflective practice, when intrinsically they will have difficulty reflecting. How could a CET program integrate these well-known issues

into new curricula that allow an increase in reflective practice across a range of skilled individuals?

9.3 Background on Pilot Training and Assessment: Decades of Change

In early training, a pilot is familiarized with basic flight instruments, cockpit setup and electrical systems, for instance. Concurrently, pilots learn standard operating procedures on how to operate the aircraft with other crew members, including other pilots, cabin crew, air traffic control, and company personnel (e.g., ground engineers and passenger boarding staff). In early instructional phases, pilots will use their understanding of basic aircraft systems and procedures to conduct training exercises in the simulator, including initial cockpit setup for departure, engine start, and taxiing. As pilots develop greater awareness of systems, simulators are used to integrate this knowledge into the context of both normal and non-normal flight situations. On completion of a training program – generally lasting 6–10 weeks – a majority of pilots develop sufficient skills and proficiency to be accredited to fly a particular aircraft type. Before a pilot is fully endorsed to fly with passengers and other non-training pilots, they undergo an examination in which a flight examiner assesses their skills and performance levels. How might the examiners accomplish their task?

As mentioned, it is mandated that airline pilots must undergo CET and assessment, though these have varied over the years. Studies in the late 1980s and through the 1990s discovered CET and assessment for airline pilots had a technical focus. For example, CET emphasized engineering and systems of the aircraft with extensive assessment of flight manoeuvres (Mavin & Murray, 2010). Even though this approach to technical proficiency remains important (Johnston, Rushby, & Maclean, 2000), it does not fully encompass the reasons why aircraft incidents and accidents were occurring over this period of time. Empirical research demonstrated that whereas technical knowledge of aircraft systems (e.g. aerodynamics, electrics, hydraulics), basic aeronautical knowledge (navigation and rules of the air), and technical skills (manipulation of actual aircraft) are important, these tended not to be the main reasons for the vast majority of aircraft accidents. Instead, skills associated with decision making, teamwork, communication, situational awareness, and management were often identified to have been the root cause of fatal aircraft accidents (Flin, O'Connor, & Crichton, 2008).

As a means of supplementing technical training curricula, airlines developed *crew resource management* material as a way to emphasize effective and efficient teamwork (e.g., Helmreich, Merritt, & Wilhelm, 1999). Though these so-called soft skills – now referred to as non-technical skills – continued to be integral to CET via a variety of didactic methods (e.g., theory concepts and critical incident analysis) there was a level of apprehension within national aviation regulatory authorities that these skills were not assessed in the simulator or aircraft. To effect change, the Joint

Aviation Authorities in Europe developed a separate system to assess non-technical skills; the assessment of technical skills remained unchanged. The non-technical skills system developed was referred to as NOTECHS and consisted of four non-technical skills categories of co-cooperation, leadership and management, situational awareness, and decision making (Flin et al., 2003). To further improve and clarify these categories, each was further divided into sub-categories. For example, *leadership and management* was divided into u*se of authority*, *maintaining standards*, *planning and coordination*, and *workload management* (Flin et al.). To further assist flight examiners in assessing pilot performance, each sub-category was augmented by means of "word pictures" to describe poor and good performance. For example, *use of authority* had word pictures for *poor performance* including "hinders or withholds crew involvement," "passive," and "does not show initiative for decisions," and "own position not recognizable." Good performance on the other hand was described as "takes initiative to ensure crew involvement and task completion", "takes command if situation requires" and "advocates own position" (Flin et al., p. 104). The aim was to make the assessment of non-technical skills mandatory, and to foster implementation by means of newly developed assessment tools.

Over the last decade, NOTECHS (and its many variants developed by airlines) are used to assess pilot performance. Even though there is great support for its use in practice, there has been some questioning of the separation of technical and non-technical skills (Mavin & Roth, 2014b). The main theme of these questions was orientated around the reality of practice. Specifically, when flight examiners assess pilots, do they see a separation of technical and non-technical skills? Furthermore, do flight examiners place a greater emphasis on some skills compared to others, as per the theories of compensatory and non-compensatory skills (e.g., Brannick & Brannick, 1989)?

In response to these concerns, a unified model of performance was developed that did not split performance into technical or non-technical skills. Newer models combine performance dimensions of flying skills and technical knowledge (traditionally technical skills) and situational awareness, decision making, management and communication (non-technical skills) into an integrated model of performance (Mavin, Roth, & Dekker, 2013). Mavin and colleagues also investigated the importance of individual performance dimensions and how they might relate. For example, a pilot during an emergency may become distracted and allow the aircraft to exceed a flight tolerance (sub-category – aircraft flown within tolerances), such as an airspeed or altitude (rather like being distracted while driving a car and running into the curb). However, this may be due to inefficient management of crew tasks (management of crew). In respect to the importance of skills, an aircraft outside of parameters (akin to running off the road) is viewed as a non-negotiable issue. Yet the cause may have been poor management (don't use your mobile phone). Seven airlines in the Tasman and the Australian military use this model for assessment of pilot performance (MAPP) (see Fig. 9.1) as their primary framework for training and evaluation purposes. Here, the MAPP provides a conceptual framework for pilots to assess performance by combining technical and non-technical skills

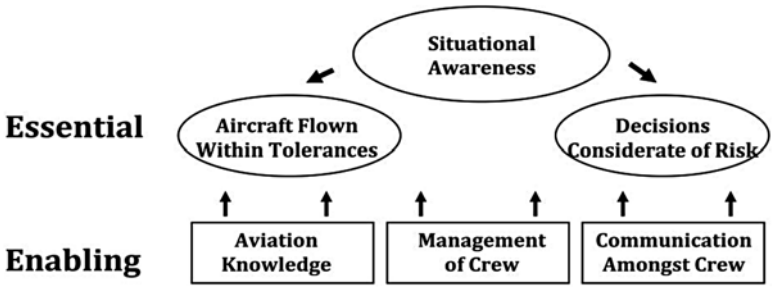

Fig. 9.1 Model for assessing pilots' performance (MAPP) (1,200 dpi)

(traditionally separated) and offers a visual presentation of the hierarchy and causal relationship of skills.

In the following sections, I show how one airline evolved two training modalities. I begin by overviewing the airline's initial crew resource management training, which had an identifiable lack of translating theory into practice, no different from the problem identified decades before in other professions (Schön, 1983, 1987). Through a change in classroom-based curriculum it is illustrated how CET moved from traditional instruction to one based on performance assessment training. That is, I show how making performance increasingly explicit, as per the MAPP, changes the focus of future reflective practice. I then describe and discuss simulator-training principles to show that even with improved understanding of performance, pilots exposed to high workload|stress assessment have difficulty recalling their previous performance. This then entails further refinements to the CET program.

9.4 Changes in Classroom-Based Instruction: Moving Towards Reflective Practice

A decade ago, the airline partner made strategic changes to their CET program in an attempt to come to grips with the findings emanating from the global aviation research community. It was clear that a move towards more non-technical skills content was required if the airline was to acknowledge current worldwide trends in accidents. The fundamental change expressed itself as an increased emphasis on theory, especially skills areas like situational awareness, decision making, management, and communication (Flin et al., 2003; Helmreich et al., 1999). It was assumed that this approach would transfer well to the flight deck of the aircraft. To confirm that the CET program was working, the participating airline developed an assessment instrument for technical and non-technical skills. It encompassed manipulative skills, knowledge of systems and procedures, automated system usage, execution of procedures, communication, workload management, situational

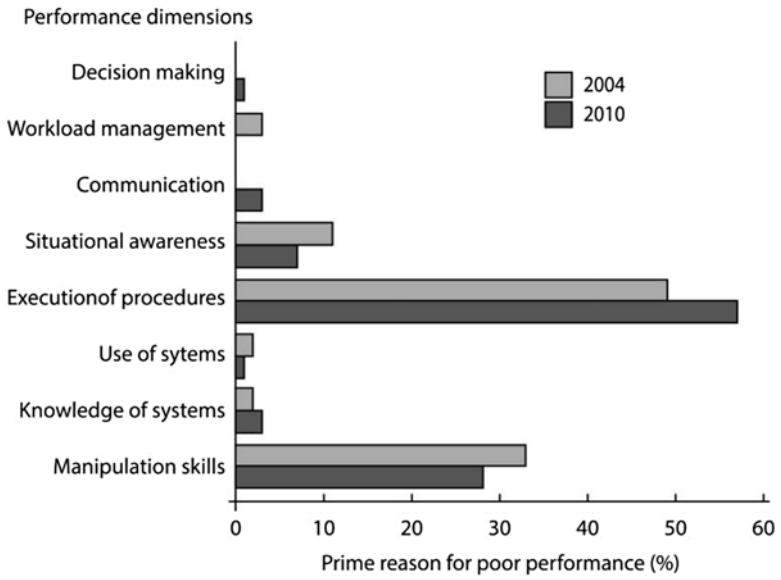

Fig. 9.2 A comparison of human factor elements measured in 2004 and 2010 shows little change after 6 years of training investment (1,200 dpi)

awareness, decision making and problem solving; a clear match of areas identified as problematic were taught and assessed.

The new CET program was implemented with baseline measures taken in early 2004 to determine that (a) company pilots were interpreting and correctly using the human factors elements in practice, and (b) flight examiners were assessing the new human factor elements. Another measurement taken in 2010 identified little if any change (see Fig. 9.2). To be more specific, after 6 years of investing in the new CET program, the focus of assessment remained on the technical skills of (a) execution of procedures, and (b) manipulation skills (Munro & Mavin, 2012).

As a result of this second assessment, the airline investigated new approaches to both classroom training and simulator assessment. One of the fundamental changes was the implementation of MAPP as its technical and non-technical skills philosophy. The reasoning for this was that the airline training team identified that the MAPP better represented the way that flight examiners assessed. This decision naturally brought the airline and the university-based research team closer together. In the meetings between airline and researchers soon after these early decisions, it became apparent that current practices were inappropriate: teaching theory and hoping for transfer into the flight deck was not working. Furthermore, it was identified that crew, even after years of additional training, were returning every 6 months to simulator assessments with little if any change.

A new training system was designed using standard instructional design principles including performance objectives, assessment instruments, instructional strategies, and instructional materials. The vision was to teach pilots fundamental skills

Management • Workload • Control • Cooperation • Threats & Errors	1	2	3	4	5
	• Ineffective organisation of crew tasks. • Inability to control self or crew member performance. • Interaction was negligible, or disrupted team effectiveness. • Serious threats or errors not mitigated or managed.	• Inefficient organisation of crew tasks. • Controlled self or crew member actions, though with difficulty. • Interacted with crew member, but provided limited support. • Threats or errors not well mitigated or managed.	• Adequate organisation of crew tasks. • Controlled self or crew members performance; disagreements resolved. • Interacted with crew member. • Most threats managed; most errors trapped.	• Crew member tasks effectively organised. • Effective control of self or crew to achieve expected performance. • Considered other crew to improve team performance. • Threats identified and managed; errors trapped.	• Tasks organised so challenging aspects of flight appeared easy. • Effective control of self or crew, even in a challenging situation. • Interaction with and consideration of crew maximised performance. • TEM well integrated.

Fig. 9.3 The word pictures used to assess management, on a scale from 1 to 5 (1,200 dpi)

of assessment irrespective of their rank. Developing assessment skills within the entire pilot group (including flight examiner, captain and first officer) was thought to improve self-reflective capacities both when pilots were assessed by a flight examiner and also during normal operations when the captain and first officer flew together (Mavin & Roth, 2014a).

The framework for developing assessment instruments came from the performance dimensions contained within the MAPP (e.g., situational awareness, decision making, aircraft flight, technical knowledge, management, and communication). The instrument was in the form of a rubric with word pictures used to describe performance levels from 1 through to 5 (*poor* to *very good* performance). The rationale was that "a holistic rubric is more conducive to providing global judgment of attainment of a benchmark standard at a program level" (Riebe & Jackson, 2014, p. 329). For example, management was a fundamental component of the MAPP; the management word picture described could be graded as a 1 (*poor performance*) all the way through to 5 (*very good performance*) (see Fig. 9.3). Coupled with the use of the MAPP, the assessment instrument enabled finer-grade assessment of each performance dimension with the ability for causal issues coming from the diagrammatic use of the MAPP (see Fig. 9.1). To return to the previous example, the instrument could show that "workload management" was the reason the aircraft was out of tolerance (or you were using your phone). Here, pilots would use maybe a 1 or 2 (see Fig. 9.3) depending on the word picture matching the performance.

As outlined, traditional methods of instruction were not transferring well from the classroom to the flight deck. Given that improving reflective practice was the objective of the training program, it was suggested that training all pilots in the area of assessment, by focusing on a similar method used for inter-rater reliability training, would assist in this area of transfer. Again, the aim was to align how pilots of all ranks assess. Inter-rater reliability training is a technique known for increasing assessment consistency between raters; it is detailed and requires an ongoing commitment (Holt, Hansberger, & Boehm-Davis, 2002). It has three main areas of focus: (a) performance dimension training, (b) behaviour observation training, and (c) frame of reference training.

Performance dimension training familiarizes students with assessment material being used (e.g., Baker & Dismukes, 2002). For example, pilots would be introduced to the MAPP and its fundamentals, followed by the new assessment instrument. This would also incorporate a detailed review of all performance dimensions such as the management field and its 1–5 rating scale (see Fig. 9.3). Behaviour observation training follows, where pilots are taught how to categorize and differentiate each performance dimension, including knowing the difference between *management*

and *communication*. The last step in the training is frame of reference training, where pilots are given the "multidimensionality of performance, defining performance dimensions, [which] provides a sample of behavioral incidents representing each dimension" while also allowing "practice and feedback" (Woehr & Huffcutt, 1994, p. 192). Here, the most effective method has been identified as video assessment. By utilizing appropriate assessment forms, students assess videos and obtain feedback from other pilots and the instructor.

As video assessment was a fundamental instructional strategy in this new training system, the airline invested in developing realistic flight video scenarios. This occurred by filming company pilots in various scenarios in the company simulator. The videotaped scenarios (ranging in length from 2 to 7 min) featured a variety of normal and non-normal situations (non-normal can describe any situation not usually experienced in flight, e.g., sick passenger, hydraulic failure, or engine fire) in fine and severe weather conditions. It was understood that developing realistic training materials would link directly to the pilots' world.

Even though performance assessment training was normally limited to flight examiners, the new aim for classroom-based instruction was to improve the assessment skills of all pilots. It was argued that having pilots assess the performance of peers in the scenarios – using the performance dimensions from the MAPP and the new assessment instrument – would create a stronger and more authentic link between theory and everyday work in the cockpit. Furthermore, as the MAPP provided a conceptual model of how a flight examiner assesses performance, junior pilots and those pilots who had performance issues would better understand the reasons why pilots in a video vignette may have failed, and the probable causal factors.

9.4.1 A Typical Training Day

After initial introductions, a typical training day in the revised classroom began with the projection of a specific scenario: in this instance, where two pilots taxi an aircraft in poor visibility to the runway. When the cabin crew (flight attendant) calls to announce that a passenger is very sick, the pilots are distracted. As the situation unfolds, they eventually find themselves on the wrong taxiway.

After playing this clip, the instructor asked workshop participants to individually assess each pilot in the scenario. Participants were specifically directed to comment on the nature of the problems that existed with the pilot's performance. In other words, what was being identified through the participants' eyes as the key reason that made them either concerned or pleased with the observed performance? Participants also were asked to identify how the problem could be fixed. The solution was to be stated in terms of the view a flight examiner would take: "What would the flight examiner emphasize during a (possible) debriefing that would enable the (scenario) pilots to improve their performance?" The last component was the actual debriefing: How would they go about discussing this issue with the pilots? That is,

all pilots were being asked to role play a flight examiner. The lesson focused on a sequence: problem → fix → debrief. After rating the pilots individually, participants teamed up with a peer. Finally, they discussed previous findings in groups of four. With a class of eight, this process would take 1-h prior to the instructor bringing the groups to a general discussion. No assessment tools were provided; pilots were required to make judgments using only their own experiences to this point.

What is surprising using this method is the difficulties pilots experience in identifying a consistent approach to the problem and the causal reasoning (fix) why the aircraft ended up on the wrong taxiway. Over a period of years, the airline had developed a culture of focusing on technical skills (specifically, execution of procedures and manipulation skills) even though a broad spectrum of technical and non-technical skills were taught and assessed (see Fig. 9.2). Accordingly, the general aspects that workshop participants identified as problematic related to failure in following procedures, communicative trouble, not stopping the aircraft when they first received the call from the cabin crew, crew inefficiency (e.g., the first officer was hopeless, the captain was hopeless), management, the aircraft being on the wrong taxiway, loss of situational awareness, and so on. During the subsequent classroom discussion, the instructor listed on the white board, under the headings *problem*, *fix*, and *debrief*, all items that had been identified by the pilots. On most occasions, there were over 30 issues produced for the 4-min clip. Fundamentally, there was no common framework among the pilot group for assessing performance.

After students had conducted their first individual assessment of a video and as a group collated scores and reasons on the white board, the MAPP was introduced. This demonstrated to the pilots in the classroom that the pilots in the video had experienced a reduction in essential skills (see Fig. 9.1) of situational awareness, which led to a failure to maintain the aircraft within tolerance (the aircraft was taxied in contravention of actual clearance). However, as use of the MAPP could illustrate, the fundamental reason that the aircraft was in this position was the failure of the crew to *manage* the incident. It would therefore follow that the debriefing meeting was to focus on management skills. For some workshop participants, there was a little confusion on why *stopping* was not the way to fix the problem. However, stopping the aircraft would have been an *event fix* rather than giving pilots *broader skills* that could be transferred to other events.

When the MAPP had been introduced and discussed, the assessment instrument was then introduced to the pilots. The workshop leaders demonstrated that management was the prime causal factor for poor performance. With the assessment instrument it was categorized under "workload management" with a rating of 1 (*Ineffective organization of crew tasks*) (see Fig. 9.3). On completion on this first video, theory pertaining to each performance dimension – now no different from traditional training – was introduced, using the first video as a frame of reference or anchor.

9.4.2 Summary

What has been described here is a new approach to how theoretical training is now conducted within this airline. Rather than theory being taught in the classroom first, videos have become the central focus of training. Pilots are required to use previous experience in an attempt to identify strengths and weaknesses in the vignettes viewed. The instructor then facilitates discussion among students about their interpretations of the performance. The ongoing research shows that many pilots now are better in identifying strengths and weaknesses of their performances, thus improving reflective abilities.

9.5 Simulation Instruction: Getting Pilots to Remember What Actually Happened

Simulation for both CET and assessment is fundamental to aviation today. In their most sophisticated form, simulators used for the last 20–30 years have been able to replicate the fidelity of a modern airliner in almost every way (Mavin & Murray, 2010). This level of sophistication now allows pilots to make their first real-aircraft training flight with passengers. The use of simulation within airlines has two prime purposes. The first is *type rating* training, where pilots initially learn to fly a particular aircraft type. The type rating includes classroom-based and simulation training lasting approximately 6 weeks prior to pilots undergoing flight training in a real aircraft. The second use of the simulator is for quality assurance. It is a requirement that airline pilots undergo a regular training and assessment program. Every 6 months (slight differences do occur between countries and airlines) all airline pilots undergo a 2-day training and assessment program. Each day consists of a 6-h training footprint that includes a 1-h briefing and 4-h simulator session, concluding with a 1-h debriefing. Even though most airlines encourage training as an underlying philosophy for each simulator session, it is still incumbent on pilots to attain proficiency by the end of the simulator session.

The simulator session can encompass a variety of training and assessment tasks. For example, when pilots first enter a simulator after the briefing, they will generally spend approximately 10 min setting up for departure. Once the setup is completed, the flight examiner (sitting at an operator console in the rear of the simulator) directs the session, operating the simulator and acting on behalf of traffic control, ground engineer, cabin crew and other aircraft.

A couple of specific sessions are always conducted. The first is a manoeuvre-based sequence. Here, the flight examiner sets up a specific manoeuvre for the pilots to conduct. In early training it could be as simple as an engine start or a rejected takeoff, or a more complex manoeuvre where an engine fails as the aircraft is rotating during takeoff. The pilots will be required to fly the aircraft to a safe altitude, secure the engine (putting out an engine fire in some cases) and land the aircraft at

a suitable airport, which could be the airport of departure or another airport depending on weather conditions. Generally in manoeuvre-based sequences, the aircraft is continually repositioned to allow for the next manoeuvre, which in itself creates issues for some pilots; these are discussed later.

The second type of training is *line-oriented flight training*. Here a normal flight is planned, with pilots during the briefing generally spending time planning for the flight. They are provided with normal flight plans, aircraft status, passenger loads, and specific weather, from which information they plan the flight. The aim is for the assessment to be as realistic as possible, with the flight examiner acting only as a traffic controller, a ground engineer, or cabin crew. During the flight, the flight examiner instigates specific non-normal events that the pilots are required to deal with. The events can be as simple as increasingly poor weather at the destination or malfunctions of a single system, or more complicated emergencies where one system malfunction can affect another system.

On completion of the 4-h session, pilots leave the simulator and return to a room to conduct a debriefing with the flight examiner. It is here that the flight examiner uses a variety of artifacts to conduct the debriefing of the crew performance. These artifacts can include notes made by the flight examiner in the simulator, charts and documents used by the pilots during flight, or whiteboard drawings produced on the spot to explain the flight manoeuvres. In some simulators, the debriefing tool (outlined previously) is used to replay selected scenes in the debriefing room. This allows the pilots to look at actual performance from a third-person perspective.

During the time that the university-based research team worked with the airline, we had begun with the assumption that pilots trained in performance assessment would be far better equipped to self-assess in the debriefing. To test our initial hypothesis, our research team began a large study investigating the actual practice of debriefing. In this study, we videotaped 29 entire debriefing sessions. To compare our partner airline with the practices of other airlines, five airlines participated in this study.

The study identified a number of important issues, some of which are outlined here. First, some pilots were emerging from the 4-h simulator session disorientated, especially after manoeuvre-based sequences. Second, all pilots were fatigued, regardless of their performance. That is to say, even pilots who had performed at an exceptional level appeared to be as tired as those pilots who had performed poorly. For example, when asked to review performance in the simulator, pilots had difficulty remembering the sequence in its entirety, thus making reflection difficult. Third, flight examiners were not taking into account the difficulties pilots were having in remembering what actually occurred in the simulator session. On numerous occasions pilots had to clarify what scenario the flight examiner was discussing. Basically, flight examiners without this realization were analyzing and critiquing a specific event; the pilots on the other hand were (a) trying to determine which event the examiner was talking about, and (b) reconstructing what had happened. Finally, flight examiners were not giving pilots ample time during discussions or when answering questions. In other words, examiners did not give enough time after a question was asked, or after an answer, a period called “wait time” (Rowe, 1986).

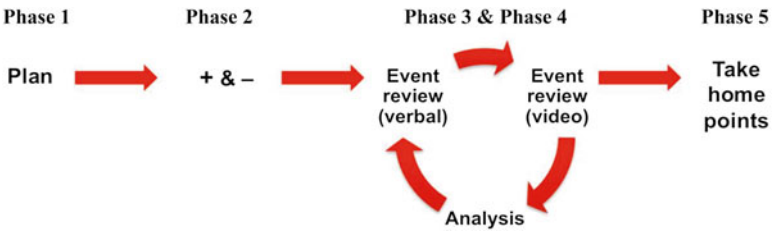

Fig. 9.4 New debriefing format depicting specific phases (300 dpi)

From this study arose two key questions: Were current debriefings effective, and if debriefings were not effective, how could the practice be changed?

By integrating previous studies the university had conducted with the airline (e.g., Mavin et al., 2013; Roth & Mavin, 2015), other studies on performance assessment (e.g., Dunning & Suls, 2004) and the current debriefing studies, we identified key issues that were making debriefings, and therefore reflection, less effective than they might be. These included (a) pilots of different rank assessing performance differently, (b) a disparity between ability to perform and ability to self-assess, (c) pilots being fatigued (no matter performance level), (d) some pilots being disorientated by numerous simulator repositions, (e) flight examiners doing most of the talking, (f) pilots finding it difficult to remember, and (g) flight examiners exhibiting poor wait time during discussion. To address these issues a new framework for debriefing was developed. It consisted of five phases, as shown in Fig. 9.4. Here, pilots initially review plan for simulator session (Phase 1); review positive and negative performance events (Phase 2); review a selected performance event in detail by talking through event, reviewing the simulator video of the event and assessing the performance by MAPP (Phases 3 and 4); and then final review (Phase 5).

In the first phase of this new framework, flight examiners encouraged pilots (rather than directing them) to provide an overview of simulator session details, simply by asking, "What were we planning to do?" This enabled pilots, especially those who were disorientated, to develop a clear understanding of what was meant to occur in the simulator. It also allowed the pilots time to talk more, with wait time being an important skill now learned by flight examiners. Surprisingly, this stage, which had usually not been occurring previously, was now taking as long as 12 min.

The second phase required pilots to identify positive and negative performance areas. We had identified, as had other studies, that pilots of different rank (i.e. flight examiner, captain and first officer) assessed performance differently (e.g., Mavin et al., 2013). At this stage the flight examiners were encouraged to be noncommittal in their interpretations of the pilots' perceptions of their own performance. As part of the third phase, flight examiners and pilots identified a particular scenario identified as either well done or in need of improvement. Flight examiners would then encourage pilots to relive (remember) that experience, or what we referred to as the *first-person* experience. This reliving of the experience was important, as it had been identified that pilots were having problems trying to do so. The flight examiner encouraged the pilot to describe (a) what they were doing, and (b) what they were

thinking. In cases when the airline had access to a debriefing tool, the flight examiner replayed the scene to the pilots. This is what I called the *third-person* perspective. It was only after these reliving experiences, both from a first- and third-person perspective, that the flight examiners engaged in analysis of performance. On completion of the analysis, another scenario would be selected for the pilots to relive.

Depending on time available, the final phase required the flight examiner to summarise the simulator session, or what we refer to as main learning points. As can be seen in Fig. 9.4, debriefing is initially linear (Phases 1 and 2) leading to a cyclical review where a number of focus areas are covered (Phases 3 and 4) followed with a final review (Phase 5). Comments from some pilots with whom we discussed this process noted it "is far better." There is now "a definite change in philosophy, how the debrief was run, very handy for us, for me anyway, use the time to chronologically list as a team, because you can't remember it … often after a simulator you're tired, you learn in the simulator and you learn in the debrief."

9.5.1 Summary

I initially made the assumption that pilots, previously trained in performance assessment, would be able to correctly evaluate their own performance on completion of a simulator session. However our debriefing study demonstrated that for a pilot to be able to assess performance they must first *make present again* what had gone before, prior to being able to reflect. This makes sense, as many studies demonstrate that cognition within the flight deck of an aircraft is situated and distributed (e.g., Henriqson, van Winsen, Saurin, & Dekker, 2011; Hutchins, 1995; Roth, Mavin, & Munro, 2014). That is, past experience of performance is not contained within a single person: in fact it is spread across the captain, first officer and aircraft systems, thus requiring a process – Phase 1 through 3 – to bring the past to the present. Because pilots can talk between them to reconstruct the simulator session, hear and see each other in the video, important aspects of the flight become present again. This is enhanced by the representation of instruments, which show exactly what pilots had available in the simulator. The third-person view, and the recalled first-person experience, increase the quantity and quality of represented experience, which then was available for analysis, assessment (using the MAPP and assessment instrument), and learning.

9.6 Classroom and Simulation Training: Improving Learning

In the foregoing sections, I described the ways in which an airline had changed two CET training programs it had been using: classroom-based instruction and simulator training associated with assessment. In the early years the airline increased the

focus on training of non-technical skills due to evidence being presented from the world aviation community (e.g., Helmreich et al., 1999). However, teaching non-technical skills theory (Flin et al., 2003) in the class did not transfer well into practice.

As part of a university|airline collaboration we had identified a couple of key issues. First, the best learning requires socially and physically authentic environments (e.g., Ericsson, 2008). Classroom-based training, by virtue of its decontextualized setting, can make authentic instruction difficult (Roth, 1995). Nevertheless, our use of videos – thereby consistent with existing research (e.g., Merriam, Caffarella, & Baumgartner, 2007) – provided an increased level of authenticity. The videos afforded anchored instruction (Merriam et al., 2007), whereby practice (the flight deck) was brought into the classroom. Using this approach allowed us to integrate theory with the practice of flying in the way that the pilots are familiar. Secondly, there was a consistent message that newer or poorer performing pilots had difficulty understanding assessment decisions of the more experienced flight examiners. This was consistent with other studies into performance assessment (e.g., Dunning & Suls, 2004; Dunning et al., 2003; Gurung et al., 2012; Sitzmann et al., 2010) and our study with airline pilots (Mavin et al., 2013). The focus of training therefore moved towards performance assessment training as a means of improving all pilots' ability to reflect on practice.

Yet there still remains a need to step beyond looking at pilots merely as individuals and to take a broader view on performance, which can only be learnt when the pilots are viewed within actual or simulated work settings. In simulation training, it was assumed that pilots now trained in performance assessment would be better equipped to assess their own performance. Given that pilots are trained to assess performance, and given that they had just completed the events in the last couple of hours, it was assumed that reflecting back would be a simple affair. Again, our research suggests this is simply not the case. We discovered that while a flight examiner can quite accurately identify events to be discussed, pilots under assessment actually struggle to recall what occurred during their simulator exercises. In the revised training program, there now existed an interim step between reflection on practice: an emphasis on recalling or re-remembering events that they had conducted. By changing flight examiners' debriefing framework, as illustrated in Fig. 9.4, we assisted pilots in recalling events prior to the analysis of performance via assessment instruments, thus allowing pilots to better use the assessment skills taught in the classroom, and thereby improving reflection.

9.6.1 Broader Implications for CET

Our work has a number of important implications that may assist other professional fields. The first implication for CET concerns an individual's ability to recall past events. Here there are two issues that are at play. The first is associated with memory, specifically explicit and implicit memory. Explicit memory is viewed as the

purposeful referencing of prior experiences, and is linked to conscious recollection (McKone & French, 2001). On the other hand implicit memory often requires little if any conscious effort to recall; implicit memory proficiency often relates to exposure to previous tasks, and "makes no reference back to any particular encounter with the stimulus" (McKone & French, p. 806).

For many years explicit memory has been categorized to include areas like episodic (past events) and semantics (factual information) memory. Of late these categories have been subject to increasing debate, with some research questioning its separation from implicit memory (Goujon, Didierjean, & Poulet, 2014), and others stating that explicit memory exists only as mental representations, and is thus unable to be observed (Grimm, 2014). Yet, while we improve our understanding of how knowledge may be categorized, we are still aware that when we recall past experiences – specifically explicit memory – recollections can be inchoate or unclear (Roth & Jornet, 2013). For example, when we ask individuals to recall a performance in a simulator, classroom or even an operating theater, the recollection may be unclear, incomplete and in some cases provide only what was done, not what an individual was thinking, or vice versa. It requires increased effort on the part of the individual and trainer to elicit a detailed view of past experience.

With implicit memory on the other hand, we have little if any recollection of how actions come to play, are learnt or acquired. Nevertheless when asked to perform a task we are familiar with, like playing piano or operating on a patient, we are able to perform these familiar tasks flawlessly (Roediger, 1990). Here implicit representations are difficult, as they can be viewed as sensory-motor or embodied (e.g., Sheets-Johnstone, 2011). For instance, when asking an individual to describe an action, they may have difficulty recalling what they did, how they performed a task, and in some cases may even require acting out the task to assist in the recall.

The second issue to be discussed regarding memory relates to *distributed cognition*. Distributed cognition describes how, within a group such as a team of professionals, cognition is not held internally by one individual, but shared across multiple team members, and aided by the use of artifacts (Hutchins, 1995). Here the argument is that within teams the "operation of a distributed-cognitive system is parallel in that multiple people and artifacts work simultaneously" (Cheon, 2014). To be precise, multifaceted work environments are viewed as a complex socio-technical system, like an intensive care unit (ICU) at a hospital (e.g. Rajkomar & Blandford, 2012). For example, when a doctor in hospital examines a patient, they make a diagnosis and prescribe treatments to a patient – be it physical therapy or pharmaceutical drugs. A nurse will action these treatments or prescriptions (by referencing to patient records) while at the same time caring for a patient's daily needs, such as measuring vital signs, and again recording these on a patient's chart. A doctor, be it the same one or another, will return again to review a patient, and record their progress, and so on. What is known about the patient within this clinical setting is not contained within one individual, but distributed amongst doctors, nurses and artifacts. In this case, remembering all there is about the patient would require the team of doctors and nurses to discuss the patient in vivid terms, while referencing arti-

facts such as patient records. This would allow for an entire picture of the patient's well-being, health and care to be clearly developed and understood.

The second implication for CET is not in focusing on teaching reflection, but rather teaching how to assess performance. Some approaches to CET include reflecting on performance with journals (e.g. O'Connell & Dyment, 2011), critical incident analysis (Lister & Crisp, 2007), reflection on performance aided with the use of videos (e.g. Hulsman et al., 2009; Todd, 2005) or even using instruments that measure the effectiveness of reflection itself (e.g. Thorsen & DeVore, 2013). However, the literature fails to demonstrate the link between an individual's performance and the effectiveness of measuring that performance. As Dewey wrote over a century ago, "To find out what facts, just as they stand, mean, is the object of all discovery; to find out what facts will carry out, substantiate, support a given meaning, is the object of all testing" (Dewey, 2012, p. 116). Here Dewey recognizes that meaning is fundamental. Yet, as there appears to be a connection between performance ability and reflective ability – sometimes referred to as a *double paradox* (Dunning et al., 2003) or *ability effect* (Cassidy, 2007) – the research suggests that deliberate approaches to specifically teaching the *meaning* of performance would result in improving reflective ability.

In summary, during CET, the process of learning new procedures – during normal practice or even during times of high workload or stressful events – may require an individual to spend time recollecting and reviewing performance, sometimes with other team members. This process must occur prior to an individual or team being able to assess on action. Of equal importance is the fact that, once a picture has been clearly painted of a performance, it must be determined whether the individual will be able to reflect on their actions in order to assess performance and develop strategies that will realise improvements in their actions.

As a final note, it is worth observing that non-technical skills mentioned in this chapter are not unique to airline pilots. Numerous professions, such as health care, armed services, police, mining and rail, must attend to and contend with non-technical skills (e.g., Flin et al., 2008). While aviation has undoubtedly led the world in non-technical skills training, lessons from our program could well be applicable to other professions.

9.7 Conclusion

The aviation industry is one where CET and assessment are integral to practice. Traditional CET and assessment programs for airline pilots have focused on technical proficiency. It has only been over recent decades that increasing evidence has demonstrated that technical skills deficiencies, while important, are not the full reason for aircraft incidents (Helmreich et al., 1999). The identification of non-technical skills as causal in many accidents has created a change in the direction for pilot training.

The use of classroom-based instruction is necessary to almost all training environments; as would be expected, classroom-based training became the focus for teaching non-technical skills. Nevertheless, as I demonstrate in this chapter, this approach has not worked well for one airline.

The collaborative airline/university research undertaken in this chapter predicted that focusing on performance assessment training in the classroom, for pilots of all ranks, would achieve a greater understanding of non-technical skills. While this approach was reasonable, it revealed only half the story. As evidence mounted identifying the difficulties pilots were having remembering the intense simulator sessions of only 4 h prior, it became apparent that new approaches to debriefing were required. Once the importance of remembering prior to reflection informed the debriefing sessions, the CET program's focus became apparent.

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Chapter 10
Learning at the Frontier: The Experiences of Single-handed General Practitioners

Peter Cantillon

10.1 Introduction

The purpose of this chapter is to explore how doctors who work in relative social isolation continue to learn across their working lives. It focuses on the learning contexts and experiences of single-handed general practitioners who represent a significant proportion of the medical profession worldwide. All of this is important, as concerns about the quality of service offered by single-handed (solo) general practitioners (GPs) have existed for many years. These came into particular focus following the revelations of the UK Shipman enquiry in 2004. Harold Shipman worked as a single-handed GP in a suburb of Manchester for 27 years during which time it is estimated that he murdered at least 250 of his patients. In the subsequent inquiry, his status as a solo practitioner was highlighted as playing a particularly important role in concealing his murderous acts from the regulatory and legal authorities. . The inquiry report noted that:

> Single-handed practitioners tend to be isolated. This term [isolation] connotes a lack of involvement with one's peers and a failure to keep up to date with current practice (The Shipman Inquiry – 5th Report page 398).

The report added considerable weight to long-held concerns that solo general practice is associated with poor quality patient care and substandard clinical outcomes (Norton, Dunn, & Soberman, 1997). Hippisley-Cox, Pringle, Coupland, Hammersley, and Wilson (2001) found marked differences between single-handed general practices and larger group practices in terms of referral and immunisation rates, chronic disease management and preventative activities. Van den Hombergh et al. (2005) similarly found that single-handed practitioners provide their patients

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with a more limited range of services and are less likely to engage in quality assurance activities. In terms of their personal well-being, single-handed GPs report longer working hours and greater levels of job-related stress. This is associated with higher rates of professional burnout (Curran, Rourke & Snow, 2010), alcoholism and suicide among solo doctors (Hippisley-Cox et al., 2001). Solo doctors also reported greater difficulty in attending professional development opportunities and were much less likely to interact with other doctors on a regular basis (Kuyvenhoven, Pieters & Jacobs, 1990).

Yet, despite the many drawbacks of single-handed practice, up to 40 % of GPs in mainland Europe are solo operators (Hippisley-Cox et al., 2001), and single-handed general practice is the norm in large parts of the Far East (Blank & Burau, 2007). Solo GPs are also a common phenomenon in rural and remote parts of North America, Australia and New Zealand (Bindman & Majeed, 2003; Hayes, 1999). Given that single handed general practice represents a significant portion of the GP workforce worldwide and the many concerns that exist regarding the quality of care offered by solo GPs, they represent an interesting and important group to examine in terms of their ongoing learning practices and contexts. Certainly, an exploration of the ongoing learning practices of single-handed general practitioners is of relevance to all doctors, as they are all to some extent solo practitioners. Whilst many doctors may work in groups or teams the core element of their work, i.e. consulting with patients, tends to be done on a one-to-one basis behind closed doors. Doctors' interactions with patients are rarely the subject of scrutiny by other doctors, even in group practice settings. Working with other doctors provides opportunities for normative comparison (Lewkonia, 2001), but engagement between doctors rarely strays into an examination of the actual practice of an individual doctor (Armstrong & Ogden, 2006). The implication for ongoing learning is that doctors working in aggregated groups benefit from collegial interaction, but are potentially as isolated as solo practitioners when it comes to how and what they learn from their engagement with patients.

A professional orientation toward individual practice is a result of how professionals are trained to be autonomous, self-directed and self-regulated (Boreham, 2004). Yet, the complexities of client interaction, negotiation of therapeutic strategy and navigation of the workplace require professionals to act in concert with others (and with social structures) – something they have not all or always been prepared to do (Boreham). Furthermore, needs assessment, self-assessment and self-regulation are functions that are fundamental to ensuring that the ongoing learning of professionals addresses what they actually need to learn. However, self-assessment of developmental needs has been found to be dysfunctional unless it is informed by peer review, social comparison and informed self-awareness, (Mann et al., 2011; Sargeant, 2013). The emerging message from the literature is that collegial interaction is essential to allow normative comparison and this, in turn, informs professionals' assessments of their learning needs. This chapter will describe how the enablement of such interpersonal engagement between isolated general practitioners and other doctors is both challenging and at the same time worthwhile.

The uncertainties of doctors' self-assessment of their own practice and a societal perception that the medical profession is not capable of ensuring robust self-regulation (Holmboe, 2008) has spawned the establishment of national relicensing schemes in most developed countries (Holmboe, 2013). In revalidation schemes, all registered doctors (including single-handed general practitioners) must demonstrate on an annual basis that they are engaging in formal continuing professional development initiatives to maintain their license to practice (Holmboe, 2008). Relicensing or revalidation schemes are important for the learning of single-handed general practitioners because such schemes play a major part in determining the formal continuing professional development that doctors engage in.

There are a number of well-recognised problems associated with the continuing professional development strategies prevalent in medicine. These include: (a) an assumption of accurate self-assessment of learning needs; (b) an emphasis on formal and measurable engagement in learning activities rather than doctors implicit learning from practice (Olson, 2012); (c) an encouragement of learning behaviours designed to meet the requirements of the revalidation system rather than address the particular needs of isolated doctors and the communities that they serve (Holmboe, 2008) and (d) an assumption that doctors can attend professional development events, something that is very difficult for geographically isolated doctors (Kuyvenhoven et al., 1990).

It is for these reasons that this chapter explores the influence of revalidation driven continuing professional development on the ongoing learning of isolated general practitioners and suggests means by which these problems can be redressed, based on well-evaluated published reports. The chapter also considers what official discourses of continuing professional development ignore, i.e. how and what doctors learn through engagement in practice.

In all, the chapter attempts to provide a more comprehensive account of the challenges that face the project of promoting the ongoing learning of single-handed general practitioners. In so doing, it uses such understandings to suggest changes in how solo doctors might learn more effectively in facilitated and more collegial learning environments. The chapter presents: (a) an exploration of what the term "isolation" means in the context of the medical profession; (b) an analysis of the effectiveness of the prevailing models and learning theories underpinning continuing professional development in relation to their influence on the continuing learning of isolated doctors; (c) a description of what is known about factors that influence how and what isolated doctors learn from their own practice; (d) a consideration of the etiquette that governs inter-doctor relations and therefore the potential for collegial learning and (e) a description of successful approaches to enhancing the ongoing learning of single-handed and socially isolated medical practitioners. In advancing ways forward, the chapter argues that whilst the resource implications of implementing supportive strategies for the professional development of isolated general practitioners are considerable, they are also very worthwhile. It contends that addressing the inadequacies of the ongoing learning of isolated general practitioners requires attention to overcoming intra-personal resistance to change in medical professionals and the sensitivities of interpersonal communication between doctors.

10.2 Isolation

Despite the fact that undergraduate and graduate medical education prepare doctors for individual competence, the learning environments in undergraduate medical schools and in subsequent postgraduate training are characterised by social engagement with others. However, once professional training has ended, the opportunities for continuing learning alongside peers become less predictable and depend to a considerable extent on the social structures of the doctors' work environment, (Lewkonia, 2001). Social structures characterised by professional isolation from peers are now recognised (along with cognitive ageing) as the most important risk factors for reduced medical competence, worldwide (Norton et al., 1997). However, before looking at the relationship between social isolation and continuing learning amongst solo general practitioners it is important to explore what is meant by the term "isolation" in a general practice context.

St George (2006) provides the most comprehensive definition of what the term "isolation" means in the context of general practice. Using a consensus method amongst general practitioners in New Zealand they described five different dimensions of isolation i.e. geographic, professional, strategic, resource, and psychological. They found that the most important forms of isolation in terms of maintaining doctors' competence are geographic and professional isolation. Geographic isolation (as the name suggests) describes GPs who are situated outside large centres of population. Typically, these are the GPs who work in rural and remote areas. Professional isolation is a more complex concept. This describes doctors who, for one reason or another, are working without regular contact with other doctors, despite the fact that they may be situated in close geographical proximity (St George, 2006). Geographic isolation does not imply that rural doctors are disconnected from their peers, but it does make it much more difficult for rural GPs to physically meet or interact with other doctors (Curran et al., 2010). Rather, it is the degree of professional, (or social) isolation that defines how cut off doctors are from their peers and, therefore, from the evolving norms of medical practice.

It has been known for some time that social interaction with peers is an important stimulus for practitioner learning. Osler, writing in 1897 observed that "*The daily round of a busy practitioner tends to develop an egoism of a most intense kind*, *to which there is no antidote. The mistakes are often buried*, *and . . . successful work tends to make a man touchy*, *dogmatic*, *intolerant of correction and abominably self-centered. . . . The medical society is the best corrective*, *and a man misses a good part of his education who does not get knocked about a bit by his colleagues in discussions and criticisms*." (Osler, 1897 in Cushing, 1925, p. 477). Osler's Victorian observations are supported by more current empirical studies that clearly demonstrate the knowledge and performance benefits of regular social interaction with medical peers e.g. (Feron, Cerexhe, & Pestiaux, 2003; Gagliardi, 2007; Jukkala, Henly, & Lindeke, 2008; Kuyvenhoven et al., 1990; Lockyer, Wycliffe-Jones, Raman, Sandhu, & Herta, 2011). Looking at the learning of isolated practitioners from an educational perspective, Lewkonia (2001) argued that socially

isolated doctors are more likely to have reduced awareness of current practice and substandard performance when compared with their more aggregated peers, because they lack access to the regular stimuli of normative comparison and peer interaction, (Lewkonia, 2001).

The benefits of collegial interaction between doctors make sense from a social learning perspective. Learning together in a zone of proximal development, doctors will learn more from and with each other than they will learn on their own (Vygotsky, 1978). From a cognitive perspective, there is also good evidence that social interaction improves morale and maintains cognitive ability (Eva, 2003). It has also been demonstrated that engagement with peers reduces feelings of professional isolation amongst solo practitioners and leads to demonstrable improvement in practice (Kuyvenhoven et al., 1990). This is because engaging with other clinicians is not just a process of situating individual knowledge or practice in a more collegial perspective, it is also a process of negotiating professional identity in relation to one's peers (Cooley, 1992; Cooper, 2009; Mead, 1967). The continuing process of identity formation is not just about looking inwards, but also, crucially, it is about how individual doctors can come to see themselves as others see them. This is what Cooley refers to as the "looking glass self", meaning that individuals must communicate and interact with others to gain an understanding of who they are. The implication is that viewing ourselves and our actions in relation to others allows us to make normative comparisons and to align ourselves with abstract social norms (Crossley, 2005). Clearly, the opportunities for such normative comparisons are limited for doctors who are situated in relative social isolation.

So far, it has been argued that social isolation places doctors at increased risk of diminished competence through a lack of opportunities for normative comparison as well as diminishing their opportunities to negotiate professional identity in the company of peers. However, despite their relative social isolation, single-handed general practitioners in developed countries are usually subject to mandatory engagement in continuing professional development processes maintain their licence to practice. The next section explores the effects and effectiveness of continuing professional development on the continuing learning of isolated doctors.

10.3 Continuing Professional Development

Traditionally, doctors kept up to date through voluntary attendance at medical meetings, membership of medical societies and through journal subscriptions (Grant, 2012). This form of professional learning, termed "continuing medical education", was characterised by expert lecturers, authoritative publications and engagement with like-minded practitioners in "medical clubs". More recently the term "continuing medical education" has been superseded by the term "continuing professional development", as it is felt to encompass a broader subject matter beyond clinical topics, including communication skills, teamwork, record-keeping etc. The term continuing professional development encompasses all of the formal (explicit) learning

that occurs over a professional lifetime and has been called the "50 year curriculum" (Mann, 2002). Typical continuing professional development activities might include reading journal articles, attending lectures on clinical topics, case discussions with other doctors and engagement in quality assurance exercises such as clinical audit. The following paragraphs describe and critique continuing professional development in terms of its stated purposes, its effectiveness, its foundational models as well as the influence of its situation within professional revalidation schemes.

In the past, participation in continuing professional development was voluntary and was largely driven by doctors' interests and their conscientiousness. Attendance at continuing professional development was variable with a recurring pattern of poor attendance by the lowest performing doctors (Dornan, 2008). The variable nature of doctors' engagement with continuing professional development led to the advent of compulsory continuing professional development schemes (initially in North America), through which doctors had to demonstrate that they were participating in formal continuing education to maintain their license to practice (Campbell & Parboosingh, 2013). Similar changes in the UK were driven by a recognition that medical knowledge and practice are constantly changing and that society expects its doctors to keep up to date (Archer & de Bere, 2013).

There are now mandatory revalidation (or re-licensing) schemes in most developed countries. Revalidation is a process by which doctors are required to demonstrate to a regulatory body or professional organisation that they are up to date in terms of knowledge and skills and that they are fit to practice (Archer & de Bere, 2013). Revalidation schemes provide the framework in which doctors' continuing professional development is situated and usually operate in 3–5 yearly cycles during which doctors must demonstrate that their practice meets national standards and that they are competent across a broad range of competencies.

The implication of mandatory revalidation schemes is that doctors are no longer wholly trusted to self-regulate and manage their own lifelong learning (Holmboe, 2008). The agenda has shifted from voluntary participation in continuing professional development based on curiosity and personal interest toward one of accountability to patients and to society (Holmboe, 2013). However, mandatory continuing professional development has been shown to encourage learning behaviours focused on meeting the requirements of the revalidation system rather than addressing the particular learning needs of isolated doctors and the communities that they serve (Holmboe, 2008). It is important, therefore, to examine the phenomenon of formal continuing professional development as it is currently offered in most countries, if we are to understand where it might best support the learning of isolated general practitioners.

10.3.1 Purposes of Continuing Professional Development

The most widely stated purposes of continuing professional development are to enhance and improve practice, and assist in ensuring the delivery of high quality care for patients (Jukkala et al., 2008). However, in a major review of continuing

professional development in Europe, Schostak et al. (2010) found that engagement in continuing professional development is also about verifying that professional practice is similar to that offered by professional peers. Continuing professional development, therefore, provides ongoing confirmation of practitioners' sense of competence based on the understanding that their practice meets a common standard. There are four prevalent models of continuing professional development in medicine reflecting differing schools of thought regarding the purposes of continuing professional development and its modes of action. These comprise:

1. An *update* model which represents medical knowledge as transmitted through engagement with authoritative sources such as traditional lectures or journal articles (Mann, 2002). The idea is that doctors graduate with a solid basis of knowledge and skills and the purpose of continuing professional development is to elaborate and enhance that foundational knowledge.
2. A *competency* model which represents medical knowledge in terms of aggregated sets of knowledge skills and attitudes pertinent to particular medical roles. The competency model was coined to address the rather piecemeal nature of learning associated with the update model of continuing professional development (Grant, 2012). The purpose of the competency model is to provide competency frameworks and learning outcome blueprints that inform continuing professional development strategies. A competency model framework offers the additional benefit of providing knowledge and procedural standards for practising doctors that can be assessed. The competency model is most prevalent in the context of post-graduate training.
3. The *outcomes* model situates medical knowledge in terms of its relevance and ability to enhance patient outcomes. The purpose of the outcomes model is to ensure that the standards set for doctors by regulatory bodies are measurable in terms of changes in practice and improvement in patient outcomes (Cervero, 2003; Mann, 2002).
4. The *systems* model represents medical knowledge and learning as arising from doctors' engagement in clinical practice. In contrast with the more prescriptive update, competency and outcomes models, the systems model acknowledges the learning that occurs in the doing of practice as well as engagement with planned learning events (Horsley, Grimshaw, & Campbell, 2010; Olson, 2012).

Of these, the dominant models of continuing professional development practice across the world (and therefore those that remain most relevant to single-handed general practitioners) are the update and outcomes models (Grant, 2012). Common to both of these models is an emphasis on the agency of the learner. Learner agency is also a defining feature of the learning theories most often associated with continuing professional development, (e.g. experiential learning, reflective practice and self-directed learning). The predominant models of continuing professional development and the associated adult learning theories that underpin these models position medical professionals as agentic in identifying their own learning needs; choosing how and when to address those learning needs and selecting what aspects

of patient outcome they want to focus on (Slotnick, 1999). The emphasis on learner agency is further supported by national revalidation processes where the focus is usually on measuring participation in continuing professional development rather than actual learning or changes in thinking. It has been known for some time, however, that the update and outcomes models of continuing professional development are not as effective as they ought to be in changing doctors' thinking and/or practice.

In a landmark review of the effectiveness of some of the commoner update forms of continuing professional development, (e.g. lectures, guidelines, journal articles) Oxman, Thomson, Davis, and Haynes (1995) demonstrated that they have, at best, a weak effect on doctors' practice. Whilst there is some evidence to show that combinations of update and outcomes continuing professional development interventions are more effective than single interventions on their own (Davis et al., 1999) the message remains the same, i.e. continuing professional development based on the update and outcomes models is not as effective in changing doctors' practice, as might have been anticipated given the amount of resources and time involved (Davis et al., 1999). The reasons offered include the impracticality of keeping up-to-date with the rapid generation of new knowledge for health professionals to incorporate into their practice, the complex relationship between doctors' embedded practices and suggestions of alternative approaches and the effects of competing discourses and priorities in the healthcare practice environment (Ho & Jarvis-Selinger, 2010). Perhaps the greatest drawback of the prevalent models of continuing professional development is their reliance on doctors' ability and willingness to self-assess their own learning needs (Epstein, 2008). Self-assessment is part of professional self-regulation and as such is a defining feature of what it means to be a medical professional (Friedson, 1970). Self-assessment is a critical attribute of doctors' self-directed and lifelong learning (Mann, 2002), yet it is becoming increasingly clear that doctors' ability to self-assess their own practice is problematic.

There is good evidence (e.g. Colthart et al., 2008; Eva & Regehr, 2005, 2008; Mann et al., 2011; Sargeant et al., 2010) that exposes the inadequacies of doctors' self-assessment of their own practice and that sheds doubt on doctors' ability to autonomously identify their own learning needs. Worryingly, in a major systematic review of doctors' self-assessment Colthart et al. found that the least competent doctors were also those who are least able to self-assess accurately (Colthart et al., 2008). Furthermore, Peterson (2014) found that general practitioners self-assessed themselves as needing to learn more in areas of personal interest rather than in areas of less than adequate competence. Furthermore Regehr and Mylopoulos (2008) argued that doctors are reluctant to identify their own learning needs, because to do so they are forced to recognise areas of weakness that undermine their own sense of competence and self-efficacy. Moreover, if weaknesses are acknowledged, they found that doctors are not motivated to address those weaknesses if the perceived remedial effort outweighed the perceived reward (Regehr & Mylopoulos, 2008). Not only do practitioners fail to recognise/acknowledge their areas of weakness, but they are also less likely to attend CPD events that address those weaknesses. The emergent understanding is that doctors' self-regulation, self-assessment and the

identification of learning needs in lifelong learning, ought to be informed by external comparison and review as well as multisource feedback (Sargeant, 2013). The increasing acceptance that the prevalent models of continuing professional development are inadequate and that doctors are unable to comprehensively self-assess their own learning needs, presents particular problems for isolated general practitioners.

In the absence of specialised colleagues, single-handed practitioners often find themselves acting in roles that are far beyond those that they trained for (Coleman & Lynch, 2006). As such, geographically isolated GPs have to develop and maintain knowledge and skills across a much wider wide variety of clinical areas then their more aggregated or urban colleagues (Curran et al., 2010). Rural doctors also experience considerable difficulty accessing continuing professional development because much of it is situated in major centres using update model face-to-face formats (Lott, 1995). Difficulty accessing continuing professional development is compounded by a lack of access to locum coverage, rendering it difficult, if not impossible, to leave their centres of practice for any significant period (Pope, Grams, Whiteside, & Kazanjian, 1998). Reduced access to continuing professional development events also increases rural and remote GPs' sense of professional isolation, (Curran et al., 2010).

Current models of continuing professional development, underpinned as they are by mandatory revalidation, are insufficient to meet the needs of single-handed and isolated general practitioners. The update and competency model professional development designs are regarded as having relatively low effectiveness in terms of changing beliefs and practice. The effectiveness of continuing professional development is further undermined by its reliance on autonomous self-assessment. These difficulties are compounded by the difficulties encountered by isolated doctors in attending professional development events. Before describing interventions designed to address some of these deficiencies it is also important to look at how doctors learn from their own engagement in practice.

10.4 Learning from Practice

The literature on the continuing learning of doctors is dominated by continuing professional development, but it has been known for some time that work and workplaces have an important role to play in doctors' learning and development (Dornan, 2008). In a study of learning amongst general practitioners and consultants, Allery, Owen, and Robling (1997) found that only one third of doctors' learning could be explained by their engagement in continuing professional development. They concluded that most of what doctors learn, they learn through their work. This fits with a much larger literature on occupational learning where much of what professionals come to know is learned through participation in work and through engagement with workplace environments (Billett, 2014; Fenwick, 2014). However, the literature on the relationship between doctors' learning and workplaces is much less developed. This section will summarise the very limited literature that does exist on

the relationship between general practitioners learning and the work that they do. The literature is characterised by studies of factors that mitigate changes in general practitioners' behaviour, (e.g. changes in prescribing behaviour) and research looking at what influences the translation of formal learning into actual changes in practice. The clear message from this limited literature is that there are intra individual and inter individual influences that act to conserve current practice rather than facilitate change.

Armstrong, Reyburn, and Jones (1996) explored why single-handed and group practice GPs change, (or choose not to change) their prescribing behaviour. They interviewed a purposive sample of general practitioners from single-handed and group practices about changes that they had made in their prescribing. From their analysis they derived three models of behaviour change: a challenge model, an accumulation model and a continuity model. The *challenge model* describes situations in which in which GPs abruptly change prescribing behaviours in response to adverse events or unexpected successes with new medications. More commonly GPs changed their prescribing behaviour in keeping with what Armstrong et al. (1996) termed an *accumulation model*, (i.e. a gradual accrual of increasing evidence from reading, listening to others, attending meetings or the influence of environmental incentives). As evidence supporting an alternative strategy accumulates it gradually tips the balance in favour of a substitute prescribing behaviour. GPs attribute considerably more evidential weight to the prescribing behaviours of colleagues who are perceived as respected and influential in the medical community. Similarly, Armstrong et al. found that doctors' prescribing was more likely to change if incentivised by features of the organisational or institutional environment. Armstrong et al. identified a third model, the so-called *continuity model* to explain how GPs are more likely to change their prescribing behaviour if the evidence in favour of using a particular drug aligns with the GPs' personal professional values and beliefs. Armstrong et al. suggest that GPs try out new therapeutic strategies tentatively and that new behaviours were reinforced by positive patient feedback. It is suggested that each new prescribing behaviour becomes a form of "therapeutic experiment" whereby patient outcomes dictate whether the new behaviour became embedded or rejected. Interestingly, the most impressive message in Armstrong's work was not the changes in GPs' behaviour, but their description of the stability of GPs prescribing practice. Despite regular suggestions from the environment including journal articles, consultants' letters, continuing professional development meetings, patient feedback and so on, doctors' prescribing behaviours are remarkably stable. Armstrong examined the remarkable stability of doctors' clinical practices in a subsequent study of GPs' prescribing behaviour 10 years later.

Following this study, Armstrong and Ogden (2006) used a critical incident interview design to explore why single handed and group practice GPs did or did not adopt new therapies in depression and dyspepsia. They found that GPs who work in group practice settings learn in conversation with their GP colleagues using a form of professional "etiquette". The basic rule of the etiquette is to discuss the strengths and weaknesses of particular therapies without exposing the idiosyncrasies of any particular GP's practice or prescribing habits to potential ridicule or criticism. It

became apparent in their study that single-handed general practitioners did not have routine access to other general practitioners for such discussions. All participating general practitioners were influenced by the therapeutic recommendations offered in letters received from hospital specialists' to whom the GPs' patients had been referred. GPs used these letters as a means of updating their own therapeutic and diagnostic knowledge. However, the relationship between the specialists' therapeutic recommendations and these GPs' adoption of new prescribing practices was not straightforward. It seems that these GPs resisted recommendations that contradicted their own beliefs regarding particular therapies or that appeared to undermine the GP's own sense of professional autonomy, (e.g. was construed as an unwarranted interference in the GPs' therapeutic relationship with the patient). These GPs also questioned the partiality of specialist recommendations, based on a widespread GP perception of specialists' close relationships with pharmaceutical companies. GPs engaged in this study were also reluctant to make radical changes in their own prescribing behaviour for fear of making errors that were directly attributable to their own actions. They preferred to use the opportunity of being an observer of new prescribing initiated by other doctors (i.e. specialists and locum doctors) as a "clinical experiment" to assess the effectiveness and safety of the new therapeutic strategy. Many of these GPs chose not to initiate a novel therapy themselves until they had witnessed one or two such clinical experiments. This study suggests that GPs' learning and changes in practice are influenced by risk estimations of personal culpability associated with a change, the delicacies of professional etiquette and scepticism in relation to the motivations for therapeutic choices of other doctors.

So, it seems that GPs' learning is not just a matter of negotiating inter professional relations, but is also influenced by a motivation to maintain a personal sense of competency and self-efficacy. For example, in a study of the translation of new prescribing knowledge (learned through engagement in a standard continuing professional development intervention) Kennedy, Regehr, Rosenfield, Roberts, and Lingard (2004) found that GPs justified their decisions whether or not to change practice using rhetorical strategies to prop up feelings of competence and self-efficacy rather than logical reasoning strategies based on the research evidence provided in the educational interventions. In a later study examining how and why doctors seek support from other doctors, Kennedy, Regehr, Baker, and Lingard (2009) found the decision to seek help is not just based on perceived knowledge gaps nor the risks associated with the patient's condition, but is also shaped by doctors' estimations of the detrimental effect that seeking help might have on their perceived credibility amongst their professional colleagues. These studies suggest that any interventions designed to support the ongoing learning of isolated general practitioners will need to take account of the relationship between doctors' beliefs and clinical behavior, on the one hand, and their need to maintain a sense of intra-personal competence and inter-personal credibility with colleagues, on the other.

Indeed, the relationship between general practitioners' self-concept and how they choose to act is an important consideration when studying GPs' professional development. Henriksen and Hansen (2004) investigated what happened to general practitioners' self-perception in the context of their prescribing behaviours.

Examining examples of prescribing where GPs experienced conflict between their own professional principles and the prescribing decision taken, they found that GPs often had to adjust their professional identity and values to achieve some equanimity with their changed practice. Whilst these doctors were likely to attribute uncomfortable prescribing decisions to external forces such as patient expectations, health authority guidelines and cost saving initiatives, they still had to make some adjustments to their sense of professional identity in order to persist with the new prescribing behaviour. This study and the accounts above suggest learning in general practice represents a continuing process of construction and reconstruction of identity, knowledge and values in practice contexts.

Another way of looking at how isolated general practitioners learn in practice is to examine what they do when they become aware of gaps in their knowledge or skills in the context of caring for patients. There have been a number of studies that explore how clinical questions arise in practice and what GPs do about addressing them (Ebell, Cervero, & Joaquin, 2011; Ebell & Shaughnessy, 2003; Wyatt & Sullivan, 2005). They found that GPs identify gaps in their knowledge or skills during most consultations and that a majority of such questions are never answered due to a lack of time and/or resources. They argue that it is difficult for general practitioners to find answers to most of their clinical questions because the questions are often particular to the patient's context and they do not lend themselves to the more rigid parameters of evidence-based medicine. However, it is clear from these studies that general practitioners' questions and awareness of gaps in their knowledge represent important opportunities for learning that are currently under being utilised. Potential solutions to this and the many challenges involved in supporting the learning of isolated practitioners are discussed in the next section.

10.5 Discussion and Responses

Despite its many potential drawbacks, solo practice is a lifestyle choice for many general practitioners around the world, and a necessary and essential form of primary healthcare in many situations. Also, single-handed general practitioners have been found to manifest a strong identity as important participants and contributors within their local communities when compared with general practitioners who work in group practices (Green, 1996). Studies of rural and remote solo practitioners found that in many cases they feel supported by and committed to their communities (Curran et al., 2010; Jukkala et al., 2008). Many single-handed general practitioners regard their practice as encompassing a much wider range of knowledge and skills than that of their more aggregated and urban colleagues (Jukkala et al., 2008). However, despite these positive features of solo practitioner identity, there is little doubt that single-handed and socially isolated general practice displays particular problems in terms of quality assurance and maintaining competence. Whilst assistance may be found in new models of supported learning in the workplace and continuing professional development founded on informed self-assessment, this

review above has identified four distinct hindrances to the ongoing learning of isolated general practitioners. These are:

1. A lack of collegiality and interpersonal engagement with medical colleagues which deprives isolated practitioners of opportunities for normative comparison and confirmation of their own competence. Collegial engagement is further undermined by the constraints of inter-doctor etiquette. Isolation also places them at increased risk of professional burnout.
2. A lack of external challenge to GP self-assessments, which means that solo practitioners' evaluations of their own practice and their learning needs are likely to be incomplete and ill-informed.
3. A tension between continuing professional development driven by national revalidation schemes and isolated doctors' need to preserve their own autonomy and sense of professional competence.
4. A lack of readily accessible resources that would allow isolated practitioners to address many of the case related questions that arise in almost every consultation.

It follows then that the remainder of this discussion will present potential ways of redressing hindrances to solo practitioner learning that have been identified in the literature. These are advanced under the headings of: (i) Collegiality and learning; (ii) informed self-assessment and (iii) Making sense of practice.

10.5.1 Collegiality and Learning

Osler suggested that there is a need for a doctor to get "*knocked about a bit by his colleagues*" to maintain and advance competence (Cushing, 1925). Collegial models of continuing professional development have been shown to be highly effective in shifting opinions and enhancing practice (Gagliardi, 2007). However, it is precisely the problem of being "knocked about" that prevents doctors from seeking help and addressing areas of weakness (Kennedy et al., 2009). It is essential for doctors to maintain a strong sense of their own competence, as well as an impression of credibility in the minds of other doctors in order to continue to practice (Kennedy et al., 2004; Kennedy & Lingard, 2007). Doctors tend to employ a professional etiquette between each other, (Armstrong & Ogden, 2006) that preserves face and seeks to avoid any risk of diminishing doctors' credibility. Socially isolated general practitioners are not only less likely to have regular communication with other doctors but the communication is further impeded by the sensitivities of inter-doctor communication.

There have been a number of published information and communication technological, (ICT) provisions that attempt to establish a more collegial engagement between socially-isolated doctors. These include the establishment of electronic communities of practice (Barnett, Jones, & Bennett, 2013; Ho & Jarvis-Selinger, 2010), the use of videoconferencing (Allen, Sargeant, Mann, Fleming, & Premi,

2003) and computer mediated conferencing (Curran & Kirby, 2003). More recently there has been considerable interest in a tele-mentoring project, Project ECHO, in which hospital specialists provide mentoring to isolated GPs in managing patients with challenging conditions such as chronic pain in the community (Katzman et al., 2014). All of these approaches have in common the notion of creating a synchronous community of learners. Critical success factors include the establishment of common purpose between participants to sustain engagement, the importance of ensuring that discussions are problem-focused, and that some form of asynchronous communication, (e.g. a moderated discussion board) is established that maintains dialogue between the virtual meetings. All of these provisions emphasize the importance of continuous moderation and facilitation of discussion to overcome the acknowledged reticence of doctors to share areas of uncertainty and lack of knowledge with each other. The viability of such critical reflection interventions depends to a great extent on the degree to which participants' safety can be assured (Dornan, 2008). These ICT based solutions are included here because have had demonstrable success in facilitating moderated collegial interaction between dissipated medical practitioners and, in each case, they were associated with beneficial changes in doctors' practices. It can be argued, however, that moderated collegial interaction allows doctors to select topics for discussion based on their personal interests and self-assessments, rather than issues that emerge from external peer review. Hence, their self-selected issues will be the focus of review.

10.5.2 Informed Self-Assessment

The evidence is compelling that doctors do not make sound assessments of their own learning needs and competence (Davis, Mazmanian, & Fordis, 2006; Eva & Regehr, 2008; Sargeant et al., 2010). Yet, self-assessment remains an essential part of the continuing learning of doctors in practice (Dornan, 2008) and underpins the update, outcomes and competency models of continuing professional development. In an extensive review of doctors' self-assessment Eva and Regehr (2005) observed that doctors are very unlikely to assess their own knowledge or skills negatively if such a judgment undermines their self-efficacy or sense of professional competence. They also found that doctors' self-assessment is informed by normative comparison with other doctors, but that this is much more difficult for socially-isolated practitioners.

Given the now widespread acceptance that doctors' self-assessment of their own practice and learning needs are insufficient, there have been growing calls for "informed" or "directed self-assessment". Informed self-assessment implies an evaluation of a doctor's practice informed by external review, normative comparison and evaluation against accepted standards (Sargeant (2008). Normative comparisons may be accessed using one of the ICT-mediated collegial approaches outlined earlier, but external peer review remains a challenge for isolated practitioners. Multisource feedback, (e.g. 360° appraisal) tools and strategies may offer a

potential solution to the deficiencies of doctors' self-assessment. A number of validated multisource feedback tools have been developed that allow key stakeholders such as colleagues, patients, health managers etc. to provide the individual practitioner with observations and feedback on key aspects of the work, such as communication, teamwork, record-keeping, quality of service etc. There are multifold examples of successful implementation of multisource feedback strategies in the medical continuing education literature (e.g. Ferguson, Wakeling, & Bowie, 2014; Fidler, Lockyer, Toews, & Violato, 1999; Finlay & McLaren, 2009; Lockyer, 2003; Overeem et al., 2007) many of which include isolated general practitioners. A recurring issue for the implementation of multisource feedback strategies amongst socially isolated practitioners is the relative ease of getting perspectives on the doctors' practice from locally-based sources such as nurses, managers and patients, compared with the difficulty in accessing judgements of the doctors' practice from other doctors, given the geographical challenges. One way to overcome this situation is to provide financial support for peer review visits by general practice colleagues to isolated practitioners (Lewkonia, Flook, Donoff, & Lockyer, 2013). Such visits have not only contributed to multisource feedback but have also lessened doctors' sense of social isolation and have informed demonstrable improvements in practice (Humphrey, 2010; Lewkonia et al., 2013). It is particularly important in peer review visits that careful attention is paid to managing inter professional etiquette and that peer reviewers use commonly-agreed structured approaches and standards (Sargeant, Macleod, Sinclair, & Power, 2011). For example, Sargeant, Mann, Sinclair, Van der Vleuten, and Metsemakers (2008) found that in situations where deficiencies in practice were detected, corrective feedback was much more likely to lead to beneficial changes, if the feedback communication was done in person and was deliberately structured so as not to appear overtly comparative (Sargeant, 2008). In summary, feedback arising from multisource feedback and/or peer review visits informs doctors' self-assessment, but it needs to sustain rather than undermine isolated doctors' sense of personal competence and self-efficacy.

10.5.3 Making Sense of Practice

It can be difficult for isolated practitioners to make sense of what they are doing or how they are performing (Lewkonia, 2001), given their difficulty in accessing normative comparators. A lot of energy is expended by isolated doctors in the enactment of their practice, rather than reflecting on it or measuring its outcomes (Grant, 2012). Many of the commonly promoted strategies that facilitate doctors in getting a sense of the quality of their practice such as clinical audit with feedback are difficult to realise for isolated practitioners (Mansouri & Lockyer, 2007). As highlighted above, ICT does offer opportunities to link isolated doctors to each other and to specialists in supportive environments that allow practitioners to learn from their own practice and that of others. One such example has been the establishment of virtual morbidity and mortality conferences in which isolated doctors discuss

challenging cases using computer mediated conferencing technologies (Pletcher & Rodi, 2011). The success of such interventions depends on building trust between participants over time and as highlighted above, ensuring safety through strong facilitation (Pletcher & Rodi, 2011). The relevance of virtual morbidity and mortality conferencing is that it provides a worked example of how through strong facilitation socially-isolated participants are able to discuss features of their practice that they might otherwise want to hide such as errors, lack of knowledge and areas of clinical uncertainty.

Large-scale studies of isolated doctors who engage in online collaborative learning have demonstrated that GPs who examine their own practice in the context of engagement with other GPs learn more and are better prepared to change their practice (MacNeill, 2014; Newton, Lefebvre, Donahue, Bacon, & Dobson, 2010). However, it also possible for isolated doctors to self-assess knowledge, judgement and practice against external standards without needing to share their knowledge deficiencies with other doctors. Recent trials of self-administered script concordance tests (assess judgement in the context of vignettes portraying clinical uncertainty) (Hornos et al., 2013), and self-audit tools that help isolated practitioners to be more robust in their appraisal of their own practice have proved to be effective in changing medical beliefs and practice (Gagliardi et al., 2011). There is also a growing literature on the use of electronic portfolios that support the continuing learning of doctors through engagement in reflective practice. Web-based portfolios have been shown to encourage isolated practitioners to share observations, clinical stories and reflections on their practice with trusted others/mentors leading to demonstrable improvement in practice (Dornan, 2008). Electronic portfolios and morbidity conferencing facilitate doctors' processing of previous clinical experience through engaging in the latter, but they do not address many questions that arise during doctor-patient interactions.

The questions that occur to doctors during and after consultations with patients represent an excellent opportunity for continuing learning. An analysis of the questions that isolated doctors generate from their practice can be used to remotely identify their learning needs and to customise targeted educational interventions to support their further development (Bjerre et al., 2013). Doctors working in group practices can ask professional colleagues for answers, but this option is not available to single-handed GPs. There have been several successful trials of so-called information scientist services e.g. (Ebell et al., 2011; Wyatt & Sullivan, 2005). The information scientist, (usually a medical librarian), searches the relevant literature and provides an evidence-based answer in a timely fashion via e-mail or discussion board to the isolated doctor. The advantage of such a scheme is that doctors get customized answers to the patient-centred problems that they encounter. Information scientist services also help isolated doctors to feel more connected. However, as with other approaches mentioned above, the sustainability of such programs depends on the continuing funding and support of the information scientist. Given the proven beneficial effects (for isolated doctors and their patients) of providing collegial and/or virtually supported continuing learning opportunities, it does appear to be money well spent!

10.6 Conclusion

This chapter has reviewed and summarised the state of the literature on what is known about learning across a working life amongst isolated general practitioners. It has also attempted to describe some of the external forces that apply to single handed general practitioners, and their learning, with a particular focus on the effects and effectiveness of continuing professional development and revalidation. The emergent picture is one of inadequacy. The dominant discourses of continuing professional development, particularly the update and outcomes models, do not work well for geographically and professionally isolated general practitioners. There are also a number of intra-and interpersonal influences that impede doctors' learning and conserve current practice. This chapter has highlighted the availability of some promising educational procedures and interventions that facilitate collegial interaction between socially-isolated doctors. Whilst such measures may not prevent another Harold Shipman, they do offer the potential to establish educationally powerful conversations between isolated doctors that have demonstrable benefits for professional learning, mutual support and the quality of patient care. The essential elements of these interventions, i.e. informed self-assessment and mediated case-based interaction, need to be established in a manner that does not threaten doctors' self-efficacy and professional identity. Single-handed general practitioners are likely to continue to play a very important role in the provision of primary medical care services in circumstances where medical expertise is scarce around the world. It is essential therefore that health services and regulatory bodies recognise the very particular supports that isolated doctors require and that they put in place the funding and infrastructure to support these indispensable healthcare providers.

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Part III
Towards a National Model of Continuing Education and Training: An Australian Case Study

Chapter 11
Continuing Education and Training: Needs, Models and Approaches

Sarojni Choy, Stephen Billett, and Darryl Dymock

11.1 Continuing Education and Training

This chapter sets out the context, framing, procedures and broad outcomes of a 3-year investigation of continuing education and training (CET) in Australia. The investigation sought to identify what might comprise approaches to and models of CET that could be applied across Australia, its regions and industry sectors to: (i) assist individuals sustain and develop further their workplace competence and secure advancement across lengthening working lives; (ii) address the needs of competent industry workforces, (iii) make workplaces safe and productive sites of employment and learning, and (iv) provide communities with the kinds of skills they require (Billett et al., 2012a, 2012b). In this way, the goals for CET are about supporting individuals' employability and sustaining the social and economic viability of workplaces, industry sectors and communities. Specifically, the challenge for the investigation described and discussed here was to identify a set of models through which a national CET provision could be planned, implemented, supported and evaluated to achieve these kinds of goals.

By way of preview, the practical aspects of the investigation (i.e. how the research was conducted, data gathered, from whom and how it was analyzed) were initially informed by a consideration of what these models might comprise and be structured. This included identifying a range of what could constitute models through which CET provisions might be enacted. As a starting point for engaging worker and employer informants, the researchers elected to depict a continuum of models ranging from those that are wholly based within workplace settings through to those which are based wholly in educational settings. Following this initial work, the practical elements of the investigation were undertaken through surveys and

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interviews with workers in a variety of roles and across a range of occupations and industries, as well as their managers. Later in the investigation, focus groups were conducted with adult and vocational education practitioners from both vocational and higher educational institutions and in both metropolitan and regional centres across four Australian states. These focus groups were presented with initial findings and tentative outcomes for them to evaluate the worth of the models preferred by workers and managers and how tertiary education institutions would be able to support these kinds of CET provisions.

A key finding of the investigation was a strong preference, by most categories of workers interviewed, for learning through work and as part of work activities. These informants reported that much of this learning was secured by individuals through their everyday work activities, but often supported by other workers or experts present at the work site. Models of CET that emphasized training or educational interventions were also identified. Some of these were held to necessarily occur within the workplace so that what was being provided as CET provisions was richly contextualized in the work setting, but also engaged with by workers in the circumstance of their actual practice. Nevertheless, it was also found that when workers needed to reskill or change occupations, unsurprisingly, their workplaces were not able to offer the kinds of experiences that were required to develop the capacities for that reskilling or the process of initial occupational preparation. Moreover, some worker informants reported that they would not wish people in their current workplace to know of their plans and continuing education efforts, as this might compromise their current employment. Consequently, this kind of CET would need to be provided by educational institutions. To take one example, a graduate electrical engineer working on a fly in and fly out basis in a remote gas field was undertaking his certificate of electrical installation by distance from a vocational education provider. So, because of the particular requirements for developing those skills, this needed to be undertaken through a vocational education institution, albeit by distance in this case. Put simply, he would not have been able to learn those skills and importantly, receive certification in his current work circumstance.

In contrast to workers' preference for workplace-based learning support, the employers and managers who were interviewed as part of this investigation typically reported a preference for their employees engaging in stipulated training programs. This preference was reported as being premised upon a desire to bring about specific changes and secure particular kinds of learning required for the effective operation of the workplace. It is inferred from data from employers and managers that this preference for training programs and courses was seen to offer greater certainty in outcome than skill development processes in the workplace because these experiences could be intentionally organised to achieve pre-specified goals.

This chapter elaborates what has been presented here. It also sets out the context, processes and then overviews the findings of that investigation, aspects of which are then elaborated in the subsequent three chapters. It proposes that there is no single model of CET that can be presented as a national approach or one which is to be mandated to achieve the goals of learning across working life. Instead, depending upon the particular point in individuals' careers, the issues they confront with

employability and their ability to secure the kind of experiences they need to be supported in their learning across working life, particular approaches or combinations of approaches will be most appropriate. However, in all of this, the focus on experiences that constitute individuals' working lives, those afforded by workplace activities and interactions, stand as a first point of consideration, perhaps more than the orthodoxy of educational programs. That is not to deny the importance of the latter, but positions workplace learning experiences as being central and worthwhile, yet ones which require particular forms of interventions to have their potential optimized.

11.2 The Project for Continuing Education and Training

As is the case in most countries with advanced industrial economies, Australian workplaces are constantly challenged by changes in the requirements for the production of goods and the provision of services. Responding effectively to these challenges impacts on their ability to be productive and remain viable, and, collectively, to sustain national economic and social prosperity. That is, workplaces need to be competitive both domestically and internationally. Consequently, to remain competitive in an economic environment which is often no longer constrained by geographical borders, workplaces require workers who are skilled sufficiently to be adaptable and innovative in responding to these changes, and to sustain those capacities across their working lives. Hence, workers need to constantly renew their work practices in response to market demands, improving quality, and innovation and to cope with changes (Fakhfakh, Perotin, & Robinson, 2011). Likewise, workplaces that support their employees' continuous learning potentially have much to gain (Silverman, 2003). The simple point is that post school initial occupational preparation will be insufficient to accommodate the constant changes in occupational and workplace requirements across individuals' working lives. These changes emerge from developments in a range of domains influenced by deregulation, opening up of markets, new technologies, work re-designs, licensing and legislations, and business work processes and systems (Misko, 2008). So, all classifications of workers need to remain competent and employable to maintain and sustain their employability and also societal and social wellbeing, and, at the same time, contribute to high productivity in a competitive global market (Skills Australia, 2011). Consequently, there is a need for learning across working lives, and some of this can be provided by structured CET provisions, such as taught courses offered by tertiary education institutions. However, it is also important to include the kinds of learning that occur through workers' every day workplace activities as these are a key source of ongoing development across working life (Billett, 2008).

It follows then that, provisions of CET needs to respond to emerging changes, extending workers' current capacities and appropriately so they can contribute to improved quality and productivity. In particular, as much of this advancement is enacted through working life, these provisions need to focus more on 'learning' than

'teaching', albeit include an amalgamation of work and study activities (Tennant & McMullen, 2008). Consequently, individuals and their workplaces need to play active roles in directing learning that is personally relevant and aligned to work goals. Potentially, provision of CET located in the circumstances of work, with onsite support, can be more effective than provisions in educational institutions alone. Yet, pedagogical arrangements that are distinct from those designed for entry level training are needed to support continuing education and training in the workplace (Billett, 2001).

Currently, the provisions of post-school education and training system in many countries are focused largely on preparing students for specific vocations. That is, these provisions are providing foundational knowledge associated with specific occupations, mainly to school-leavers. Yet, such provisions, their content, how these experiences are provided, and where and when this occurs may be inappropriate for the continued development of workers' capacities across lengthening working lives. So, for instance, it is claimed that the Australian vocational education system, which was established for initial occupational preparation (training for entry into employment), can no longer adequately serve the changing skill requirements of Australian workplaces (Harris, Simons, & Maher, 2009). The efficacy of its educational institutions is being challenged by all categories of workers and industries experiencing changes in workplace and workforce requirements (Skills Australia, 2010). Yet, all workers are now needing to continually upskill to maintain high standards for certification and licensing (Beddie, Creaser, Hargreaves, & Ong, 2014), and in ways that are accessible to and through experiences that are well aligned with the required learning outcomes. So, although provisions of support for workers' ongoing learning and development can be found within the current vocational education and training system, these provisions may be insufficient. That is, support for learning will necessarily need to extend beyond traditional classroom and distance study modes to embrace opportunities such as those that are accessible during engagement in work activities. Accordingly, the scope of investigations into CET systems, models and approaches needs to account for and appraise experiences that go beyond the orthodoxy of institutional-based tertiary education and training system.

Indeed, the idea that adult workers, can and will become students within the vocational education system and attend and engage in the ways which school leavers do is fanciful and impractical, not to mention being resource-impossible.

11.3 Context for the Investigation

All the above factors prompt a reconsideration of how learning experiences should be organised and engaged with by workers to most effectively support their learning across working lives. Therefore, it is not surprising to see heightened interests in models of CET that can maintain workers' ongoing occupational competence and employability, but in ways that are effective and accessible for those workers. It was this interest that motivated the funding of a national study to identify and appraise a

range of models by which effective and accessible provisions of support for workers' ongoing development could be appraised. To understand the approaches taken, the overall processes and findings of a 3-year study to identify and evaluate potential models and strategies for an effective national approach to continuing education and training are overviewed here. The investigation commenced by identifying what constitutes the purposes, processes and provisions for an effective national CET system that meets the current and emerging needs of Australian workers, workplaces and communities. Given the diversity in the needs of workers, changing occupational requirements and specific workplace practices and work requirements, it was necessary to identify a set of models of continuing education and training that could serve as platforms to be evaluated by informants in terms of their efficacy in meeting a range of learning needs. Hence, the investigation reported here systematically appraised approaches to best order, organise and enact continuing education and training provisions for the Australian economic and societal context.

Having established the rationale and context for the study, an overview of the purposes, research focuses, methodology and general findings of the 3-year investigation are now presented.

11.3.1 Purposes and Processes

There are particular purposes that models of CET need to address, and specific processes that are most likely to achieve those outcomes. As noted, with the requirements for work and workplaces transforming and occupations changing or discontinuing, workers need to engage in ongoing learning for work, broadly referred to here as continuing education and training, to maintain the currency of their workplace competence, and, thereby, remain employed and employable. This engagement in lifelong learning can also secure the development required for career progression and realise new occupational roles. Moreover that learning needs to be directed towards the kinds of performance requirements of their workplaces. Hence, CET models are required that respond to these purposes of learning, whilst at the same time being accessible, especially if that learning is best located in the context of their workplace, and when any provision of workplace support is expected to bring returns in terms of productivity increases.

Furthermore, models of continuing education and training need to be inclusive enough to support that through arrangements offering distinct kinds of opportunities for a range of different types of engagements in different sites (e.g. workplaces, educational institutions, in the community, online etc) (Smith, Dymock, & Billett, 2013). Hence, whether the required learning is voluntary or mandatory, workers may require experiences that can extend what they know, can do and value, and have the ability to integrate learning from various experiences. That is, it needs to accommodate their readiness to engage and learn and be aligned with the expected performance requirements. Consequently, CET provisions can stimulate and foster learning through at least four means: (i) learning pathways and opportunities that

stimulate and advance individuals' learning; (ii) access to knowledge that is not easily accessible; (iii) intentional pedagogic practices to promote particular kinds of learning; and (iv) certification of learning.

However, what and how much individuals learn also depend on their interests and agency to secure and engage with the support and guidance that is afforded through CET models. Hence, issues of accessibility and appropriateness also need to be aligned properly with what will form the basis for engagement by these individuals. All of these then become considerations for the models' purposes and processes, and lead to the obvious conclusion that there will be no single model or approach which could meet all of these needs.

The interests of employers, on the other hand, are often primarily those that can meet the imperatives of the workplace, which are typically those associated with increased levels of productivity and understandably, economic returns (Smith & Billett, 2003). Although a common interest of workers and employers is in continuity, it may be manifested on different premises – the first to maintain employability and the other for productivity (Bratton, Mills, Pyrch, & Sawchuck, 2008). Continuing education and training models, therefore, need to support both personal and workplace imperatives. There are also purposes associated with meeting government regulations for safe working, hygiene, handling perilous materials or requirements for caring for the weak, infirmed or very young. In terms of industry-wide or national skills supply, there are also expectations associated with supporting the quantum and quality of skills to be learnt (Rubenson, 2009). Like those of workers and employers, industry-sector spokespersons and government interests also need to focus on current and future skills needs. Government sponsorship of continuing education and training might also align with intentions to support a growing population of older workers who need to remain employed throughout an extended working life (Billett, Dymock, Johnson, & Martin 2011). All of this suggests that models of CET need to be able to respond to a combination of complementary and competing purposes, and in ways that may be distinct from educational provisions designed for entry level occupational preparation. A key issue is that the design of the processes for these models' needs to be founded on how workers can and prefer to engage with them and how managers agree to support that learning.

It became necessary at the beginning of the research that development of continuing education and training models be directed to serve specific educational purposes and processes of learning that forms an integral component of on-going development across working lives of workers. As mentioned, it was elected to utilise a continuum of models ranging from those which are wholly based within workplace settings through to those which are based wholly in educational settings, as a platform to incite and capture responses from informants. This approach is elaborated below.

11.3.2 Developing Continuing Education and Training Models

The central question guiding the investigation was: *What models and practices of continuing tertiary education and training can best meet workplace demands and sustain Australian workers' ongoing occupational competence and employability across their working lives?*

The aim of the study was achieved through two sub-questions:

1. *What models and practices can support on-the-job learning, allowing workers to acquire the kinds of experiences and expertise valued by industry?;* and
2. *How best can workers be prepared as active learners to engage in productive learning in the workplace and meet the skill demands of industry?*

As noted, the investigation commenced with the identification and development of a set of models that represent how workers might typically engage in continuing education and training. That is, the conditions, situations and processes required for continuing tertiary education and training and were initially reviewed by identifying six factors that guided the development of nine tentative models: (i) scope within a curriculum framework; (ii) encompassing pedagogical qualities; (iii) appropriateness for regional and national delivery; (iv) accommodating employer motivations and strategies; (v) meeting workers' motivations to engage in continuing education and training; and (vi) aiding the roles of tertiary education and training providers. The nine models based on a continuum between wholly based in practice and in educational institutions were:

1. Wholly practice-based experiences
2. Practice-based structured experiences (e.g. acting up, rotational)
3. Practice-based experiences with direct guidance (e.g. shadowing, mentoring)
4. Opportunity based experiences (i.e. as work events permit)
5. Practice-based experiences with educational interventions (e.g. action learning, action research, project work)
6. Sandwich/block release experiences
7. Structured dual experiences (e.g. cadetship, apprenticeships)
8. Structured experiences in educational programs
9. Wholly educational institution-based experiences (Billett et al., 2012a, 2012b).

Learning through these curriculum models can be supported by a range of practices including working and practising alone, dyads, group processes, integrating learning in education settings into work practices, and didactic teaching. The nine models were used as an evaluative framework during data analysis. That is, these models were used explicitly to identify what kinds of provisions were currently being adopted by workers and workplaces and also which ones were most valued.

11.3.3 Data Collection

Data were gathered through engagement with key stakeholders including workers, employers, industry, educational institutions and government agency representatives. The project applied a mixed method approach and followed three consecutive phases as follows:

- Phase 1 – Generation of models and approaches
- Phase 2 – Refining models and approaches
- Phase 3 – Aligning and implementing models and approaches to continuing tertiary education and training.

In all, 135 workers and 60 workplace managers from health and community services, transport and logistics, mining, finance, service/hospitality industries contributed data through face to face semi-structured interviews and a survey, sharing their experiences with continuing education and training provisions including their strengths and limitations, current practices and preferences for what is most efficacious. They also were asked to suggest CET provisions that would enhance their capacity for current and emerging work demands. The five industries selected for the project provided particular qualities of work (i.e. service work – personal interactions, transport and logistics – solitary, mining – technology) or they contribute significantly to social (i.e. aged care) and national economic goals (i.e. mining) and also employ workers of all ages in regional and metropolitan regions. Beyond workers and managers, 62 vocational education and training professionals participated in roundtable discussions held in the capital cities of Melbourne, Adelaide, Brisbane, and in three regional centres – Kyabram (Victoria), and Gold Coast and Gladstone (Queensland) to gauge their views on the worth and sustainability of models that were favoured by work and manager informants. Then, during the final phase of the project seven representatives from key workforce development and training agencies participated in interviews. Findings from the roundtable discussions and interviews with the seven agency representatives are reported in Chap. 15. All interview data were digitally recorded then transcribed and de-identified for analysis using the NVivo software. The survey data was entered in the SPSS software for mainly descriptive analyses.

11.4 Findings

Workers' reported preferences and ways managers were willing to support learning are summarised in the following sections. Preliminary findings indicated an overwhelming preference and support for learning in the circumstances of work, during working hours and through direct support from experienced workers, supervisors or trainers. Furthermore, recognition, encouragement and support for the purposes of learning remain integral to effective provisions of continuing education and training.

Table 11.1 Current ways of learning and preferred ways of learning

Modes of learning	Current %	Rank	Prefer %	Rank
Everyday learning through work – individually	88	1	57	3
Everyday learning through work individually – assisted by other workers	87	2	65	1
Everyday learning + group training courses at work from employer	60	3	59	2
Everyday learning + training courses away from work (off-site)	36	5	25	7
On-site learning with individual mentoring: one-to-one	50	4	38	4
Small group training at work – external provider	35	6	26	6
Individual training at work – external provider	33	7	27	5

11.4.1 Learning Preferences and Support

Workers completed a short survey through responding to a list of items on ways they learnt (derived from literature and the pilot study for this project) to indicate how they were currently learning for their work and also preferred to learn. They were asked to indicate all items that applied to them. Their responses are collated in Table 11.1 which indicates the modes of learning in the left column, the current mode in the next column, followed by its ranking as a frequency, then in the two most right hand columns the informants' preferred approach and its ranking.

From the analysis of their responses, it is clear that workers found learning at their worksites, most importantly, individually in the first instance followed by assistance from others, as being most efficacious. The three most preferred ways of learning are: (i) Everyday learning through work – individually; (ii) Everyday learning through work individually – assisted by other workers; and (iii) Everyday learning + group training courses at work from the employer. Fundamentally, these findings emphasised these workers preferring and relying on practice-based modes for their ongoing work-related learning. These preferences were consistent across the four industries, in regional and metropolitan areas, and by gender and age groups (see Billett et al., 2012b for details).

Similarly, the workers responded to another set of items to indicate how their learning was currently supported and their preference for support for future learning. Table 11.2 summarises these findings. Again, the left hand column is used to indicate the modes of learning and informants' current mode in the next column, followed by its ranking as a frequency, then in the two most right hand columns the informants' preferred approaches and their ranking. Working and sharing with another person on the job; direct teaching by a workplace expert; and learning in a self-managed group in the workplace with a facilitator were the three most preferred forms of support for learning. Workplaces are held to be rich sites for learning because workers experience authentic work activities, can access other co-workers, especially those more experienced, and are able to practice what they learn (Billett, 2001).

Table 11.2 Current ways workers' learning was supported and their preferences for support

Ways learning was supported	Current %	Rank	Prefer %	Rank
Working and sharing with another person on the job	76	1	56	1
Direct teaching by a workplace expert	67	2	52	2
Learning in a self-managed group in the workplace with a facilitator	67	2	45	3
Direct teaching in a group (e.g. a trainer in a classroom at work)	59	3	36	5
Self-directed learning individually – online, books, etc.	47	4	19	6
Group activities in a classroom, guided by a trainer or facilitator	36	5	39	4
Learning totally online individually with trainer	32	6	10	7

Working and sharing with another person on the job resonates well with the preference for learning at work individually with assistance from other workers; and group training courses at work from the employer. The social and intersubjective nature of learning (Smith & Billett, 2006) where the contributions of co-workers are valued is highlighted consistently across the data. This is perhaps not surprising because it is through interactions with others, that workers mediate and reconcile their experiences and make appropriate meanings in the context of their specific work settings, practices and expectations (Billett, 2008). These interactions enrich workers' occupational specific conceptual and procedural knowledge, and dispositional knowledge, that is, what they know, can do and value, which are also shaped by the organisational history, culture and situational appropriateness (Scribner, 1984). However, ultimately, the efficacy of that learning is directed by individuals' agency, interests, skills and cognitive capacities. According to Smith, Dymock, and Billett (2013) it is the integration of four key elements that effectively support learning for continuing employability. These are: (i) active learning by workers individually and collectively; (ii) support in the workplace; (iii) the facilitation of accredited learning (e.g. by education and training providers); and (iv) effective governance by regulating authorities.

Hence, some worker preferences were consistently reported across sectors and locations. In this way, some patterns emerged about what processes of experiences and support were being offered, how these were engaged with by workers, and the kinds of support for ongoing work-related learning that was valued. All of these findings are important, because whilst being just one perspective, the accounts of workers is important because it is they who elect to engage with what experiences are afforded them, albeit in the work or training setting.

Table 11.3 Ways workers' learning is assisted

Ways learning is assisted in current job to keep up-to-date	%	Rank
Employees learn individually from other workers – e.g. ask questions, observe, listen, discuss	96.7	1
Employees do it themselves individually – e.g. pick it up as they go, read manuals and journals, go online	90.0	2
An experienced person – e.g. supervisor, on-site trainer – trains or mentors employees individually in the workplace	85.0	3
An experienced person – e.g. supervisor, on-site trainer – trains employees in the workplace as part of a group	81.4	4
Employees stay updated through a professional network, or through friends and family	75.8	5
An external trainer trains employees (e.g. from RTO) in the workplace as part of a group	71.2	6
Other: (e.g. onsite conference, vendor training)	45.8	7
An external trainer (e.g. from RTO) trains employees off-site as part of a group	45.0	8
An external trainer (e.g. from RTO) trains employees in the workplace individually	44.1	9

11.4.2 Managers' Responses

Both workers and their managers have a mutual interest in improving productivity and competitiveness through continuing education and training. Indeed, there is an interdependence to meet the challenges of change by employing a range of business-oriented strategies. Among these, managers need to include effective learning support for their workers. Managers of worker participants in the study reported here were invited to complete a short survey and engage in a semi-structured interview to describe how workers were assisted with their learning in their workplaces. The frequencies for the survey on the ways their employees' learning was assisted are summarised in Table 11.3. In the left column are the kinds of means through which that learning was supported, with the middle column indicating the percentage of informants who selected that item, and the ranking of managers' responses.

Responses from the managers indicated the most frequent ways in which workers' learning was assisted included: individual peer support from experienced worker/s (e.g. buddy system) (95.0 %); individual mentoring by supervisor (91.7 %); small group training in workplace with manager, in-house trainer etc (e.g. classroom teaching) (70.0 %); and external trainer (e.g. registered training organisation or professional association) delivering at the work site (70.0 %). Other than these, employers also funded training that was offered by registered training organisations and professional associations off site (78.3 %), and online courses (41.7 %). In addition to the provisions of learning support in the workplace, some informants reported they also accessed self-funded training that was provided by professional associations or other registered training organisations.

The responses from both workers and managers indicate some consonance between how workers reported learning occurs in and through work, and how

managers reported workers were being assisted with that learning. The findings consistently highlight the significance of learning in the workplace, in the context of everyday work, giving further support for their ongoing learning. Hence, there was a strong pattern of responses indicating that models of continuing education based at work and enacted in the context of work were reported as being likely to be the most efficacious. Yet, given differences in the patterns of responses, even continuing education and training models based in work settings may need to be aligned to appropriately meet the needs of individuals at specific phases of their career trajectories, or in addressing particular learning needs that might arise, such as learning new technologies or work tasks, which might present challenges to even experienced and currently competent workers.

11.5 Proposed Models of Continuing Education and Training

The findings from Phases 1 and 2 of the investigation suggest that four models of continuing education and training form the foundations of what might comprise a system of continuing education and training that has national reach in sustaining workers' ongoing development and employability, and promoting the changing skills requirements for transforming productivity requirements. The four models are briefly summarised in Table 11.4.

The four models offer experiences that will serve different purposes and outcomes for individuals, as noted. The three foremost models emphasize the significance of learning experiences in workplaces where individuals learn in the course of their daily work practices, have access to direct instruction and guidance provided by workplace-based experts or teachers, and are assisted by co-workers when needed. The situational bases for learning to meet the specific requirements of particular workplaces, which are determined by the nature of services and production goals, shape what workers and their managers see as important to learn. The data from this study suggest the first three models, in different ways and in combination are well aligned with the needs of those workers who are most interested in maintaining their competencies to meet productivity levels and sustain their employment and advance their employability. Workers with these goals prefer their learning to be enacted in and through everyday work, usually by working alone in the first instance, and supported by other workers, supervisors and trainers if and when needed. Some of that support may also be provided by educators/trainers from vocational education institutions. These educators/trainers are required to be involved if learning needs to be accredited for a qualification or to meet regularity requirements. In terms of the effectiveness of the first three models, it is the quality of social interactions and the attitudes of employees and managers that underpin what is regarded and promoted as quality learning in the workplace.

While workers' and managers' responses highlight the prevalence of the learning in work site, and learning through everyday work, not all the learning from this source is sufficient to maintain currency and sustain employability (Slotte, Tynjala,

Table 11.4 Models of continuing education and training

Model	Summary description
1. Wholly work-based experiences (i.e. on-the-job)	Learning across working life through work-based experiences, in the course of everyday work activities and interactions, learning on one's own or indirectly, and/or supported by more experienced co-workers
2. Work-based experiences with direct guidance (e.g. mentoring, demonstrating)	Individuals' learning at work supported by the direct guidance of more experienced co-workers or supervisors through joint work activities and engaging in supported activities for learning that cannot be acquired without the assistance of more experienced workers
3. Work-based experiences with educational interventions (e.g. applying classroom-taught theory to workplace activities; action learning, project work)	A process of learning which combines learning undertaken through workplace activities and interactions supported by expert input from trainers either on- or off-site, or using projects, such as in action learning, to extend this learning and enhance practice aspects of work. The learning is often accredited and leads to certification
4. Wholly educational institution-based experiences	Some continuing education and training is through programs based in educational institutions or offered online by those institutions. The experiences provide the kinds of learning individuals require for specific goals, such as changing occupations or developing new skills that cannot be learnt through current work

Source: Billett et al. (2014, p. 13)

& Hytonen, 2004). Educational interventions in the third model can augment the experiences provided through practice-based provisions. The fourth model has the potential to contribute to workplace innovation and individuals' career change. It is most likely to be preferred by workers seeking promotions or new careers, and by workplaces interested in implementing new practices, yet will not be able to secure appropriate learning experiences in their workplaces. Workers may fund learning themselves or be sponsored by their employers. Nonetheless, even then acquisition of practical skills is likely to require experiences in everyday work because the disciplinary knowledge they acquire from wholly educationally-based learning is not necessarily always aligned with or able to generate the capacities required for work purposes (Tennant & McMullen, 2008).

11.6 Discussion

The identification of the four preferred CET models outlined above responds to the sorts of ongoing changes that Misko (2008) reported. At the national level, there was increasing acceptance of the need for ongoing and accredited learning across working lives in Australia, although employers and workers alike were ambivalent about the necessity of *certification* of that learning, except where mandatory for safety and registration purposes. The models also reflect the need for pro-activity by

workers in undertaking learning for skills and career development as identified elsewhere (Billett, 2001). However, some workers, particularly older and more experienced ones, were often more reluctant to undertake structured training, which is reflected in the literature (Dymock, Billett, Klieve, Johnson, & Martin, 2012; Noonan, 2007), albeit often because they find limited worth in such experiences. Workers' preferences were typically directed to learning for their immediate work roles, job security and advancement through workplace experiences, via a combination of: engagement in work tasks they were learning about; guidance by more knowledgeable and locally-informed partners; and training interventions related to their immediate work and future work life plans (themes that are elaborated in Chap. 13).

Workers and their managers overwhelmingly supported the notion of learning experiences being situated in workplaces instead of being based in educational institutions, thus requiring workers to engage in active learning during working hours. That is, both workers and managers favoured work-based learning for similar reasons – it didn't take them away from the workplace and was real-work-focussed. While the managers saw ongoing learning in the form of training, the workers identified ongoing learning through their everyday practice although appreciated the benefits of training interventions. Some workers thought that going off-site had benefits too in terms of getting away from the immediate work environment to focus on learning, and also in cross-fertilisation through meeting workers from other sites.

From a pedagogical perspective, workers' preference to learn from others draws attention to the intersubjective nature of learning embedded in the socio-cultural spaces of workplaces (Blåka, 2007). It is within these spaces that knowledge is codified and meanings are appropriated, mainly by working alongside others, listening and observing others, asking questions, receiving/giving feedback, accessing resources and co-workers who can assist, learning from mistakes, reflection on work-tasks and interactions, and mediating artefacts (Eraut & Hirsh, 2010). Fundamentally, the defining feature of learning is the use of what is learnt, the co-occurrence of working and learning as goal-directed activities and outcomes. It was not surprising that managers were primarily concerned with achieving immediate workplace goals, and typically saw structured training programs as the main means of achieving organisational goals.

While particular kinds of work arrangements in some workplaces afford and support regular interactions (such as was the case in age care facilities where novices are teamed with experienced workers), deliberate efforts might need to be made in other kinds of workplaces to create opportunities for interaction and support. For example, in the transport and logistics industry, drivers often work in situations of physical and social isolation. They report actively engaging with and learning from more experienced workers, either when the latter accompany them or when drivers reach a depot and meet with other workers.

Regardless of whether workers are learning new tasks or undertaking totally new jobs, from the interview data it is inferred that their learning processes might best follow a structured process of orientation, engagement in practice circumstances, and development of workplace competence. So, the three key features that underpin

work-based models of continuing education and training include: (i) engagement in circumstances of authentic work; (ii) direct support from and access to more experienced co-workers or other experts; and (iii) learner agency to seek and engage in learning processes that lead to rich or adaptable outcomes. Notwithstanding this as the founding platform, variations of these models will need to be implemented to suit different types of worker learners, work practices and workplaces, of the types Beddie et al. (2014) found. The characteristics of worker involvement in work-based models are discussed in Chap. 14.

The focus in the first three models, on learning at and through work, highlights the critical role played in continuing education and training by those regarded as occupational experts, including external training providers, in-house trainers, peers and supervisors. There was some tension between some employers' preference for workers to acquire immediately applicable skill sets, and training providers' general preference for workers to complete full qualifications. The most effective partnerships appeared to be those based on individual trust and respect, as discussed further in Chap. 14. That chapter also highlights the significance of managers' attitudes to and support for workers' ongoing learning, which are key elements of the second and third models.

Two other important stakeholders, VET professionals and representatives of key government agencies, were also consulted to appraise the efficacy of the four models. Sixty two VET professionals from private and public sector organisations across five sites, with roles in training or training management, engaged in roundtable discussions, each lasting three hours. Four scenarios reflecting the four models of continuing education and training were presented for discussions from three perspectives: (i) effectiveness and sustainability of the proposed models; (ii) roles of different stakeholders to effectively implement the models; and (iii) systemic changes required for effective support of the models. Their contributions are discussed in Chap. 15.

11.7 Conclusion

The workplace as a site for learning is highly significant in maintaining and enhancing the skills of national workforces. In most circumstances reported through this investigation and other inquiry, ongoing learning for work is best undertaken through engagement in work tasks because the context and activity comprise the authentic deployment and enactment of what is learned. Workers, their managers and supervisors all have key roles to play in enhancing the effectiveness of CET provisions, and they all need to be supported accordingly and their capacities built as needed. The flexibility of tertiary education and training systems, institutions and teachers, their staff abilities to implement approaches to delivery, as well as regulatory and funding models, all influence the extent to which CET can be effectively supported to meet worker/learner and employer needs. Key areas for further development reside in the implementation of the four models in ways that address the

particular workplace goals and circumstances, as well as those meeting individuals' readiness and goals for continued learning across their working lives.

The two chapters that follow present and discuss the perspectives of workers and managers respectively, about continuing education and training. In the final chapter, the book concludes with a discussion of the sorts of factors that contribute to an effective national system of ongoing learning and training.

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Chapter 12
Workers' Perspectives and Preferences for Learning Across Working Life

Raymond Smith and Ann Kelly

12.1 Workers' On-going Learning Needs and Practices

As elaborated in the first chapter of Sect. 1.3 of this book, continuing education and training (CET) refers to the provision and enactment of learning experiences undertaken by those who have left the compulsory education system (i.e., school) and are now pursuing or seeking to pursue their livelihoods in work and the world of adult endeavour. In this chapter, and further advancing the focus on a national model of CET within the Australian context, a case is made that CET is about workers' engagement in a broad range of work-learning activities and the need to more fully understand and value their contribution to the provision and enactment of CET. Such a case is important, not because their contributions are weak or limited, but because, unfortunately, workers contributions can be overlooked in the culture of institutional and regulatory control that dominates the tertiary vocational education and training industry and its practices in Australia (see previous chapters).

Workers have more than a vested interest in CET. As well as an educational vehicle for developing the essential skills sets that future work will require (given the nature of occupational and workplace change), and a means of sustaining employability through those developing skill sets (holding a job in times of increasing uncertainty), CET is based in the ongoing daily enactment of working. That is, CET is the regular practice of workers as they engage in the learning that enables and constitutes their work. For those currently employed, CET is learning in and for work and this kind of learning is not something done separately from work or additionally to work; in effect it is work. Working is a form of learning (Billett, 2006, 2008a; Engestrom, 2001, 2008) and the fact of its continuity through being employed makes work a form of on-going learning. Hence, examining and understanding how

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workers engage in work is necessary to improving and supporting a national CET provision and its enactment.

This chapter reports research that was conducted in workplaces and enabled workers to discuss their work-learning experiences, how those experiences supported their occupational trajectories in and through the changes they have encountered and how they would prefer their learning to proceed in order to address foreseeable changing requirements of work. These perspectives and preferences offer significant insight into the ways workers feel they learn best and how best that learning can be supported. Three key emphases emerged. First, learning in and for work is best enacted at work and through work as opposed to off-site and out of context. Second, it needs to be supported by circumstances that enable individuals' personal and agentic engagement in shared work-learning activities as opposed to treating workers as homogenous and or isolated learners and so deny their differences and need of support. Third, these circumstances need to include convenient access to assistance and expertise, ranging from more experienced co-workers and workplace mentors to external sources as opposed to rationing and quarantining learning guidance and support. Importantly, this support needs to come from those who are fully knowledgeable about the contexts in which their expertise is deployed.

These three emphases suggest a focus for effective CET being based on addressing the work and learning needs of workers in the authentic circumstances of their actual work practices. Such perspectives are central to and advocated by much of the workplace learning literature where tenets of learning as a social practice accomplished through immersion in activity are common (e.g., Billett, 2006, 2008a, 2008b; Engestrom, 2001, 2008; Gherardi, 2006; Hager, Lee, & Reich, 2012; Smith, 2012). This body of literature helps to illuminate work-learning as most robust and innovative when it is learning centred as opposed to teaching or instruction centred (e.g., Bell & Kozlowski, 2009), when it affords rich and diverse opportunity to engage in activity as opposed to constricting engagement (e.g., Fuller & Unwin, 2003) and when it is future and developmentally focused as opposed to maintenance and compliance driven (e.g., Toner, 2010).

This chapter supports these proposed CET bases. It goes on to briefly outline some of the social participation and practice literature that can serve as the conceptual foundation of these proposals. It then presents and illustrates some of the key findings from the research noted and concludes by discussing and further justifying how both the literature and the research conducted can support and advance the need of greater and clearer appreciation of workers' contributions to CET provision and practice.

12.2 Learning in and for Work: Some Conceptual Foundations

Work and the learning by which occupational and organisational practice is sustained and developed are socio-personal practices. That is, work and learning in and for work are both the processes and outcomes of collective activity whereby

individuals, engaged in the tasks and relationships that constitute the participative requirements of their particular contexts, develop and contribute to the knowings, doings and sayings (Dewey & Bentley, 1975; Schatzki, 1996) that comprise their enactment of those practices. These knowings, doings and sayings are, contemporaneously, the known bases or historical artefacts from and on which learning and development will progress to generate the new and emergent knowings, doings and sayings that evidence the (re)making of social and occupational practice. Throughout the work-learning literature, a broad range of concepts and understandings are deployed in efforts to illuminate the nature of these practices and how their transformation is enacted and accomplished. Taken together, these various concepts and understandings may be seen as comprising a participation and practice paradigm of work and learning. What is common within the different perspectives of the paradigm is the emphasis on a unifying principle of inseparability. That is, all the resources (social, historical, personal, contextual, material, ideational, etc.) necessary to collective activity are brought together in and through that activity and are inseparable from it. In effect, they are mutually inscriptive, mutually derivative. The resources generate the activity and the activity is the regeneration of the resources.

To illustrate, Engestrom (2008), from a cultural-historic-activity-theory perspective describes the inseparability or mutuality in action as "knot-working". Knot-working is the collaborative activity that brings together the resources necessary to the generation and or transformation of a learning object. So, for example, knot-working may be the coming together of a group of health professionals whose combined resources (e.g., their occupational skills, hospital equipment, capacities to share information, etc.) enable the generation of a treatment regime (i.e., learning object) for a particular patient. Such a scenario is viewed as an activity system and the emergent learning objects become the new resources that the system can now bring to the inevitable and subsequent activity that will follow. Knot-working emphasises the immediacy and significance of the learning object and the combination of resources by which it is generated. Such learning is collectively enacted and the system members and the skill sets they bring are dynamic as they draw on and depend on each other in the construction of the solutions to problems, more efficient processes and the creation of new resources that constitute collaborative and expansive learning at work. When the learning object, the focus of learning activity, is continued learning for work (i.e., CET), the concept of knotworking emphasises that it can only be accomplished by the shared and often unpredictable effort of working together. For healthcare workers, Bleakley (2013) notes this effort requires high levels of both personal and collective tolerance of ambiguity and improvisation.

From a different cultural psychology perspective, Billett (2008a) describes and defines the unifying inseparability and mutuality that underpins work-learning as "relational interdependence". From this perspective, the emergence of workers' learning through engagement in their work is based on the degree to which workers choose and are able to take up the invitational qualities of participation in practice that their work extends them. Where workers are willing and capable, and workplaces afford opportunity for workers to exercise their willingness and capacity (i.e., their agency), then learning proceeds to the degree that it is supported and satisfies

the goals of those who will enact it. To work is to enact learning. However, the nature of that enactment is enhanced or limited by the qualities of the relational interdependence between the personal agency of the worker and the social agency of the work. Hence, to engage in CET is to realise and enact the relational qualities of situated learning and participation opportunity and personal learning capacity and intention. Workers cannot do more than their work allows and enables. Equally, workplaces cannot do more than that in which their workers are prepared to engage. So, effective CET provision and enactment are likely to be secured through workers and their workplaces seeking to identify and satisfy their mutual goals simultaneously. When this is successfully accomplished, workers' learning encompasses both their effective utilisation of the resources available for personal and professional development and employers' securing necessary workforce training and development (Etelapelto & Saarinen, 2006; Harteis & Goller, 2014).

From another perspective, Smith (2014) describes the unified enactment of work-learning as "negotiation". Negotiation is the purposeful bringing together of what is required for action. Workers are the locus of learning and without their engagement and investment in the energies and priorities that comprise their personal goals and purposes, the kinds of changes that mark work-learning could not be witnessed or examined. Further, negotiation emphasises that mutual goals are established in the juxtaposition of purposes enacted and the outcomes accomplished. Workers' purposes are both brought to work (e.g., through prior learning based in histories of years of social engagement) and developed through work as enactments of their personal preferences and priorities. So, for individual workers, what is important either is so or becomes so as they exercise their agency in pursuing their preferences and priorities. Effective learning emerges as the personal energy and effort invested in participative practice approaches outcomes desired or resolves to outcomes secured. However, such secured outcomes need not be favourable (although they are preferred). Rather, outcomes secure the new positions from which subsequent negotiations will proceed. Hence, on-going work-learning (i.e., CET, as both instructional intervention and as emergent through routine participation) can be rewarding, frustrating, intentional, incidental, hidden and continuous. For workers, it is a highly subjective experience, enacted and secured as negotiated engagement in collective activity. It can be formal, planned and targeted, as when known objectives such as specific qualifications or experiences are pursued and secured (e.g., Kyndt, Govaerts, Kuenen, & Dochy, 2013). Similarly, it can be protracted, discontinuous and imperceptible as when conflicting perceptions of self-value and the expected behaviour that defines organisational-value complicate workers' engagement in work-learning experience (e.g., Claxton, 2014).

Differently again, practice theory perspectives (e.g., Gherardi, 2006; Nicolini, 2012; Schatzki, 2002) describe the unifying quality of social activity as "connectedness". Practices are the social manifestation of connectedness in action and as such offer a means to examine and interpret how aspects of the constant flux of social experience and the resources from which it is formed, for example learning and working, can be generative of the altered practices that confirm newly emergent knowings and, hence, new and additional resources. Learning in and for work is

learning in practice with the acknowledgement that social practices are both constraining and liberating because they capture and define our current knowings, and therefore, can be indicative of our knowing needs. What we know and do can be suggestive of what else we need to be knowing and doing. Hence, negotiations proceed in efforts to secure the new outcomes required and desired.

Negotiation is a form of social practice. It is characterised, in part, by sets of posturing, information seeking and sharing, decision making and other interactive practices. So, to improve on-going learning negotiations is to secure more accurate information, to make more informed and inclusive decisions, and so on. However, from a practice theory perspective, to improve practice is to engage in the comprehensive transformation of current practice rather than simply devote greater energies to make existing practices more efficient (Kemmis et al., 2014). Current CET practice identifies, describes, positions and evaluates the resources by which it is constituted in ways that are familiar and accommodative of the accepted. For example, instruction is delivered, structured programs are required, qualifications are earned, skills are developed and training must be cost effective, industry focused and contribute to the national economy (see e.g., Department of Education Training and Employment (DETE), 2014; Department of Industry, 2014). These are some of the regulatory knowings, doings and sayings that coalesce to generate the connectedness of understandings and activities that mark contemporary CET.

This connectedness is, of course, further complicated by the additional stakeholders who, through their different enactments of related practices, contribute to what Gherardi (2006) describes as the texture of practices. Along with regulators and legislators, workers, training providers, workplace systems and cultures and other vested interests create the fabric of diverse textures that is CET practice. For some it is formal and proscriptive, as might be defined by institutional program, a kind of contextually determined work-learning practice. For others it is unstructured yet bounded, as might be defined by acting in the opportunities to vary practice that arise when colleagues are absent or necessity demands – a kind of emergent learning practice. For others, it is engagement in social or relationship building activities, as might be defined by getting to know people in contexts outside of the usual work and learning settings, that is, through practices that bring strangers together and enable their friendship to develop – a kind of embodied learning. Hager and Reich (2014) elaborate these and other qualities of learning in and via practice through a framework that identifies six threads for theorising professional and work learning practice. The six threads: knowing in practice, socio-materiality, embodiment, relationality, context dependence and emergence, provide a means by which the textures of practice can be examined and interpreted. To improve CET practice is about altering the textures by which it is generated, thus altering the connections and the perception bases that hold those connections together. This is about bringing resources together in different ways, transforming relationships, adopting different perspectives and realigning imperatives. Through these kinds of actions, CET practices may be transformed to become new and emergent practices rather than remain existing practices that are simply made more profitable and or less costly for those who invest in them, no matter what their stake.

The four perspectives on work-learning noted above and the different vantage points they create for viewing CET cannot be conflated beyond a common recognition of the inseparability of the people (plural), purposes (multiple) and practices (current and unfolding future) necessary to the enactment of work. That enactment is the conduct and transformation of work irrespective of how the bringing together of the resources by which it is constituted is conceptualised. That acknowledged, the significance of workers as primary resources cannot be underestimated in efforts to account for and elaborate the diversity and complexity of all the resources enacted as mediating factors in work and work-learning. It is, unsurprisingly, people who learn. In and through work, it is people as workers who learn and thereby secure the conduct and transformation of work. As is evidenced by industrial disputes, accidents, holidays and all manner of disruption and delay, when workers stop working, work and learning in and for work ceases. To examine and understand CET (in all its guises) requires understanding and valuing workers' perspectives and preferences for learning through their immediate experience and across their working lives. To effect this means researching what Lave and Wenger (1991, p. 50) described as, "the interested, concerned character of the thought and action of persons-in-activity". How and what workers think and action as their learning, their motivations, intentions and preferences and so on, is fundamental to the effective provision of CET. Seeking to advance or enhance CET without such understanding reflects a failure to appreciate the nature of work-learning and the opportunities workers generate through their enactment of work-learning.

12.3 Examining Workers' CET Learning Experiences and Preferences

In order to gain an insight into the types of learning experienced and preferred by workers for the purposes of retaining their current employability and meeting future economic and structural challenges (resulting from factors such as globalisation, technological developments and the demise and creation of new industry sectors), the perspectives of 136 employees in four states in Australia were canvassed. The data collection was organised in two phases. In Phase 1, semi-structured interview schedules, along with a number of written questions containing tick boxes and scales, were used to elicit the views of workers employed in the two industry sectors of (a) aged and disabled care within community services and health and (b) transport and logistics. The interviews were of between 30 and 40 min' duration and were usually conducted in a face-to-face format between a study researcher and the participants, although a few group interviews were also held. In Phase 2, the larger study, while opinions from additional participants in aged care and disability were sought, the range of industry sectors sampled was extended to the mining, financial and services industries (e.g., hospitality and tourism).

Table 12.1 Workers' experienced and preferred forms of CET

Kinds of learning and support experiences	Preference percentage[a]	Actual percentage[a]
Working and sharing with another experienced worker on the job	57.0 %	76.0 %
Individual mentoring by a workplace expert (e.g. supervisor)	55.5 %	56.0 %
Group activities on site guided by a trainer or other facilitator	49.0 %	67.5 %

[a]More than one response was encouraged

The workers, who are the focus of this chapter, were asked to rank different types of continuing education and training (CET) provision according to their experiences and preferences and then provide a rationale for their choices with respect to the latter category. The particular forms of CET selected derived from earlier research findings (Billett et al., 2012). Table 12.1 above shows percentages of the three most common learning and support experiences of CET identified by workers and their preferred forms of such provision across the two phases of the study.

What is evident from the first line in the table above is that the participants in the study stated that their preferred form of engagement in learning was on-site from an experienced co-worker (57.0 %). Further, they rated this as their most common mode for developing new knowledge and skills (76.0 %). In explaining why they attributed this ranking to the option of working with another experienced colleague at work, the study participants provided a range of reasons. The following examples give a flavour of the different reasons workers proffered to rationalise this choice.

> … I'm one of the more experienced people now, but a few years ago that wasn't the case and I most relished being with my experienced buddies who were doing my job, who were deeply familiar with what I was doing, who could give me insights into my job. People from the outside, their advice was often, not always, often less relevant because they didn't have intimate details of my job and they couldn't be expected to. (finance worker)

This worker respected the 'depth' of knowledge and the 'intimate details' about his job that his co-workers had developed and could share with him. This was compared, somewhat unfavourably, with guidance from others who lacked these attributes.

Another worker, this time within the aged care sector, focused on the likelihood of currency and practicality inherent in this mode of learning. That is, 'whatever they're telling you actually works 'cause they do it all the time'. Still another worker highlighted the opportunity to build team unity at work through learning from and with peers. This can be seen in the following quotation.

> The individual peer support, that's always good. I think it fosters a nice team environment and then it gets a broad range of knowledge across the whole team so if you can keep that communication open it just enhances the way that the team works together. (finance worker)

Other workers identified processes that were perceived as helpful when learning from their co-workers. The following example indicates a stepped sequence of

learning guided by peers that was claimed by a participant to have been effective in learning to TIG weld.

> Well watching people doing it you get a rough idea how it goes and getting someone to help you, they will give you a rundown … show you and then they'll tell you to do it and while you're doing it they'll watch you and tell you what you're doing wrong. (mining worker)

For truck drivers within the transport system learning from other drivers was particularly important as these employees are very mobile. It was evident from the interviews that there are few opportunities for this particular occupational group to meet together, either informally or formally, to develop new knowledge. However, as well as appreciating the CET support available from those colleagues with longer service in the industry, one interviewee noted that learning from others also involved a form of reciprocity between older and younger workers.

> Quite honestly, I still think it's the same thing where you can pass knowledge on and you can take knowledge and it works in two ways. If you've got a young person, you're virtually teaching them part of it I suppose, and you can learn something from them as well. I still think that's the better way after 48 years on the road. (transport worker)

These examples of workers' justifications for why they preferred to learn from and with a peer emphasised the belief that these unofficial 'trainers' were generally highly experienced and understood current and effective practices. In addition, a relationship of trust existed in such learning milieu where mistakes could be corrected through positive and developmental processes.

The mode of learning ranked closely to individual peer support preferences by interviewees was individual mentoring by an authorised workplace expert (e.g., a supervisor) within work settings (55.5 %), although it was somewhat less commonly available (56.0 %) than in the mode discussed above (76.0 %. In the transcript excerpts below, several features of this mode of learning are highlighted.

In the first example there is recognition by the worker that initial training at work, however it might be conducted, will not suffice. The value of being assigned a mentor is that a particular person with experience is available to address questions or issues as they arise.

> … The reason … for my first choice, which is one on one mentoring, is because whatever job you do, there's always that need to go to the next level. Having someone who has been there, done that, helps you to ask your questions freely and … you wouldn't have to wait for a different course ten months down the line to ask a question, because you either have forgotten about it or lost interest in the question. (aged care worker)

Another participant valued the efficiency and the highly focused nature of the relationship that is possible to develop with a mentor.

> Oh because it's just you and the supervisor one on one. He can just be talking to you and not trying to explain it to this one and then next one and next one, sort of thing. … It's easier to concentrate. If there's more people around then it's a little bit distracting. You don't have all different people trying to talk at once. (mining worker)

Another element of efficiency in learning that was rendered by a mentorship relationship was the increased likelihood of learning from mistakes and, ultimately,

avoiding them. In the two interview transcript excerpts below which relate to the mining and tourism industries respectively, these features are evidenced.

> I think if you work with an experienced person you are less likely to commit mistakes and if you do commit mistakes they will show you why and they will explain to you how not to do it again instead of… you know, because in the industry we are in we can't afford to make any mistakes. We're talking about lots of pressure on those wells, so we've got to make sure we do it and we do it right. (mining worker)
>
> This isn't the sort of job. I mean a lot of it, a little bit of it is trial and error, you learn from your mistakes, but there's not much leeway to make mistakes here, because you're talking about working with animals that have had a lot of training and you make too many mistakes and it can set that training backwards. So learning by your mistakes is probably not a great idea. (services worker)

As with the first preferred mode of learning that workers identified, the importance of trainer knowledge and experience was highlighted. However, in this case, these attributes were legitimised and this was critical, particularly within high risk industries, where the margin for serious errors is very fine. Another aspect of this type of learning arrangement was its inherent individualised nature and where, optimally, assistance could be staged in a way that was responsive to a particular worker's needs.

The third model of learning that was preferred by the study interviewees (49.0 %) was small group learning interactions (e.g., through the media of meetings or organised discussions) guided by a knowledgeable facilitator. This form of on-the-job knowledge and skills development was the second most commonly experienced option with this group. In the three interview excerpts shown below, the interviewees emphasise different aspects of learning through engagement in small group meetings and discussions with managers and in-house trainers. The first quotation focuses initially on affective benefits whereby those workers who may be reticent to speak in a more formal setting 'will actually pipe up to say something', in a small group setting within an aged care facility. A further point that was raised is that this mode is an efficient way of sharing information that is pertinent to a specific group of employees.

> [Opportunities to learn in an in-situ group setting] I find are quite beneficial because sometimes a few are a quieter person in a group. Like, in the office, you might not feel confident enough to say something but once you're in a group setting with people you might actually pipe up and say something and other people talking encourages you to speak and that's why I find those are quite good. And they allow you to get a whole lot of information across to a group of people as opposed to telling everyone individually and people getting the message differently or whatever the case may be. (finance worker)

In the transcript fragment cited below, the worker identifies a number of features of this mode of training. First, it is provided by someone 'qualified' (a teacher) from a different part of the organisation who has developed specific 'new' skills and knowledge ('things)' and practices ('ways') that are both practical and effective in this workplace setting. Second, the training is conducted on-site using modern equipment which has been designed to meet both legislative and the physical requirements of the residents.

> We do have training here like continence management, pressure area management, … hoisting, fire training, first aid. We do have a lot of training. Taylor House provides a teacher from the other faculty. So, they train us and they teach us the new things, new ways, the good ways. They teach us those things, we're pretty much applying. … They always bring in new equipment, the latest equipment and the people who use those [sic] equipment teach us here so they share the knowledge and they share the information which is good for us. … Because we do many manual things here and teaching manual handling will definitely minimise the risk of being injured. It's really essential. They have to update what is going on in a legal way or in a mechanical way, anyway. It's essential. (aged care worker)

Another benefit raised by a worker with respect to small group learning was the availability of opportunities for workmates to explore notions and even point out, in a supportive way, erroneous approaches that were being practised that this mode presented. The excerpt below focuses on this point.

> I've always found in the group you could bounce ideas off other people; you can present your opinion, whether it's wrong or… at least the group can sort of close in what they feel you're saying is wrong and convince you, okay, I need to think a different way; or you might be able to comment on somebody else who is thinking the right way, "Oh yeah, but if you look at that and try and think through it a bit better".… I think I benefit more out of group training because I mean it's all part of team construction as well as … sharing information that you know with other people and knowledge isn't knowledge unless it's shared. (mining worker)

Again, it is evident that the workers in the study reported here valued 'trainers' who were experienced and knowledgeable about effective work practices which included the use of specific equipment in their occupational contexts. They also noted that this mode was characterised by learning within a supportive environment where all voices were respected and, specifically, its efficiency in sharing information.

While the three sets of preferences elaborated above were initially conceptualised by the study researchers as discrete, it is evident that, as well as being understood by the participants as having common features, they were sometimes seen as complementary in specific learning events. For example, an older aged care worker stated that when she was first employed in her current role it was necessary for her to improve her computer knowledge and skills. This learning was achieved successfully through a number of different training modes, not all of which were practised in her workplace.

> I've had a mentor on the floor who's actually shown me step by step, written down the instructions for me, plus I've had training offered to me in the computer side of things and I've taken those up and that's really helped a lot. [In the case of] computing at home, [I have] young children who just haven't got the patience to wait for poor old Mum. … They're four or five steps ahead of me, but we've gotten there. I've gotten there. I've had to if I wanted to better myself and step up, which I want to do in the position that I'm in. I've had to learn but I've enjoyed it. It's been a great journey (aged care worker)

Another worker, this time in the mining industry, saw his preferred learning mode as a set of sequences, some of which were likely to be iterative. His understanding of the linear and mixed-modal process that his learning was anticipated to

take is shown below in the first quotation and this is then summarised in the second.

> … I've started yesterday so I'm going through a training program at the moment. I've just been given the booklet, so at the moment I'm just reading through and learning all the parts of a well, all the joints of the pipes and things like that. After that I'll spend some time on the field with one of the operators just looking and learning and after that I believe I'll go straight to the training classes to undertake training as well. …
>
> Yeah, so what do you do? The way I'm thinking is to get a bit of knowledge inside the workplace first, so you get that knowledge and then you go away and do class studies with an organisation which will teach you all the theory. So once you've learned all the theory you come back to the practical again. (mining worker)

As the few and brief excerpts of worker interviews above indicate, work is a dynamic blend of active engagement in the enactment and development of occupational skills and knowledge through training, sharing and doing what is required. Such is the practice of on-going learning in and for work. Learning is working and working is learning. Both conceptually and pragmatically, all the worker participants in the CET project reported being constantly involved in some form of learning for their work.

12.4 CET for Working

Work is increasingly about learning – learning to improve, to respond, to innovate, to work together, to secure employability and to learn. From a practice theory perspective this is unsurprising. As Hopwood (2014, p. 351) states, "learning and knowing are about what people do and say, bodily, and the material worlds in, amid and with which these actions unfold". Hence, work is a learning practice and on-going learning is a work practice. For the worker participants in the research reported here, the inseparability of work and learning is not simply a case of securing an authenticity that ensures the links between work and learning are relevant, efficient and supported. Such authenticity is important and fundamental to good learning practice. Saliently, this inseparability is the actual lived and unfolding experience of all these workers. Seeking to separate work and learning as distinct experiences may seem necessary to separate and distinguish, for example, workers' engagement practices in a training room (i.e., where they are being informed about new procedures) from their engagement practices in the actualities of work (i.e., where they may implement and enact those new procedures). However, such separation, in terms of learning experience, is at best artificial and at its worst denies the ways workers learn and prefer to learn. And yet, this kind of 'training' perspective remains the common understanding and experience of workers and their employing organisations – perhaps as a legacy of institutional schooling and the need for carefully managing limited resources such as time available (and away from immediate production tasks) and access to expertise (those who have the knowledge and capacity to support effective learning).

Practice theory perspectives suggest a more integrated approach to the on-going learning provision for CET is necessary. It is not that getting together in classroom contexts is unnecessary; rather, it is about who gets together and how that togetherness is enacted for learning. For example, Gherardi (2010) examines the 'knowing-in-practice' that is telemedicine and how the specialist cardiologist, the general practitioner and the patient come together through the mediating technology of ICT (information communication technology). However enabled and evaluated, such coming together accomplishes the work of telemedicine. Together, in the authentic connectedness of their collaborative work tasks, the three participants collectively enact and develop the work. The practice of the work secures the practice of learning how to do the work. This is the message the workers of the project reported here are delivering. Learning needs to be practice based. Minimally, this is about getting workers and experts together, on site and in situ. Further, however, it is about getting all invested parties together, that is, clients, co-workers, experts, managers and others, in ways that progress practice rather than simply create instruction opportunities. The worker participants in the project reported here emphasised throughout the need of greater sharing and collaboration amongst themselves, and with experts, trainers, mentors and supervisors as the basis of their learning preferences for current and future work-learning.

Such collaborative practice, that engages the vertical (e.g., clients, managers) and horizontal (e.g., co-workers, tools and equipment) resources of work practice, reflects the 'knotworking' that Engestrom (2008) identifies as the activity system of work. A group of workers in a classroom may constitute a 'knot' that is working towards expanding a learning object. However, such a knot is relatively passive and far less resourceful than that which the workers in the research reported here are advocating as the basis of their on-going learning or CET. Knotworking is task and goal oriented, deploys multiple skills, perspectives and applications, and is highly temporarily bounded and typically unconstrained by the need of generating new solutions to emergent problems, rather than being limited by the structured application of known techniques to predictable problems. Hence, knotworking is intensive, creative and boundary crossing (Engestrom, 2008). More than team and meeting focused, knotworking is dynamic resourcing for whatever can emerge as optimal output for the needs of the system (Sinikara, 2012). Workers know how to knotwork. Their work and learning demands they draw on all that is available to them at the time of the need. They recognise that the primary source of these necessary resources is their work, hence, their co-workers, expertise, diverse learning opportunities, organisational support and so on, and they work to secure these resources when and if they become available. As a truck driver in the research sample stated when describing the benefits of learning together, "knowledge isn't knowledge unless it's shared". Such an understanding of how knowledge for work is generated through collaborative engagement in addressing the needs of work is suggestive of knotworking.

The resources brought together in learning through knotworking are not equally valued and homogenous; they can't be, given the nature of the different skill sets and perspectives brought together. Workers are not equally gifted to deploy similar

learning legacies that evidence their years of previous engagement in work-learning. All workers are different. The typical classroom training session with a single instructor and its assumptions of students being similarly prepared and enabled to learn denies the diversity and flux that is work-learning. For the workers in the research reported here, after the tasks and activities of work itself, the most commonly cited learning resource was co-workers and this because of their differences and yet complementary understandings of the learning requirements of their work. The next most commonly cited resource was expertise, that is, having opportunity to access and work alongside experts (be they more experienced co-workers, supervisors, mentors, subject matter experts, trainers, etc.) was considered necessary to effective CET. Throughout the interviews, workers spoke repeatedly about seeking information and support from their co-workers whether they were novices, colleagues, buddies, supervisors or managers. From Smith's (2014) perspective, this seeking of the additional learning resources that co-workers represent constitutes negotiating participation in work as personal work-learning practice. Importantly, it is unsurprising that workers actively seek each other out through their learning. Rather, what is significant is how and why they do this, given that each of them will effect this in different ways at different times, for different purposes and with different expectations. Smith points out that the negotiations these work-learning encounters constitute can be viewed as intentional goal oriented interactions that secure resolution of the work requirements generating the encounter. For example, and as the worker excerpts noted above indicate, a worker seeks assistance, receives it and is able to complete the work. However, Smith also points out how the negotiations of work-learning can lead to a variety of enactments and outcomes that can be unintentional and yet lead to unexpected discoveries (favourable or otherwise) and or can lead to repeated intentional enactments that do not find resolution and so remain on-going (pleasantly or unpleasantly). What negotiation perspectives (Smith, 2014) and knotworking perspectives (Engestrom, 2008) suggest for effective CET and as the workers interviewed attest is that on-going work-learning needs to accommodate and promote workers' self-directed engagement in bringing together the resources necessary to their sustained and developing work practice.

Hence, CET must be recognised and supported as a relational social engagement through which workers, in collaboration with the numerous resources (personal, organisational, material, etc.) that comprise their work and its future, promote and support their work-learning. Workers do this anyway as they make the best of what is available to them. Expanding this set of resources and supporting the relationships on which resource access and generation is accomplished should be accepted as a CET priority. For some workers, this will mean establishing the clear (seemingly linear) pathways that work-training-work engagements can accomplish (as demonstrated in the quotation above by one of the finance sector participants in the study). Such endeavour may mean negotiating more closely and collaboratively with employing organisations and managers to secure greater training opportunity. However, such distinctions between theory and practice that separate training from application may prove unnecessary when those charged with the deployment of work-learning resources are enabled to foster the conditions (e.g., of expansive

learning environments, Fuller & Unwin, 2003) that better support workers' agentic engagement in their on-going learning.

Billett (2008a) outlines the bases from which workers and their contexts can move to secure greater engagement in learning. So, for example, "workers need to engage in the socioculturally-derived and supported practices that make up the workplace in order to secure the knowledge required for work. While this necessity drives workers' learning and participation, the social practices that make up the workplace require workers to secure the purposes and goals of the workplace" (Billett, 2008a, p. 40). However, securing such goals and purposes is not a simple matter of workers' acceptance or transference through some enculturation process that instructs and inducts them into the priorities of their work. Rather, it is negotiated and thereby, highly person-dependent as workers personally and hence differently construe and enact what their workplaces and occupational practices suggest is necessary and valued. The bases of, and outcomes emergent from, these negotiations (minimally between work and workers but more holistically among all the resources that constitute work) are the relational interdependencies of worker engagement and workplace affordance enacted as workers create and respond to the learning opportunities necessitated and opened by their work. They cannot be seen as suggestive of reciprocity or equality. Such intersubjectivity or shared understanding is more complex, dynamic and transformative of practice than reciprocity suggests (Billett, 2008a). From these perspectives of the relational nature of work-learning provision and enactment and the need of expanding workers' opportunities to exercise more productively and collaboratively the personal agency (however weak or strong) they cannot cease to enact, CET needs to be seen in terms of enabling and supporting workers to do more effectively what they will do anyway, that is, learn to sustain and develop their practice within the opportunities and constraints their work affords.

12.5 Conclusion

To conceptualise CET in the terms of workers' on-going learning through instruction focused training practices forces such learning to be limited by the degree to which those who design, deliver and evaluate its processes and outcomes can imagine and secure its enactment. This has been and remains the case in the Australian context where institutionally led schooling type practices that address the needs of entry level (often adolescent) learners persist. Within this tradition, the limitations of CET can be characterised by seeking to secure the intentions of those who instruct over those who learn. Under such circumstances, the demonstrated capacities of experienced workers, when it is they who are the focus of learning, cannot be adequately accommodated and drawn upon as strong contributions to the learning that sustains their employability and that generatively responds to the increasing changes marking contemporary work. The work-learning theoretical perspectives

underpinning this chapter advance that the nature of effective learning is collective, negotiated and practice transforming. Similarly, the workers in the research cited elaborated their understanding and practice of effective work-learning. Effective learning is emergent from their own endeavours, particularly when those endeavours are supportive and respectful of their learning priorities and preferences. These priorities and preferences have been developed and refined across their many years of experience in learning in and for work. Workers recognise the need of instruction based training. When such training is conducted by experts from within the context of its application, workers welcome and take up the learning opportunity this represents for them and their employing organisations. However, and additionally, these same workers recognise the limitations such learning experiences generate and work hard to overcome them through the exercise of what agency they can secure to enact alternative forms of learning and access to other learning resources.

The workers who participated in the research reported here were very clear about the importance of learning in and for work and equally clear about how best they learned. Their work-learning experience, like the research literature utilised throughout the chapter, suggests that effective CET goes beyond a focus on classroom training for skills development to meet immediate needs. Rather, effective CET takes a more expansive and learner-centred focus on supported learner engagement in the personal and organisational development requirements that meet and direct work and occupational change as a constituting element of work practice. Workers know how to learn and what is necessary to support that learning. While they may not have influence over the kinds of changes they are subject to through the decisions and priorities of their employers and industry regulators, they cannot be overlooked as sources of the successes that come from effectively responding to and generating the learning that is work.

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Chapter 13
The Critical Role of Workplace Managers in Continuing Education and Training

Mark Tyler, Darryl Dymock, and Amanda Henderson

13.1 Introduction

As contemporary workplaces change in response to external and internal influences, there is increasing pressure on workers to maintain their competence and, hence, their employability. Among the factors that influence such change are: general advances in information, communications and design technologies, the need to comply with regulatory frameworks and legislation, the development of better tools, equipment and materials, and enhancements to workplace organisation, practice and culture (Misko, 2008). Field (2006) described the transformation of work in modern times as "profound" and the implications for education and training as "far-reaching" (p. 18). The nature of workers' responses to change appears to be determined by a range of variables, including the extent of the change, the support provided by employers, and the personal agency of workers themselves (Billett, 2006; Evans & Kersh, 2004). Jorgensen (2004) suggested employees should participate in broad training and in new areas that they are possibly unfamiliar with, in order to cope with changing employment requirements across their careers. "Security of employment," he wrote, "now resides in the capacity of individuals to build their employability" (pp. 10–11), which is dependent on the extent that they become intentional lifelong learners. The particular concern addressed in this chapter is the changing role of workplace managers in fostering such learning for immediate work purposes, as well as for future employment.

It might be argued that managers, as supervisors, have indirectly always had a training function. But the case made in this chapter is that such a responsibility

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appears to be becoming more overt as learning and training become more significantly embedded in workplaces in response to an ongoing range of changes to work practices, regulatory and legislative requirements, and the increasing pervasiveness of certification of training outcomes.

The chapter progresses its discussion and illustration of these expanded perspectives of line managers and supervisors across four sections. First, following from this brief introduction, it examines some of the recent research literature about lifelong learning. Part of this is the increasing role of the workplace as a site for learning, along with managers' changing roles and responsibilities through the kinds of occupational and organisational changes that characterise contemporary work. Secondly, drawing on the findings of recent research that examined the continuing education and training (CET) of workers across five key Australian industry sectors (i.e. mining, aged care, transport and logistics and finance and services), the chapter describes and illustrates new and developing learning management roles and responsibilities that managers in these sectors are taking on or having thrust upon them as their organisations respond to internal and external change. These findings are discussed in the third section, and the chapter concludes with a discussion of the implications for managers' own training and learning.

13.2 Learning across Working Lives

The growing imperative for CET in recent times has led policy makers and researchers to seek out more cost-effective and pedagogically effective ways of providing support for work-related learning. Two of the most significant consequential developments at both the policy and practice level have been around developing workers as lifelong learners and around workplaces as sites for learning. It is important, therefore, to understand how the training roles of managers in these workplaces are and might be conducted given these two developments.

McKenzie (2001) identified two streams of thought associated with the lifelong learning discourse. Firstly, that which emphasises lifelong skills "training and retraining for improving employability and economic competitiveness" (p. 368) and, secondly, lifelong learning for citizenship where life fulfilment is obtained through a sense of appropriate contribution and belongingness. These two characterisations of lifelong learning, one in terms of skills development, and one focussing on personal development, have become increasingly confused over the years, as Fejes (2014) noted in charting the development of lifelong learning policies in Europe. He concluded that in the 1960s and 1970s, lifelong learning was seen in a humanistic way, with personal development at the forefront, as exemplified in the UNESCO report, *Learning to be* (Faure, 1972). When the OECD published *Making lifelong learning a reality for all* (1996), however, there was a shift to an economic discourse, with market competitiveness and skills development becoming important considerations. In 2001, the Commission of the European Communitieslifelong learning strategy included an initiative aiming to integrate work and education,

which, Fejes said, positioned lifelong learning "as an integral part of the work and knowledge production processes", (p. 100).

In this way, 'lifelong learning' has gradually morphed into 'lifelong education', particularly in government policy documents, as Billett (2010) has pointed out. Billett said that lifelong learning is "a socio-personal process and a personal fact" (2010, p. 401), and is, therefore, conceptually distinct from lifelong education, which is related to institutional provisions. The distinction is important in any discussion of the roles of managers in CET because it allows for a consideration of their approach to supporting and facilitating the educational process, as well as to fostering individual learning.

Such a distinction is also useful in considering the concept of workplace learning, which has gained increasing prominence as an important process in building knowledge and skill outside the formally structured educational provisions of classes and curricula, because of the need for greater flexibility and adaptability in workplaces (Field, 2006). The workplace has become a salient site for learning (Billett, 2010), where enterprises enact consciously and unconsciously variations on the principles of both lifelong learning and lifelong education.

More and more enterprises look to workplace learning as a means to increase enterprise and performance through employee development. In an era where "social capital and know-how are replacing plant and equipment as the creators of economic value" (Cross, 2012), enterprises are held to be increasingly turning to their managers to build processes for employees to grow and develop as a response to workplace change. In the following paragraphs we rehearse some of the relevant positions and models of workplace learning.

Models that are relevant include competency-based training (CBT) model (Mitchell, Henry, & Young, 2001) and communities of practice (Lave & Wenger, 1991). In a comparison of these two models, Yandell and Turvey (2007) argued that CBT enabled sufficient knowledge and skill around some elements of practice or doing. Yet, it was insufficient in understanding complex professional roles, for example, that of a workplace trainer or teacher. The essence of the communities of practice model, on the other hand, is that it enabled extensions to practice and processes that rendered "a nexus of wider and cultural relationships and understandings" (p. 543) in learners so that they were able to take risks and responsibility for what happens in their context and to gain confidence in sustaining new understandings about the particularities of their new working role. It could be argued that this model of learning might be best suited to the increasing complex nature of the workplaces. That is, those where workers have to respond to often rapid rates of change and be an integral part of the innovation chain where "agility, curiosity and commitment to continuous learning" (Herring, 2012, p. 1) are required. Yet, in both models, little attention is paid to those who must find new ways to help today's workers take responsibility for their own CET – the managers and supervisors. Indeed, this is a position that Parding and Abrahamsson (2010) emphasised when they called for managers to build greater understanding of both the erudite and practice dimensions of workplace learning.

Illeris (2004) put forward a workplace-learning model that acknowledges a much broader context than the workplace. He argued for a model for learning in working life. This takes the perspective that workplace learning is more than just an encounter between the workplace and the employee's learning process. He states, "learning takes place in a dynamic relation between the employees learning processes, [and] the communities at the workplace in the enterprise as [a] technical-organisational system" (p. 431). Illeris' position is that learning is both an intrinsic and extrinsic event, that is, both a psychological process of the individual and a social process experienced through interaction between people. This plays out in the two dimensions of work identity and working practice. Work identity, relates to the individual moving between dealing with learning content and the dynamics of learning, and work practice relating to its position on a social level between the technical-organisational learning environment and the social-cultural learning environment. This means that no matter what influences are present in the learning space, whether they are linked to the performance of the work itself, or to the workplace, or to working life more generally, they are marked by the working practice that the learner's experiences are a part of. These experiences are filtered through the individual learners' work identity to become something that they process and acquire as learning (Illeris, 2004). In his model, there is no clear illumination of the facilitation of the individual worker's interaction between learning content and work practice. Illeris appears not to account for the type and nature of the influences in the learning space in relation to how they affect the learning acquired by workers.

In another conception, Billett (2001a, 2001b, 2002, 2006) presented a workplace learning model in which "learning is held to be co-participative: the reciprocal process of how the workplace affords participation and therefore learning, and how individuals elect to engage with the work practice" (2002, p. 28). Arguing that workplace learning is far from informal, Billett critically engages with the position of learning through work, suggesting that it is an inter-psychological process between workers and their workplace (the social and physical) environment. He pays particular attention to the degrees to which knowledge is available to workers within workplaces. Billett goes on to claim that "knowledge required for work performance is not always easy to access as it may be hidden, and also there are impediments that inhibit learning, as workplaces are far from benign environments" (2002, p. 28). So, Billett's concern is about how opportunities to participate in work are distributed to workers, and the extent to which this influences how learning and what types of learning are accessed by workers. Within this viewpoint, enterprises need to exercise their responsibility for providing access to workplace learning. This responsibility has recently shifted position away from central staff development units in enterprises to line managers (Carter, 2012). However, it is not just a matter of line managers seeking specific and suitable education and training from particular situations and events, but rather recognising the importance of everyday routine practices in shaping what is learnt.

What is pertinent about the above is that these models/explanations of workplace learning are limited in describing precisely the social and individual conditions required by managers in their newly acquired role of facilitators of training and,

indeed, for some, trainers. Researchers have shown an occasional interest in examining the role of line managers in the training process. This includes calling for greater involvement (rather than delegating to human resource developers as perceived experts), not only with job-specific coaching and support, but also as learning and change catalysts who create environments for effective performance (Gibb, 2003; Gilley, 2000). In a discussion of the 'learning economy' Field (2006) said that, "for managers, maintaining quality and productivity requires increased attention to the training and development of the entire workforce" (p. 79).

Carter (2012) concluded from a review of literature that as the role of workplace learning becomes more central in maintaining and improving work performance, there appears to be a gradual move away from strong reliance on central training units towards the greater manager involvement of the kind that Gilley (2000) and Gibb (2003) advocated. She noted concerns that over-reliance on managers for such purposes might result in unequal access to training for individuals and that the managers' increasing involvement might change the nature of the manager-worker relationship. Using a small sample from one workplace, Carter found that those particular managers were "committed to facilitating worker learning and that they actively sought to identify worker learning needs and deploy strategies to facilitate worker learning" (p. 5). In other words, they were concerned with both workforce development and individual learning.

The importance of the commitment to that role was identified in a larger study by Eraut, Alderton, Cole and Senker (2002), who concluded that local managers "may influence learning more through their effect on the microclimate of the workplace and the organisation of work, and through personal example, than through formally recognised activities such as appraisal or sending people on courses" (p. 93). The four researchers found evidence that line managers worked in a relatively straightforward staff development role. Yet, they also exerted influence in learning and development, including as role model and expert, and through their informal and incidental behaviour, to create a climate of learning in the workplace. Once again, there is a focus on both supporting and facilitating the educational process, and fostering individual learning. Importantly for the study reported here, Carter (2012) noted that, whilst managers deploy a range of strategies to facilitate learning, they do so with a "surprisingly lack of acknowledgement and support" (p. 1).

What emerges from the small number of studies identified and discussed above is a picture of line managers gradually taking more responsibility for the development of their staff. There are also indications that their attitudes to the importance of ongoing training and learning and consequential actions may be key factors in its effectiveness in the workplace. How they approach education and training is an indicator of the breadth of their understanding of how learning occurs. Managers appear to have a largely unrecognised but influential role in fostering and enabling staff learning. Therefore, exploring their understanding of how learning occurs and is best organised in the workplace is critical to the success of CET processes.

In the research reported in this chapter, we explore the extent to which managers are increasingly taking greater responsibility for training their workforces, sometimes because it is expected of them, sometimes because they assume a de facto

training role, not only to meet immediate work skill needs, but also to prepare workers for learning throughout their careers. In other words, the focus in the chapter is on to what extent managers consciously or unconsciously foster the socio-personal process of lifelong *learning* and support and facilitate the provision of lifelong *education* (Billett, 2010).

The next section summarises the responses from a diverse range of managers who had learning and training responsibilities. The data were collected in two phases: in phase one, managers from the Health and Community Services (H&CS) sector and the Transport and Logistics sector (T&L) were interviewed; the second phase interviews were with managers in the Mining, Services/hospitality, and Financial Services sectors, along with additional informants from Health and Community Services.

13.3 Managers' Views about Continuing Education and Training

In the first phase, managers from a total of 13 workplaces, 6 in aged care and disabled care in the health and community services sector, and 7 in the transport and logistics sector, participated in interviews. Nine of these workplaces were located in a major city in Australia, and the other four were in regional towns and cities. Within these 13 workplaces, data were collected from a total of 26 managers or senior training coordinators, using interviews with specified schedules of questions. All managers in the aged care industry were female, whereas the majority in the transport industry were male, thereby reflecting the pattern of gender distribution in these industry sectors.

Phase 2 of the project extended the study to a larger and wider informant base to more comprehensively explore what constitutes effective CET. Data were gathered through on-site semi-structured interviews and short surveys with 34 managers from four industries: Mining, Services/hospitality, Financial Services, and Health and Community Services. The worksites were in metropolitan and regional locations in four Australian states. There were ten manager participants from each of the Aged Care and Financial Services sectors respectively, and seven were employed in each of the Mining and Services/hospitality industries. Equal numbers of male and female managers were interviewed.

In both phases, the total of 60 informants participated in face-to-face semi-structured interviews of 30–40 min duration. Most interviews were conducted one-to-one, but occasionally, because of workplace operational requirements, it involved small groups. The sample also responded to written questions containing tick boxes. The managers responded to check list items relating to the main models of CET currently being used in their workplaces, and the main approaches to teaching and learning currently used in their workplaces. Following the interviews, all transcriptions were de-identified and given pseudonyms, and the data were manually

analysed using a strategy that identified major themes, patterns and interrelationships (Gibbs, 2002) to design a coding scheme. NVivo Version 9.1 software was used to extract information relating to the various elements of the coding scheme and SPSS software was used to collate frequencies for quantitative items. These were then cross-analysed with the interview data.

13.3.1 Drivers of Change

The managers in aged care and transport were asked what they saw as the purposes of learning and training in the organisations for whom they worked. There was agreement from these managers in both industries that training served not only to develop the workforce, but also as a way of recruiting and retaining staff. A strong training program was seen as a way of encouraging staff to feel part of the organisation, particularly when both industries were struggling to attract good staff.

Another common factor identified in the interviews, was the increasing importance of occupational health and safety. In aged care, this was often to do with hygiene as well as such specific practices as lifting and turning clients in their beds. In the transport sector it was mostly connected with safe practices, such as tying loads, carrying chemicals or managing fatigue.

There were differences in the reasons for training. These were based on the different purposes of the organisations involved. Aged care is a service industry so its focus is on serving the needs of its clients. Kate, a manager of an aged care facility, claimed she could see the difference when staff had undergone training, resulting in "better outcomes for patients". In the profit-driven transport sector, however, the emphasis is on training to ensure that businesses remain competitive. The result for one road transport company was to multi-skill its employees because, as Ken explained, "it enables us to be flexible in our operation. It also helps to secure and maintain contracts by having a diverse range of operators being able to swap round."

The managers were also asked to identify particular changes in their workplaces that had required staff to update their knowledge and skills. Once again, the examples tended to be industry-specific, such as manual handling and drugs and alcohol awareness in training and logistics, and dementia care and new practice standards in health and community services. The drivers of change mentioned fell into three categories: (i) new legislative or regulatory requirements, (ii) the introduction of new equipment or systems, including technology and (iii) changes and upgrading of policies and practices specific to particular workplaces.

In Phase 2, although the examples provided were different to those from the managers interviewed in the earlier phase, the categories of drivers of change across these four industry sectors were consistent with that highlighted by Phase 1 respondents: (i) new legislative or regulatory requirements (e.g. increased compliance and licensing conditions), (ii) the introduction of new equipment or systems, including technology (e.g. new computing information systems, digital instrumentation and calibration, adapting tools and equipment), and (iii) changes and upgrading of

policies and practices specific to certain workplaces (e.g. partnerships and project collaborations).

The responses to the question about the reasons for new learning indicated that the drivers of change were both internal and external. This range of influential factors suggested that managers need to have the capacity to structure training within the organisation to keep employees up to date, and facilitate external expertise and monitor both policy and technical development in their industry.

13.3.2 Learning and Training Responses

Asked to discuss how the need for change translated into new learning and training, the managers focussed on those training activities that fitted within busy work circumstances, where securing worker release time and necessary resources were often difficult. So planning, scheduling and allocation of staff and resources were important functions for these managers, as exemplified by these responses: "Learning is assisted by good processes that identify where skills are located, how staff can be tracked and flagged … accurate performance appraisal" (Kathy), and "We have a training matrix and go through it constantly… and make sure staff attend" (Lyn). They also claimed to require sufficient flexibility to accommodate the kinds of work-related changes that inevitably occur without jeopardising training attendance and completion, and the accreditation necessary to meet regulatory and personal requirements. Many of these needs were being addressed through partnership arrangements with a particular RTO that met their workplace training requirements. There are "incentives provided by the organisation to upskill to Cert IV or Enrolled Nurse … provide paid time to complete mandatory training … good communication systems help" (Madonna).

Similar sentiments were expressed by mining sector managers: "Our organisation has built a training and assessment department that sits within the field because that way we can bring a level of professionalism to what is required" (Nathan), and "Everybody's got to go through the training. It's the system. We need it" (Peter). Such comments were also common by respondents in the services sector: "We train in every aspect of the club; he's done payroll, accounts, cellars, stores. He's now into gaming. He's done point of sale, rostering … It cements him into the club and gets him thinking about how to do things differently … We pay and keep it going that way" (Robert).

In some industries, shift work and staggered hours of working caused difficulty in balancing the need for training, the availability of staff and the cost of external providers. Group training on-site was the preferred mode, but there were also instances of employees' undertaking a course off-site, and the instance of a cohort enrolled by distance education with the manager acting as an ad hoc mentor. Some managers in health services and in transport also commented on occasional worker resistance to undertake accredited training. This was particularly among older and, therefore, typically more experienced, though possibly also less educated, workers.

This situation could be seen as an example of the inherent tension between the discourse of lifelong education, meeting workplace imperatives, and the discourse of lifelong learning, in this case the personal development of workers. In this example, these 'recalcitrant' older workers may well be motivated by imperatives that they see as important but not considered by the workplace as beneficial to organisational operation. How mangers reason their important decision-making around CET in relation to these two prominent discourses is a process to be questioned. This tension between lifelong education and lifelong learning in the workplace is again exemplified further on in this chapter where these managers' pastoral care activities are highlighted.

Generally, these managers claimed that high skills-based training is leveraged and effective, when small groups of workers are instructed by experts in the field. In contrast, more conceptual, foundational knowledge based training was assisted by prolonged one-to-one interaction with experienced supervisors. Yet, when these are not available in the workplace, workers are left to their own devices, with some managers acknowledging that workers cope independently: "Well I suppose, they do pick it up. Well, hopefully, frequently" (Sam). Given the need, at times, for workers 'to pick it up', other models that support learning in practice are particularly suited.

The managers were also able to identify the sorts of training strategies and approaches adopted to assist staff to cope with the changes mentioned and, hence, retain the workers' competence and ultimately their employability. This competence directly also affects retention and recruitment of staff. These strategies and approaches ranged from direct instruction such as through an on-site trainer or in a course taught in a classroom, through to observation and modelling, as in the 'buddy' system, to less formal activities such as toolbox meetings and staff meetings, and hands-off methods such as memos and bulletins. The activities identified were also sometimes based around an individual or one-to-one strategy, and sometimes aimed at groups of employees.

The range of manager responses is indicative of the changing nature of ongoing learning, with less reliance on 'picking it up as you go along' learning, to more systematic and monitored approaches, driven by mandatory requirements and the increasing need for certification. The sorts of activities and strategies they adopted to help employees meet changed circumstances generally indicate an overt or unconscious understanding of the need both to provide training and to support the workers as learners. The nature of that provision and support is elaborated in the next section.

13.3.3 Manager Roles

The roles of the managers in providing and facilitating training while at the same time supporting individual learning became evident in the participants reporting. This related in particular to the sorts of learning and training happening in their workplaces.

'Hands-on' learning on the job continued to be important in the industries because of the nature of the work, for example, Harriet, a health and community services manager, pointed out that "We've got longer term care staff here who haven't got any kind of qualification, but you would never even think of trading them for anyone else because they know the job, they know the residents, they've got that drive as well". Consequently, peer learning and mentoring seemed likely to maintain their places in the training and development processes, and there were a number of suggestions from managers that industry and organisational cultures may need to change to embrace a broader view of what constitutes 'training'.

This last finding has implications for managers' roles. Training and employees' learning was held to be in need of being managed, coordinated and facilitated to some extent, if managers are to be effective in helping workers cope with change. The interviews with managers established that in general they reported holding themselves responsible for maintaining and even developing the training function. In more detail, an analysis of the interview data identified a number of roles related to that function, including: (i) assessing training needs, (ii) selecting appropriate providers where necessary, (iii) training and mentoring workers, (iv) monitoring training, (v) providing individual support for workers as learners, (vi) responding to staff-expressed learning needs, (vii) convincing workers of the need for change, and (viii) encouraging staff to take advantage of training opportunities and (ix) optimising the situations and conditions that facilitate learning. These informants also reported being responsible for making judgements about the adequacy of the provisions and the potential return to the organisation, and evaluating the total costs to the organisation in relation to having a particular set of training arrangements. These tasks also extended to the management of learning opportunities and certification, including motivating staff who were reluctant to participate in learning related activities.

In addition to undertaking these roles, however, the managers generally conveyed in the interviews that they were not only proactive in the development of their staff, but also had a genuine concern for that development. This concern was partly for the sake of the organisation, but also for the advancement of the workers themselves.

The interview data show that the range of learning and training arrangements in the selected industries placed growing demands on these managers. They tended to see themselves as increasingly responsible for workers' engagement in training, which required them to develop new understandings of the interactions in the workplace that foster more effective learning and to take increasing responsibility for managing, supervising and carrying out the training function. The changes also meant an extension of the 'people' skills they needed as line managers, as well as a deeper appreciation of the complexities of teaching and learning in a workplace context. In addition, the managers' personal attitudes seemed to be an important though hitherto unacknowledged factor in the extent to which they promoted and facilitated ongoing learning and training.

Overall, the managers' responses showed an increasing involvement, direct and indirect, in the provision of CET. These managers also showed an appreciation of the need to develop the learning capacities of their workers.

13.4 Discussion

The interviews with the managers across the diverse workplace settings identified that these managers have a vested interest in supporting workplace education and training. In the main, they appreciated the value in the generation of social capital and know-how as described by Cross (2012) and, accordingly, invested considerable energy in facilitating employee development. These managers identified the needs of staff to remain abreast of the work they were required to perform and were, at times, instrumental in supporting staff to meet the changing needs to progress outputs such as material resources and services. The composite of activities could be said to directly contribute to the on-going human capital development at the core of lifelong learning.

In undertaking this role, the responsibilities of these managers were broad in their scope. In the first instance, the managers claimed to create awareness, encouraged staff and, initiated learning opportunities. In the second instance, the managers fostered, supported, and monitored staff progression through requisite skill acquisition by the careful planning and co-ordination of meetings and workshop sessions. Further to this, these managers reported often scheduling staff to work alongside each other so that specific skills could be demonstrated. In adopting these responsibilities the managers largely viewed their continuing education and training (CET) responsibilities as scheduling, rostering and accessing the provision of the necessary learning required by employees. These tasks were all work-based and might be seen as examples of Billett's (2001a, 2001b) affordances in action.

In fulfilling the workplace requirement that employees be knowledgeable and possess the requisite skills for effective practice, these managers worked largely around creating awareness, encouraging, and initiating opportunities for their employees, consistent with Eraut et al. (2002) conclusions about the significance of managers' influence on attitudes to and the take-up of learning by employees. Managers, as part of their oversight of the training, education and performance of the work of their employees, appeared to have a good working knowledge of the legislation that the organisations needed to comply with, and possess up-to-date skills in new technologies and equipment. On the basis of this knowledge and skill they implemented work-related changes, acting as learning and change agent catalysts (Gibb, 2003; Gilley, 2000). The managers interviewed demonstrated their commitment to keep employees well informed through raising education and training needs in staff meetings, on notice boards, and or through internal email. Depending on the work circumstances, the managers claim to have found the appropriate means and strategies to follow up on whether the staff was aware of the significance of the proposed CET based on compliance with legislation or new

initiatives that the company had elected to adopt. This assisted buy-in for staff relief and also assisted in flagging the degree of motivation staff held for participation in planned CET events. Engaging staff in dialogue and conversation that were commensurate with continuous learning contributed to human capital development (Plant & Turner, 2005). To a lesser degree, the managers discussed responding to the self-education that staff themselves were pursuing. A few managers also discussed how they were pro-active in trying to recognise and accommodate the learning of the staff through other programs, but this was not a dominant theme.

Further to the extensive communications on learning needs with staff that managers led, managers highlighted the importance of catering for the logistics associated with actually ensuring the delivery of training. The manager informants also discussed how an important aspect of their role was the rostering of employees together with scheduling the provision of education. When done appropriately this ensured that employees had opportunities to display compliance with legislation, and operate new equipment safely. A major overarching goal for many of these managers in their shuffling of logistics for CET was that staff were able to derive efficiencies for the new systems that the company had implemented, updated technology in particular. The adoption of technology was a critical discussion point for companies with an older workforce. Effective co-ordination involved an array of activities, ranging from: organising expert staff already employed in the organisation; to delivering small sessions themselves; to liaising with Registered Training Organisations (RTO) (i.e. government credentialed organisations) regarding particular training needs. Experiences with RTOs were quite variable depending on the manager, their relationship with the RTO, and also the staff and the offerings of the RTO.

Managers mostly stated that they did not question their role in the planning and co-ordination of staff development, thereby reflecting Carter's (2012) finding that there was a gradual move away from centralised HRD units to greater reliance on managers. This planning role was largely procedural, as different staff were at different levels of qualification, for example, Certificate IV, or even degree level (see Council AQF, 2013). Overall, managers were cognisant of staff's performance ability and pro-active in the access and provision of the education at the appropriate level that ensured continuity and individual progression. The necessary learning involved the provisioning of specific skill acquisition as opposed to creating effective learning environments where staff are encouraged to reflect and seek learning opportunities. Workplaces invariably afford such opportunities (Billett, 2002), so managers should be shouldering the responsibility of the enterprise to make available and facilitate the learning through available opportunities in the performance of work. This warrants the shift from education delivery sessions as the primary source of learning, to line managers creating learning situations (Carter, 2012). Managers need to conceive of their role and responsibilities not purely in provisioning education delivery, role-modelling or coaching but rather as agents who create environments for effective performance (Gibb, 2003; Gilley, 2000). This might include fostering what Lave and Wenger (1991) call communities of practice.

From a workplace viewpoint, one most important aspect of the manager's role is ensuring that the knowledge acquired by these workers adds value and is useful to practice. Some managers acknowledged that some requirements for competency were a 'tick box' (Guthrie, 2009), and while they recognised the importance of compliance for reporting requirements and auditing, they acknowledged that it may not add value to outcomes or productivity to the company. Mostly, the managers interviewed for this project reported being quite supportive of the increased administrative responsibilities as they could see the value of their staff in being able to efficiently and effectively deliver the service that they were employed to perform.

While the dominant ways of thinking about staff CET was the delivery of competency based training (Mitchell et al., 2001), some managers looked to organising provisions for learning through workplace buddying. A few managers focused more specifically on setting up circumstances for staff to share knowledge and derive broader benefits than the specific acquisition of a skill when learning 'on the job'. Some of the more pro-active and arguably contemporary managers, while not mainstream, included initiatives as 'getting to know the individual'; rewards and recognition to maintain and assist in motivation; matching peer support; and the encouraging voices of new staff, as critical for effective learning at work. These are initiatives that can: generate attitudes that adapt and respond to change, result in more learning about the job, expand notions of learning on the job, and are possibly important for the fostering of education and learning in the workplace that could ultimately contribute to advancing the quality of the work. Assisting staff to identify and advance solutions to work-related problems and challenges leads to a conclusion that these efforts are clearly linked to the roles of the managers themselves. The workplace learning model associated with competency based training, and its focus on skills development alone, had limited value to these managers' roles in developing CET pathways and in endeavouring to develop learning cultures within their workplaces.

Some of the above CET support practices by the more contemporary managers unfortunately often remained invisible as workplace education and training, as noted by Carter (2012), until clear workplace outputs were evident. This work of the manager also aligns with discussions about consideration of individuals, their specific learning needs, and their social circumstances in the context of their work (Illeris, 2004) which is employee specific and not automatically addressed through a standard training schedule.

In sum, the research shows that managers' involvement in initiating and supporting learning and training has often evolved in subtle ways. That is, in the midst of ongoing change, they often found themselves de facto managers of learning, so that their abilities as coach, mentor, tutor, facilitator, or training organiser appeared critical to the necessary routine and on-going development of workers and the workforce capacity development of their organisations generally. Thus, the specific and often impromptu requirements of learning and systems adaptation caused by unplanned and immediate change, occurred in what Eraut et al. (2002) called the "microclimate of the workplace and organisation of work", (p. 93). As such, managers have become increasingly responsible for employees' learning. First, in the

general sense of worker and organisational well-being and performance improvement, a kind of learning culture support and development role. Second, in the sense of meeting the demands of increasingly rapid change, a kind of change agency and emergency response role existed.

The managers' responses also indicated another factor at play, one that was hinted at by Eraut et al. (2002), and that is: the subtle influence of managers in fostering and modelling learning for work purposes, sometimes in a way that is almost pastoral in nature. In some of their responses, these managers generally reported personal concerns for the development of their staff, highlighted when specific names were mentioned and concerns about the staff member's general well-being reported. The nature of the concern appeared to go beyond organisational requirements, although no doubt were influenced by them. What could be at play here are particular managers traversing the borderlands (Alsup, 2006) between the discourse of lifelong education, i.e., a matter of enterprise development through workplace learning, and, the discourse of lifelong learning, i.e. a matter of citizenship and personal development. On one hand they are concerned with the economic imperative of ensuring an enterprise is economically viable and on the other having concern for the well-being of their staff.

So, the research shows managers increasingly taking on additional responsibilities in relation to training, from identifying appropriate outside sources, especially for accredited training, to learning facilitation and direct teaching within the enterprise, as part of workforce development, which Field (2006) had concluded was necessary. It also showed another side of these managers role, however: intentionally or otherwise generally encouraging ongoing learning and developing workers as learners. This latter role, which seems mostly unrecognised, is an important one in a work environment where CET are key to maintaining workers' competence as well as preparing them to cope with the changes that are to come, including in a new job or career (Brine, 2006; McKenzie, 2001). The managers' roles need to be recognised in any modern conceptions of lifelong learning where "work and knowledge production processes" (Fejes, 2014, p. 1) are found to be essential in the data.

In these capacities, line managers and supervisors confront and respond to learning as a management variable in ways that go well beyond familiar understandings of worker and organisational training and performance requirements that contributes to social human capital, an important element for the continuation of life-long learning. Such diverse roles are not explicit in the general models of workplace learning reviewed earlier in the chapter.

13.5 Conclusion

Contemporary workplaces are buffeted by continual change: new technology, revisions of legislative and regulatory requirements, and upgraded industry- and organisation-specific policies and practices. This dynamic environment requires

workers to be continually upskilled and knowledgeable in order to remain competent and hence maintain their current employment, as well as be prepared for future change. The research reported in this chapter shows that in these circumstances managers have a key role in fostering, supporting and sometimes providing CET to help workers maintain their competency. It highlights that managers are increasingly taking responsibility not only for sourcing, facilitating and evaluating educational provision, but also for developing workers as learners, and, thus, helping them develop positive attitudes towards lifelong learning.

Yet, the role of managers in developing a 'training culture' is not always acknowledged in models of workplace learning or even sufficiently recognised within the workplaces themselves. This may be particularly the case where managers have taken on (often willingly) an ad hoc training role in addition to their specified duties. In many instances across these informants there seems to be an oversight in acknowledging the pivotal position that managers play in relation to advancing the quality of work to either provide better services, for example, in the government sector, or in facilitating more sustainable and productive practices in competitive enterprises. Equally significantly, recognition also needs to be given to the role of managers in preparing and fostering workers as learners and thus helping maintain the workers' jobs and sustain their careers over increasingly longer working lives. The research reported above shows that sometimes even the managers themselves were not aware of the extent of their involvement in the training function until asked to reflect on it.

The increasing requirement, stated or unstated, for managers to manage the workplace training function alongside their other management tasks requires a new focus on their significant contribution to CET. Employers need to recognise the critical role that managers fulfil in this area, and acknowledge that they may need time, resources and additional skills in order to carry out that function. Such an investment by employers into their managers' development will ultimately pay off with a more skilled, valued and, therefore, more productive workforce.

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Chapter 14
Towards a National Continuing Education and Training System

Sarojni Choy and Raymond Smith

14.1 A System of Continuing Education and Training

Throughout this book, learning beyond post compulsory schooling to maintain individuals' capacities for productive work, licensing and on-going employability is described in various terms – professional development, continuing professional development, on-going development, ongoing occupational development, workplace training, etc. For simplicity, in this chapter we use the term continuing education and training to interpret learning beyond contemporary post compulsory schooling as described by the terms mentioned above. Regardless of the terminologies to describe post compulsory education and training or how learning is organised, engagement in ongoing learning is now a necessity to sustain productivity, innovation, employability within and across occupations, and societal well-being in a highly competitive global environment. Learning through these arrangements commonly follows the orthodoxies of schooling (Schuller & Watson, 2009) where the curriculum is designed to teach and assess individuals. Yet, the case studies in this book illustrate several models extending from learning that takes place wholly in educational institutions across educational institutions, to those based wholly in the workplace and provided by in-house trainers, product suppliers and trainers from registered training organisations. These cases challenge the prevailing models of ongoing work-learning provisions based on initial occupational preparation, suggesting that such provisions alone are inappropriate for the effective ongoing development of workers' capacities and that other, more work- and worker-directed models offer greater opportunities for securing the kinds of learning practices and outcomes that contemporary workers and workplaces require.

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We advocate that the four proposed models and related processes and practices, as noted in Chap. 11 and further elaborated below, can be situated under a national framework which affords workers and their employers' appropriate levels of regulation, certification, and standardisation, yet meet particular occupational and workplace requirements to sustain individual, industry and national interests. For instance, those employed in the workplace which has a unique function may want certification which will allow them to demonstrate their ongoing competence should they move to another workplace. Those employed in work that has particular safety or duty of care concerns (e.g. health care workers, teachers, air-traffic controllers, etc.) might require adherence to particular sets of occupational licensing arrangements which change over time. The Australian study informing a national framework for continuing education and training, reported in Chap. 11, provides an example that can be adapted to suit systems in other countries. The Australian framework is now briefly described before highlighting the distinct contributions to be considered from other cases in this book.

14.2 Australian National Framework for Continuing Education and Training

In the Australian context, a national provision of continuing education and training must encompass and accommodate the disparate and often competing needs and expectations of many vested interests. This complexity cannot be overstated. The range of participants traverses everything from Federal governments and their ideologically driven understandings of national economies and social wellbeing in a globalized world through to individual workers and their personal motivations and aspirations for both their immediate work commitments and their sustained employability. It engages the breadth and depth of macro level national social systems and institutions including education, commerce and industry, welfare, health, etc., and the meso-level energies and concerns of small businesses and local communities, and individual citizens comprising the nation's human capital at the micro level. Such a dynamic set of mechanisms comprising common, yet sometimes competing interests makes continuing education and training a significant vehicle to sustain Australia's social and economic goals. This significance is not simply because change threatens national and social decline for those who cannot keep up in increasingly competitive economies (as real as this may be). More than this, continuing education and training is highly significant for nations, organisations and persons alike because the nature of change and the increasingly complex contexts in which it is both generated and responded to suggest that needs and expectations of the future will be decidedly different and, therefore, unable to be effectively addressed by existing systems and methodologies.

The need for different perspectives to address new and emergent issues formed part of the rationale supporting United Kingdom's recent Future of Work report (UKES, 2014, p. 9):

> Today, in the face of increasingly volatile markets and global change, many decision makers are asking whether the tried-and-tested forms of strategy development are still appropriate. In many sectors global change has called into question not just a company's portfolio, but its entire business model. The upheavals and crises of the last decade have made it clear that companies, sectors and economies cannot assume the maintenance of a stable, long-term environment.
>
> Predictions of future developments, based on an analysis of historical patterns, are unlikely to be appropriate within rapidly changing systems. Hence, taking into account uncertainties and possible disruptions in the marketplace requires decision makers to think of potential alternatives.

Related sentiments drove the vocational education and training (VET) reform agenda of the current Australian Federal Government in 2014 (DoI, 2014). Arguably, this reform agenda is too narrowly focussed on economic growth through productivity gains, as opposed to broad social and workforce development through supporting learning for an unpredictable future. Rather than seeking genuinely new perspectives that may generate new work-learning practices for new ways of addressing the need to create and sustain the changes that will characterise on-going workforce development through a 'work is learning' understanding, the Australian government is focused on market driven perspectives and mechanisms to address social and economic change. For example, within its policy justifications for the VET reform agenda, the Australian Department of Industry states:–

> The vocational education and training (VET) sector will play a central role in the Government's vision to create a stronger economy, boosting our productivity and our competitiveness by producing workers with the skills employers need. (DoI, 2014)

This statement identifies much about the nature of continuing education and training provision as it is currently conceptualised, practiced and advanced in the Australian context. First, it is dependent on the government's economic vision and a translation of this vision into a stronger economy and the production of workers. Second, it is centred on employers' labour and skill needs and the assumption that employers can and will know and articulate those needs. Third, it is delivered through the VET sector, an increasingly deregulated market of public and private training providers that has been described as highly fragmented, insufficiently and inappropriately funded, and poorly supported due to low teacher quality standards (e.g., AEU 2010; NVEAC, 2011). Effectively, the Australian government's national VET Reform Agenda appears to promote a regulatory driven desire to ensure the current VET sector engages more closely with industry as clients whose needs are to be met. Meeting these needs is the scenario of future success. In essence, such a scenario amounts to little more than a continuation of current practices. However, the Committee for Economic Development of Australia (CEDA, 2015) has recently cautioned that unless the government leads 'the way with clear and detailed education, innovation and technologies policies that are funded adequately' (p. 6), Australia may lag behind in an increasingly competitive global marketplace. Although this alert by

CEDA relates more to responding to rapid changes in technology and a focus on skilling for future jobs, it has implications for workforce development in general. Perhaps unsurprisingly, a large part of CEDA's report on Australia's future workforce focuses on the formal education system (early childhood to university) to prepare for entry into employment. Hence, frequent references are made to 'students'. Yet, a majority of participants in continuing education and training are not students. They are experienced workers seeking to advance their skills sets and social standing through work. Nonetheless, a cursory statement in CEDA's report acknowledges the need for proactive steps to ensure continued employability as a response to increasing redundancies resulting from declining industries.

Continuing education and training practices in Australia have changed little in decades, partly because continuing education and training is not a strong focus of educational institutions. Government funding concentrates on the provision of entry level training for those preparing to enter the labour market and those seeking the necessary accredited qualifications to pursue specific occupational practice (Billett et al., 2014). This type of funded training prepares individuals as competent workers. Their learning needs to continue to a proficient and finally expert level (Dreyfus & Dreyfus, 1986). Yet continuing education and training tends to be generally an ad hoc practice. Individual workers seeking advancement or career change to remain employed and employable, and organisations operationalising a need for upskilling staff to meet their production requirements or comply with regulatory stipulations access continuing education and training for these purposes. So, continuing education and training could be seen as a predominantly personal and organisational responsibility to address particular goals. Apart from the government rhetoric promoting stronger economic productivity through addressing employer skills demand, and unlike VET provisions for entry into employment, continuing education and training in Australia cannot be described as nationally focused or conceptualised and supported similarly in partnership between governments, business and industry, educational institutions and workers who create and enact it. Given the significance of continuing education and training in contemporary societies a national framework is now necessary to afford individuals' employability and sustain the social and economic viability of workplaces, industry sectors and communities within appropriate regulation, certification and standardisation requirements.

Chapter 11 introduced four models of continuing education and training drawn from a recent Australian national study. Here we advance those four models, proposing that they form the foundation for a national approach to the provision and promotion of ongoing work-learning. The resultant continuing education and training framework proposes the types of learning that progress from an established base of occupational enactment to enhance and develop the knowledge and skills generation (i.e., work-learning) necessary to responding to the challenges of the future and the changes it represents. For individual workers, such work-learning is about being adaptive, innovative and confident in their capacities to sustain their employability and advance a working life. For organisations, such learning is about forward planning and generating the learning culture of continuing education and training for growth. For educational institutions and training organisations it is about brokering

and facilitating learning experiences that support personal and organisational development. For governments and regulatory bodies it is about resourcing and encouraging the legislative and collaborative climate in which work-learning is prioritised and supported.

This chapter progresses to elaborate the four models of continuing education and training and their effectiveness in meeting the goals of different stakeholders. Then, the roles of stakeholders in implementing and sustaining the models are outlined. The chapter concludes by drawing on the contributions of other chapters in this book to advance a set of premises for a national framework for continuing education and training for successfully meeting and generating the work-learning future that is emerging from changes taking place in contemporary knowledge based economies.

14.3 Models for Continuing Education and Training

The four foundational models of continuing education and training introduced in Chap. 11 are based on different sets of experiences shared by those who participated in the Australian national study previously noted (Billett et al., 2014). Analysis of learning experiences shared by the research participants (135 workers) and the types of support provisions in the workplace (as described by 60 managers) were the central focus of the four models categorised as: (i) wholly work-based (individually), (ii) work-based with direct guidance, (iii) work-based with educational interventions, and (iv) wholly educational institution-based. Each model serves different sets of purposes, and suits particular circumstances of workers and their workplaces and particular trajectories. The first three models highlight the significance of learning in the context of everyday work practices. Without hands-on practices, workers explained that it would be difficult to fully understand the requirements of their work and the capacities needed to effectively perform the tasks by which it is comprised. One worker put it simply, stating:

> Hands on is the best way to learn. I reckon better on site [referring to preference for learning] 'cause you're more familiar with the ropes and that, so you're more understanding and you take it all in a lot better… And it's my familiar area so I feel a lot more comfortable. (Noela, aged care worker).

Noela's statement reflects the views of others who value the authenticity of workplace settings for developing competencies as advocated by researchers such as Billett (2002), Eraut (2004), and Tynjala (2008). "Just doing it" was a frequent term used to describe how workers learnt what was required to perform their jobs effectively. Statements from two workers reinforced the need to learn at work, although the learning is more directed to meet workplace goals. They stated:

> For this particular job, everything changes every day so… unless you're doing it on the job, there's no way of learning this position (Brianna, aged care worker)
>
> … in the truck driving game you've got to do it at work. (Geoff, truck driver).

Learning in authentic settings through socialisation also help workers acquire uncodified cultural knowledge (Eraut & Hirsh, 2007, p. 5) that is distinctly applied in particular settings. Workers and their managers both prefer learning in the workplace because it means greater immediacy and authenticity and little or no downtime, so the business functions continue while work and learning happens concurrently.

Here we elaborate the four models as critical considerations for work-learning practices that might better promote and influence learning provision and support for effective continuing education and training.

14.3.1 Model 1: Wholly Work-Based Experiences

A wholly work-based experiences model focusses on and enables workers to operate individually, and to practice and develop their skills in the course of daily work tasks. Working individually is not working alone. Rather, it is about getting on and doing what one has to do to meet the demands of their work solely in the context of that work. Such work and learning is both personally and collectively enacted. For example, workers observe others and reproduce those practices in ways that are acceptable at their particular worksites. While reproduction imitates what others do, it does not necessarily ensure that individuals acquire the conceptual understanding that underpins the tasks they carry out. Nonetheless, individuals do have the opportunity to seek conceptual knowledge if they recognise a need and will do so through the resources available to them in their work (e.g., manuals, colleagues, policies, etc.). Hence, well-resourced workplaces that support access when needed and desired are better able to support wholly work-based learning. Through work, workers can also have opportunities to initiate and create innovative solutions to improve their practices. In a wholly work-based-experiences model, individuals engage in self-reflection, use learning styles that they are most comfortable with and set and monitor their own goals. For instance, one may practice a set of tasks to gain efficiencies or master the skills so that the conduct of the tasks becomes automated. This releases their cognitive focus for other more demanding tasks. Though the tasks are conducted independently, they have access to others who provide peripheral support. Importantly, what workers need for this model of learning are opportunities (space, time and resources) to practice their work tasks and develop the enquiry and observation skills that support learning through practice.

There are three key shortcomings if this becomes the only approach to learning. First, workers may adopt bad habits that have consequences they may not be aware of at the time and, therefore, can be ill-prepared to manage risks when there is a mishap. Second, learning in a single workplace may adequately prepare individuals with only a narrow set of skills that suit that particular workplace, yet have limited applications in other sites. Third, learning through wholly work-based experiences is not accredited, although not all the learning necessarily needs to be accredited. So, the development of more comprehensive sets of capacities will necessitate

learning through other complementary models in the framework proposed in this chapter.

Notwithstanding the limitations of a wholly work-based model, workers value learning in the context of work because it is relevant to the tasks that they are performing, build on what they have already learnt and can be applied immediately (just-in-time learning). Further, learning through wholly work-based experiences supports autonomy, self-reliance and opportunity to appreciate and evaluate personal strengths, interests and priorities. It is self-initiated and unstructured by others' intentions so individuals exert and develop some control over what and how much they wish to learn and for what purposes. Undertaking all of this effectively relies on their ability to clearly identify learning needs, be self-directed and motivated, and take an agentic role in creating, accessing and responding to opportunities. Equally, it relies on the nature of their work and the degrees to which employers and workplaces enable and support workers' self-investment in the learning requirements of their work.

14.3.2 Model 2: Work-Based with Direct Guidance

In this second model workers' learning is again based in the context of their work, and purposefully supported through direct guidance from more experienced co-workers or work supervisors, often working alongside them. The arrangements for direct guidance can be formal (a structure of work practices at a site) as well as informal and casual. Deliberate sets of opportunities are afforded and structured to make required learning contextually and occupationally relevant and suit regulatory requirements. For example, learning episodes may include new skills development and the sharing of information and understandings that cannot be gained through independent learning alone. For instance, safety-related briefings at the start of a shift at a mine may provide an update on safety issues, demonstration and discussion of a particular technique to avoid accidents, and opportunity to re-acknowledge workers' roles in maintaining safe work practices. Some of the learning in this model can be opportunity based, in interdependent ways, where these are deliberately organised. For instance, the buddy system used in the aged care facilities where workers operate in pairs, one more experienced than the other, is purposefully organised direct guidance. Allowing workers to act in roles above their current level or work rotations in a range of areas (eg., as in the finance sector where employees moved routinely through different departments so as to gain a strong overview of their company's operations). In each new department they enter as novices needing, and afforded opportunities to learn and be guided by others. Another example is when a team with workers from different areas address a particular issue through action learning/research or project based tasks. Strategies for guidance may include mentoring, coaching, demonstration, one-to-one instruction and feedback. The success of a *work-based with direct guidance* model depends on the willingness of workers to engage with and accept the guidance offered. Equally, it depends on

the expertise, availability and willingness of those providing guidance, in terms of their work knowledge and pedagogical skills. Moreover, those providing guidance need to be acknowledged and respected as credible experts. It becomes necessary to ensure training is afforded to these in-house experts for effective mentoring or coaching.

Hence, shortcomings of this model include its reliance on the quality of the guidance offered and secured. Poor guidance (e.g., lacking in expertise, unavailable when necessary, minimally supported, etc.) will equate with poor learning process and outcomes. Relationships become significant elements of guidance offered and accepted. Respect and trust are fundamental requirements. Without such relationship qualities, effective learning is jeopardised. Where these qualities are strong, among the guides and the guided, as well as among those positioned outside the structured arrangements, work-learning may be strengthened.

14.3.3 Model 3: Work-Based with Educational Interventions

This model focuses on and enables learning in and through work that is augmented by the supportive intervention of educational and subject area expertise. This kind of learning is typically structured and facilitated by qualified trainers (in-house or from registered training organisations) to extend learning through work activities and make it certifiable if necessary. Educational interventions could take place during work activities or after work hours, onsite or in educational institutions (e.g. as sandwich/block release), could follow traditional didactic pedagogies and tutorials or take the form of coaching or mentoring by a qualified expert. Didactic provisions could include directed group processes and facilitated learning circles. Importantly, provisions through educational interventions are designed for accreditation or licensing purposes. Increasingly, VET providers involved in workforce development of enterprises engage in this model. The main attractions of this model include flexibility in offering learning services to the worksite, delivering during work time, and offering accreditation. Workers tend to value this as a credible source of learning for accreditation. Trainers may have input on- or off-site, and use for example, action learning projects to extend workers' learning. Input from these trainers is normally sponsored by the employers. Importantly, trainers from registered training organisations providing educational interventions need expertise in customising learning content to suit the context of particular workplaces and groups of workers, and be flexible in terms of meeting workplace schedules. Specific competencies in brokering training plans for workforce and organisational development are also helpful.

Overall, the success of this model relies on the subject area expertise and pedagogical skills of the trainers deployed; the resources and capacities of the educational and training organisation responsible for the interventions designed and enacted; respectful relationships between workers and their trainers; and productive partnerships between workplaces and the organisations that assist with educational

interventions to their workforce. Hence the shortcomings of this model reside in the increasingly complex interdependencies operating among workers, trainers and employers in the domains of business, administration, expertise, pedagogy and relationships that necessarily intersect through this model of learning provision. For example, employers are often positioned as fee-paying clients of educational and training institutions that are in themselves businesses operating for profit in the competitive market of the supply of training and accreditation. Trainers may be highly experienced experts in their field but lack the pedagogical foundations on which to design and implement effective learning experiences for workers who may, in turn, be unwilling participants in training they do not accept as necessary or are obliged to undertake because of other politically sensitive reasons that are specific to their working relationships and opportunities. Yet further, geographic isolation, budgetary restraints, competing perspectives on training as cost and training as investment, capacities to address regulatory requirements, contested notions of 'best-practice', poor planning and lack of strategic oversight are all significant obstacles to the business of workforce development in the immediate sense of production and service provision, let alone the long term scales that mark considerations of personal career and organisational growth at the heart of the educational intervention decisions on which this third model is dependent. Hence, large city-based organisations can more readily and effectively undertake the range of negotiations necessary to connect workers, trainers and employers for on-going learning provision. Importantly, this model is both common and familiar in market driven economies and so may represent practices that are difficult to develop and transform for the new circumstances of rapid work change. For example, the deregulation of the Australian training market in recent years has seen the proliferation of small training organisations that may be under-resourced and ill-prepared to address the national scale workforce development issues facing the country.

14.3.4 Model 4: Wholly Education Institution-based Experiences

A *wholly educational institution- based* model focusses on and enables workers to pursue work related learning away from the immediacy of their work requirements and within the pedagogical resources of a learning -focussed set of intentions and processes that are institutionally structured and supported for often highly specific purposes and outcomes. This model predominantly serves two main goals: (i) allows workers to learn new and innovative ways to bring about changes in their workplace; and (ii) enables career changes for workers. This model is helpful when learning and certification cannot be achieved through work-based experiences alone. It could include a range of conventional pedagogic processes such as lectures, tutorials, webcasts, and facilitated group processes. Unless sponsored by their employers, worker-learners may engage in learning at their expense and outside

working hours. However, employers may support selected individuals' career development by allowing time off at agreed phases of the study. This model demands flexibility in educational provisions by training providers so that worker-learners can balance work, family and study commitments. It also calls for training providers to have in place on-going support for on-line and self-directed learners.

So, learning through this model may be directly work related and supported as workers engage in courses of study that can enhance their occupational practice and work trajectories for both personal and organisational gains. Equally, this learning may be indirectly related to work and based on solely personal goals for development or future work aspirations. Shortcomings of this model are at their most evident when the purposes of engagement are directly related to work. For example, strong disconnects between learning and work (through time, distance, purpose, etc., at conceptual and procedural levels, etc.) can mean lack of relevance, disparate goals, wasteful distraction and additional costs for learners and organisations. Such separations may be welcomed as elements and indicators of alternatives and diversity. Equally, they may be hindrances, unforeseen and emerging, that challenge the quality and purpose of the learning being undertaken.

The four models and aspects of their effectiveness are presented in Table 14.1 below.

The first three models necessitate little or no downtime for workplaces and hence were widely supported by managers and employers who participated in the Australian national study. However, there may be a potential tendency for learning to focus on a narrow set of knowledge and skills to suit particular worksites. Nonetheless, engagement of external experts and VET practitioners could introduce new knowledge and ideas for innovation and extend the scope of workers' knowledge and skills. Such an approach is strongly recommended by Eraut and Hirsh (2007) who argue that experts' knowledge of trends in occupations place them well to advise about updating technical knowledge and skills.

All four models can be supported through three sets of provisions. These are:

1. Allowing individuals to learn while working alone, but having access to further information and experts when necessary
2. Facilitating or guiding group processes to share information, and learn while working together
3. Teaching or training in the workplace by qualified trainers from within the workplace or a registered training organisation.

Fundamentally, it is the learning curriculum, appropriate pedagogic arrangements and personal epistemologies that underpin effectiveness of the four models. The effectiveness of the four models of continuing education and training proposed in this chapter was appraised as part of the study, and the outcomes of that appraisal are summarised below.

Table 14.1 Effective models for continuing education and training

	Wholly work-based experiences	Work-based with direct guidance	Work-based with educational interventions	Wholly educational institution-based experiences
The medium for learning is through:	Individuals' everyday work activities and interdependent interactions	Engagement with more experienced others (e.g. expert peers, supervisor, trainers)	Structured training and often assessment by e.g. accredited trainers, workplace supervisors, vendor trainers	Classes in RTOs or on-line, taught and assessed for accreditation
This model is effective for continuing education and training because it:	Is work-relevant, addresses immediate needs, is accessible, practical and builds on previous learning	Provides new skills, information or understandings that workers cannot achieve without guidance	Draws on trainers with industry expertise, links training and work, provides basis for accreditation and certification	Enables access to structured training not available through work
Learning and teaching strategies include:	Observing and reproducing observed skills, active independent and interdependent learning	Mentoring; coaching; demonstration, direct one-to-one instruction and feedback, related directly to work needs	One-to-one and group instruction, teaching on-or off-site, simulated and actual work-related training	Face-to-face classroom teaching and structured online courses
Workers mostly employ this model when:	Enacting their everyday activities and interactions through their work and with co- workers	The learning they require is beyond their current level of skill or understanding to be advanced independently	Learning is workplace-specific, to meet workplace or occupational requirements, and needs to be assessed and certified	Learning and certification is for future purposes, and cannot be learnt through work

Source: Billett et al. (2014, p. 27)

14.4 Effectiveness of the Models

The utility and efficacy of the four models of continuing education and training were appraised through consultations with VET professionals (62) and eight personnel from three key workforce development agencies. Discussions for the

appraisal were based on four case scenarios representing each of the models. The conversations were guided by three questions when considering each model:

(i) In what ways is the model an effective and sustainable model of continuing education and training for your industry or discipline?
(ii) What do different stakeholders need to do to make this model effective in continuing education and training provisions?
(iii) What changes are required to the broader education and training system to more effectively support this model?

Their responses to these questions are summarised below.

(i) Effectiveness and sustainability of the models

Based on a diverse range of experiences in working with different industries and types of workers and workplaces, the VET professionals who participated in the review stressed four conditions that underpin effectiveness and sustainability of the models: (a) learning to take place in circumstances of authentic work practices; (b) learning to be aligned to ensuring benefits to the workplaces; (c) appropriate and specific VET pedagogies to support workers' learning in the workplace; and (d) adherence to compliance and accreditation to maintain systemic consistency. It was widely acknowledged that authentic experiences could include those in real work or simulated environments. Nonetheless, engagement in learning would depend on conditions such as the size of the workplace, affordances of the workplace and how the tasks are sequenced and the capacity of others to assist workers with their learning. There was general agreement among VET professionals about the benefits of particularly the first three models for workplaces in terms of costs (e.g. reduced downtime and 'back fills', easy access to expertise on site), staff loyalty, and a strategic approach to workforce development. Furthermore, the returns in terms of promoting a learning culture, lifelong learning and advancing specific capacities of individuals to meet productivity requirements were widely acknowledged. The discussants also valued opportunities for VET practitioners to advance their pedagogical domains and embed these into authentic practice settings. Unlike Model 1, Models 3 and 4 were supported to meet regulatory and workplace compliance requirements that VET practitioners are charged with and that underpin most of the publically funded provisions. All stakeholders appreciated and advocated Model 3 (work-based with educational interventions), although practitioners specifically preferred it given that this most closely reflects their current roles in continuing education and training. Many VET institutions see themselves as already actively adopting this model to support continuing education and training across occupations and industries. For the VET practitioners, Models 1 and 2 were seen as indications of how they might enhance their Model 3 practices to support workers' learning when trainers were not immediately available during workers' learning. They suggested providing pedagogical skills training for those workers who would be considered the more experienced colleagues that fellow workers would seek out through their routine work activities. Overall, all four models were seen by the VET professionals and workforce development personnel as effective vehicles for continuing

education and training provision, although with slight reservations about Model 1 because they were unclear about quality and accreditation.

(ii) Roles of stakeholders

Effective implementation of the four models demands particular responsibilities of the main stakeholders: (i) employers and workplace managers; (ii) VET professionals (trainers and assessors); (iii) worker- learners; and (iv) education institutions and registered training organisations. Importantly, all need to share a common value for learning, appreciate a learning culture and appropriately invest in learning.

Workplaces that include learning in their broader business plan and invest in their workers are perceived to be more progressive in continuing education and training of their workers (OECD, 2010, 2013). This demands employers and workplace managers develop learning pathways and have in place the types of affordances and opportunities for workers to engage in learning in the course of their daily work. Moreover, a learning plan embedded in the broader business plan, adequate finances, and engagement of registered training organisations will enable enterprises to have more strategic management of the learning and development of their workers, contribute to the national training system, and be less reliant on funding and support from government sources. Engagement with registered training organisations and VET professionals offers better returns, according to some participants. One of the focus groups from a regional area suggested that continuous improvement and quality assurance needs to be embedded in the design of such plans.

Input from VET professionals to support workers' learning demands additional skills and knowledge. Importantly, they 'need to understand the environment and context of workplace and learners in that workplace'. Essentially, there are five main areas that VET professionals need to be competent in for effective implementation of the models suggested in this chapter. First, expertise and qualifications in the area that they are supporting learning; second, ability to provide flexible and customised learning experiences to diverse groups of learners in a range of workplaces; third, coaching and mentoring skills for workplace learning; fourth, project-based and action learning; and fifth, regulations, compliance requirements and industrial relations procedures for their industry.

Like workplace managers and VET professionals, worker-learners have an important role in effective implementation of the proposed models for continuing education and training. Foremost, they need to value learning in the workplace, assume agency of and also commit to learning in their respective worksites. With this commitment also comes the development of a set of qualities that are necessary to support their learning. These include self-direction and motivation, openness to receiving learning support from co-workers and experts, offering support to other workers, and seeking and securing learning opportunities beyond their immediate work areas to learn in the worksite. It is suggested their individual learning and development plans include clarity around responsibilities for learning and its contributions to work and business requirements so that the benefits of learning can be shared by individual workers and their employers.

Finally, effective implementation of the proposed models necessitates a set of reforms within registered training organisations to allow efficient operations and

ensure quality provisions by their teachers and trainers. Furthermore, they need to support continuous development of staff capacities to maintain currency of relevant industry expertise. Moreover, partnerships with enterprises to support workers' learning demand special attention in terms of responsiveness to their business goals and providing value for money. Rich collaborations must form a key feature of partnerships. On the whole, workers' learning needs to remain central to implementation of the four suggested models. An explicit focus on their learning as opposed to teaching them is highly recommended.

The roles of the stakeholders in relation to each model is summarised in Table 14.2 below.

Aside from the roles and responsibilities of the key stakeholders, reforms to the current VET system (that is primarily designed to develop workers for entry level training rather than continuing education and training) are also necessary.

(iii) Changes to VET System

Participants particularly noted that effective implementation of the four models requires further appraisal of the national focus and purpose of continuing education and training in the two key areas of learning recognition and accreditation, and finance and resource support. First, this means extending current provisions of the national training system in order to appropriately respond to workers and enterprises' learning needs. For example, amendments to the system need to acknowledge and recognise learning and training that lies outside accredited programs. What is required is a system of assessing, reporting and certifying relevant (for accreditation) formal and informal learning in the workplace. It is suggested that current practices and procedures for recognition of prior learning could be extended to serve this purpose. However, the skills of those assessing the learning will need to be developed and accredited. Essentially, learning that meets individual and enterprise requirements, as well as accreditation purposes will need to be moderated and recognised. So, there is a requirement for some flexibility given the challenges presented by a diversity of learners and workplaces.

Second, changes are necessary for improvements in the finance and funding distribution models to recognise learning in the workplace, and meaningful contributions of individual workplaces to workforce development. According to VET professionals, finance is also needed for practitioners to maintain currency of industry knowledge and skills. Such investment needs to be equitable and performance driven.

In summary, those engaged in enhancing and supporting on-going learning through continuing education and training provisions each have a different role in the learning process for each model, as outlined in Table 14.2 below. The best outcomes are likely to be achieved when stakeholders collaborate to enhance and support workers' learning with flexible and responsive regulatory frameworks. The learner needs to remain central to these stakeholder positions and practices. The degree to which stakeholders can create and sustain the flexibility to recognise and support a diverse set of processes, places and practices that constitute ongoing work-learning will indicate the degree to which they can ensure the learner is central

Table 14.2 Stakeholder actions and attitudes to enhance continuing education and training

	Wholly work-based experiences	Work-based with direct guidance	Work-based with educational interventions	Wholly educational institution-based experiences
This model is effective when				
Workers	Acknowledge a need to learn, have access to learning-related work activities, are self-directed, curious and pro-active	Regard the source of direct guidance as credible, can immediately apply and practise what they have learned	Regard the source of accredited training as credible, see value in certification or accept the need for it, have sufficient literacy and numeracy skills	Can fit the learning in with their work and family commitments; identify relevance of the training for future work
Supervisors	Are supportive of workers' learning, provide opportunities for new activities and learning	Are available, are experts in the work area, are competent as trainers, mentors, guides, and can provide feedback and follow-up support	Support employees' learning by organising and/or supporting educational interventions, and value assessment and certification	Support employees' educational goals through organising support, time off for study, and access to workplace expertise
Managers	Encourage support for learning through work-based activities and build on them	Recognise and support supervisors' role as guides, trainers or mentors, provide opportunities for new learning	Organise training and require assessment and certification, through partnerships with RTOs, and focus on workforce development	Sponsor employees' educational goals through financial support, time off for study commitments
Training providers	Assist workplaces to structure workers' experiences and learning, advise about workplace curriculum and pedagogies	Assist workplaces to structure workers experiences and learning, and assist in building capacities for training one-to-one	Are flexible about training times and locations; ensure staff are well trained; make training relevant to enterprise needs, and provide follow-up	Offer flexibility in educational provisions to meet workers' circumstances, recognise workers' prior experience and provide follow-up support

Source: Billett et al. (2014, p. 28)

to their efforts. A broader set of premises is required for ongoing learning across working lives which flow through to a wider range of occupations and circumstances of work than those derived from the Australia study. Billett and Hodge (in Chap. 1 of this book) outline considerations of premises for learning through and across working lives. Similarly, in presenting empirical findings, other authors (e.g. Poell & Van der Krogt in Chap. 2; Avby in Chap. 4; Wegener in Chap. 6; Noble & Billett in Chap. 8; Cantillon in Chap. 10) also suggest approaches for supporting and guiding learning that inform a range of premises for continuing education and training.

14.5 Premises for a National Framework for Continuing Education and Training

The efficacies and emphasis on practice-based learning approaches are highlighted across chapters in this book, thus exemplifying ways that learning through Models 1, 2 and 3 could be organised and supported. In Chap. 6, Wegener makes reference to the broad national concerns for innovation within Denmark and how this has become a driver of national policy. Her accounts suggest that there is often a societal or national imperative underpinning a concern for workers' ongoing learning and development. Her model highlights how the significance of interrelations between innovative work activities in the context of professional work practices aligns with continuing education and training Models 1, 2 and 3 proposed in this chapter. Avby (in Chap. 4) takes this notion further by suggesting workplace reflection as a deliberate strategy to promote professional learning and the remaking of practice. She promotes the premise that effective learning result when workers engage in rich interactions with different knowledge sources, research, practice and policies in the workplace. The important contributions of interactions with others is emphasised by Cantillon (in Chap. 10), who calls for strong support for workers who are required to operate in social isolation, yet meet acceptable standards. While socially isolated practitioners such as medical practitioners tend to learn mostly in the context of their practice, Cantillon argues that social and reflective opportunities are required for normative comparisons, interpreting and making sense of dilemmas and unusual cases, and self-assessment of learning and developmental needs. Similarly, Noble and Billett (in Chap. 8) present a case on how interactions between professional practitioners from within the immediate practice community and other associated professionals can bring about collective change that contributes to individual capacities and at the same time transforms occupational practice.

The case of learning from mistakes outlined by Bauer, Leicher and Mulder (in Chap. 7) stresses the importance of socialisation and appropriation of classes of knowledge and rule-based errors. The authors argued that socio-cultural settings in the workplace provide useful structures to support learning from errors. Eppich, Rethans, Teunissen and Dornan (in Chap. 3) focus on the significance of continuing

education and training throughout the careers of medical doctors who are required to maintain evolving knowledge of medicine and apply these in the social context of their clinical practice. The role of discourse and 'talk' as important mediators of learning and accurate communication required in particular social and practice settings is highlighted. These authors argue that learning and medical practice are inextricably linked so continuing education and training needs to be in authentic settings to contextualize knowledge and skills. The notions of collective competence, intersubjectivity and reciprocal interdependence highlight the social nature of learning in practice settings and suggest ways in which such learning is achievable through Models 1, 2 and 3. Further, Eppich and his colleagues advocate the significance of 'talk' as a medium for collaboration and learning, so that learning is not seen as acquisition but as participation. However, there are challenges in certifying such learning. Indeed certification of any type of learning in the workplace requires careful consideration to meet professional standards and regulatory requirements, but can be achieved through educational interventions. Eppich et al. go on to propose ways to structure collective learning processes to augment what is learnt in practice. The notion of collective learning by a community to sustain a practice community is illustrated in the case of medical doctors and pharmacists co-working and learning through ontogenetic ritualization and is further elaborated by Noble and Billett (in Chap. 8).

In numerous ways, the authors in this book have identified and elaborated sets of work and learning circumstances that offer insights into the relational interdependencies that govern the quality of workers ongoing learning. Personal histories, the contextual politics of workplaces, relationships with people, systems and occupational knowledge bases, personal and organisational plans and aspirations, national economies, ideologies and the supply and demand of the market place, technological change and the challenge meeting the demands of the future, are all aspects of effective learning that come together in continuing education and training provision. The kinds of balances generated by these mixed mediations are complex. Poell and his colleague (in Chap. 2) call on greater individual agency in their professional development by operating more strategically to meet organisational and personal goals through opportunities available in the workplace. Unwilling learners meeting unqualified trainers in obligation-driven responses by under-resourced employers to ill-informed policy directives by reactionary regulators may represent a weak scenario for continuing education and training provision. However, the corollary best case scenario seems equally unrealistic in any but the best of working worlds. In any case, ultimately at the micro level it is the individuals whose efforts underpin effective learning, therefore their learning capacity and agency need to form an important premise for any national framework for continuing education and training.

The chapters of this book express bases for enhancing effective work-learning. These bases or premises advocated in the various chapters stand as key elements for effective continuing education and training models. Overall, the cases in this book confirm six key premises for effective implementation of continuing education and training models identified in the Australian continuing education and training study (see Billett et al., 2014). First, sets of learning activities and opportunities need to be

customised and form part of regular affordances to appropriately meet the needs of workers and their workplaces. Such a learning plan could commence with close guidance and monitoring, followed by a requirement for individuals to gradually become self-directed and agentic in seeking, accessing and securing opportunities to learn what is required for immediate and future work. Careful and strategic planning, design and well-resourced implementation are essential. Second, any learning plan needs to be guided by more experienced co-workers and experts, including those from VET institutions. The pedagogical capacities of guides and coaches need to be developed for them to appropriately support workers' learning. Third, workers need to initiate and effortfully participate in learning for current as well as future productive work. Workers know the changing conditions that drive their work. Further, they know how to learn and how to learn well within the circumstances of their practice. They must be supported to enhance these practices as part of their routine work. Fourth, workers need to play an agentic role in identifying what they need to learn and the best ways to organise that learning. Additionally, they need to manage self-directed learning during periods when there is little or no guidance available. Such organisation and management roles need to complement employer goals and directions, not be subject to them. Fifth, where necessary, arrangements for certification and accreditation of learning may need to be secured. Finally, procedures and processes for certification need to consider variations in practices in a range of contexts to accommodate diversity in the size of workplaces and specific occupational requirements of particular sites.

Although each of the cases reports on different aspects and sets of concerns, collectively there is strong inference to national imperatives because models, processes and practices that respond to those concerns will continue to support learning across working lives. The requirement for a broader framework for national continuing education and training provision sits well within the four models advocated in the Australian project. These models and the premises on which they need to be based cannot by themselves result in effective continuing education and training. Governance is needed at a national level to support negotiations that can accommodate the interests of the national economy, industrial foundations and employer enterprises, and individual citizens.

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Part IV
Learning Across Working Life

Chapter 15
Conceptions, Purposes and Processes of Ongoing Learning across Working Life

Stephen Billett, Darryl Dymock, and Sarojni Choy

15.1 The Project of Ongoing Learning across Working Life

There is a growing need for a comprehensive and informed account of how learning across working life can be conceptualised, its range of purposes outlined and processes supporting that learning understood. Consensus exists across governments and supra-national agencies, spokespersons for industry, occupations, employees, workplaces, education systems and communities and by workers themselves that the ongoing development of occupational capacities is now required by all kinds of workers in all occupations across their working lives. This consensus arises from the recognition that not only is the knowledge required for occupational practice subject to constant change, but also the nature and form of that change are more than merely keeping up-to-date with the latest developments. Instead, many occupations are being transformed, which affects what constitutes occupational competence and extends to what is expected of those occupations by the community. Moreover, the nature and kinds of paid employment, how it is undertaken and by whom are also constantly changing. Therefore, there is a need to view workers' ongoing development across working lives as being a major education project. Given the importance of this project in securing economic and social goals, it warrants a fresh and informed approach to how these goals might be realised. The focus here is distinct from other educational projects in so far as its conceptions are far broader. The concern is to build upon both work and educational experiences, and to be open to a range of provisions of experiences and support going beyond the scope of what can be realised through the provision of experiences in educational institutions. So, this project needs to be realised not only through educational systems and institutions, but also in the circumstances where occupations are enacted

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(i.e., workplaces, work practices and communities). Considering that this need for ongoing learning across working life constitutes an entire educational project, there needs to be clarity about what conceptions underpin it, the kind of purposes to which it is directed and the processes used to realise these purposes. In this way, this concluding chapter draws upon contributions within this book and those from elsewhere to set out something of what comprises the educational project associated with ongoing learning across working life.

It follows that this chapter sets out something of what comprises the three elements of this emerging educational project (i.e., conceptions, purposes and processes). It commences by discussing key conceptions associated with learning across working life, to capture not only those in the schooling discourse (i.e., that privilege educational programs and teaching), but also those arising from the imperatives of work and working life. Then, building upon these conceptions, it considers the range of purposes that have been proposed for learning across working life as these set out the goals that this important educational project needs to address. Therefore, it is necessary to understand the particular kinds of purposes which are to be achieved so that the provision of educational experiences or those which are aimed to support learning within and across working life can be guided by clear purposes. It follows, therefore, that there is a need to consider broadly the kinds of workplace experiences and intentional educational provisions that can realise these goals. Whilst not claiming to be exhaustive, some of the kinds of curriculum and pedagogic practices that might be used to realise this project in work settings, educational institutions and elsewhere are identified and described. Within this consideration of provisions of experiences is the highlighting of the role that workers themselves need to play as active, engaged and intentional learners across their working lives. Hence, the adequacy of experiences in terms of their alignment with the leaning required to sustain employability is an essential consideration as is the effort, direction and agency of workers as learners.

In all, these three kinds of contributions are required as a basis to understand, advance and enact the provision of the educational project associated with learning across working lives.

15.2 Conceptions

Conceptions of what constitutes learning across working life have been problematised by the lifelong learning policy agenda that often conflates both of these concepts of learning into what is essentially lifelong education (Billett & Hodges, 2016), that is, the provision of educational programs and experiences that are seen to be those going beyond compulsory and initial occupational preparation. Indeed, policy prescriptions about lifelong learning are often distorted because those proposing and discussing them fail to distinguish between lifelong learning and lifelong education, and privilege educational programs as the means through which worthwhile and purposeful lifelong learning arises (Billett, 2010). Therefore, it is

important to outline something about the different ways in which provisions of learning across working life are conceptualised, given that many of these ways are not aligned with what is provided through or can be achieved by educational programs and provisions, as in taught experiences. Within this volume, for instance, learning across working life is conceived in a range of distinct ways. These are associated with:

- being embedded in work in addressing workplace issues and problems;
- evidence-based practice;
- mandatory processes of capacity assessment and occupational development;
- being focused on workplace viability and continuity;
- a phased process of individual development; and
- being organised, directed and enacted by workers.

In the following sections, these diverse conceptions are briefly outlined and illustrated.

15.2.1 Embedded in Work and Addressing Workplace Issues and Problems

One conception of learning across working life is focused on the process of learning being richly embedded in the actual circumstances of work and as directed towards addressing specific workplace issues and problems. This kind of learning is purposeful, often quite situationally pertinent and directed towards both individual and institutional (i.e., workplace, occupational) continuity. Wegener (2016) provides an example of this conception of work-life learning through her account of welfare workers engaging collaboratively to identify how best to work more efficiently in circumstances of reduced resources. Hence, these developmental activities are embedded within and part of a process of workplace change and, in particular, arise through identifying innovative practices that are attempting to meet changing work requirements through more resource-efficient work practices. In a similar way, inter-professional or workplace interactions relating to work activities can also embed learning within practice. Indeed, there may be no other circumstance for learning to work collaboratively across occupations than when that development is embedded in practice (O'Keefe, McAllister, & Stupans, 2011). Some suggest that attempting to achieve inter-professional working through any other means is unlikely to be helpful (Thistlethwaite et al., 2014). For instance, in considering the development of junior doctors' prescribing capacities (i.e., their prescription of pharmaceutical products), Noble and Billett (2016) identified how pharmacists interacted with junior doctors, as part of their everyday work role, thereby providing important contributions to those doctors' learning about prescribing. It is the pharmacists' role to ensure the effective use of pharmaceutical products for patients (i.e., patient safety). One of their roles is to check the prescriptions made by doctors and

then engage with them if there are problems or concerns about prescriptions. Consequently, with junior doctors whose prescriptions largely follow from the advice or instructions of senior clinicians, there are frequent interactions between pharmacists and these junior doctors because of the need to clarify or adjust prescriptions. Hence, pharmacists' work tasks and the development needs of these doctors co-occur in quite specific ways as the latter prescribe. Hence, here there is an opportunity for ongoing professional development arising through ordinary work practice, but also effective inter-professional engagement and interaction.

Within this volume also, reference is made to the process of learning through errors in and through work (Bauer, Leicherb, & Mulder, 2016) which is also embedded in everyday work activities, that is, workers being able to report and discuss errors they have made with colleagues and supervisors for developmental purposes. These activities are inevitably embedded in work activities, and the quality of the environment that permits individuals to voluntarily report errors and receive constructive and supportive feedback is a product of the norms and practices of particular workplaces. The point here is that rather than the quality of an educational experience, it is the invitational qualities of the workplace that is central to this provision of learning across working life.

All of this suggests that, as Smith and Kelly (2016) propose, it is important to go beyond viewing continuing education and training as being something which arises through instruction in intentional education programs. Instead, they advocate for a broader range of activities to be included within conceptions of what constitutes this mode of supporting individuals' ongoing learning across working lives. Indeed, findings from a large national study involving workers from across a range of industry sectors, at different stages in their work lives, and in both metropolitan and non-metropolitan settings indicate strong preference by workers for the opportunities and support for their learning across working life to be largely located within work settings and enacted through work activities (Choy, Billett, & Dymock, 2016; Smith & Kelly, 2016). Hence, the strong associations between ongoing learning and development across working life and the circumstances of practice are rehearsed across a range of occupations, locations and stages within working lives. That is, this concept of learning across working life is inherently embedded in everyday work activities, as directed towards addressing particular learning needs.

15.2.2 Evidence-based Practice

Another way in which learning across working life is conceptualised is when it is directed towards improving practice, that is, intentionally engaging in a process of remaking the occupational practice as circumstances change and new approaches are required. For instance, Avby (2016) refers to a process of identifying and reconciling knowledge that is sourced in both the practice of social workers and also scientific literature that informs social work through an intentional process directed towards improving practice. So, the key focus is on improving occupational practice

and finding means through which to access the knowledge that can inform that improvement, and be engaged with and intentionally directed to those purposes. In all, it comprises a conception focused on informing evidence-based practice. This conception is also embraced within discussions and processes for the continued learning of medical practitioners. Converting evidence into action through authentic practice through the medium of talk (i.e., oral communication amongst practitioners) is described and discussed by Eppich, Rethans, Tueunissen, and Dornan (2016). Here, the conception of professional development is that realised through effective communications, and everyday occupational practices that include and promote talk amongst practitioners. The conception of learning across working life is about drawing upon, and mediating and applying knowledge that can be accessed within the practice community. This conception is one seen as a necessary response to the perceived failure of continuing professional development when it is conceptualised as the undertaking of courses and the completion of examinations that are remote from, and fail to influence, the nature of practice.

15.2.3 Mandatory Processes of Capacity Assessment and Occupational Development

Aligned with the above focus on learning to remake the occupation, is that associated with how particular practitioners' needs for ongoing learning across professional careers are required to progress. When referring to small-business operators (Billett, Ehrich, & Hernon-Tinning, 2003), transport workers (Choy et al., 2016; Lewis, 2005) and those who work in relative circumstances of social isolation, there is a need for engagement with others to promote learning of the kind required for effective practice. In some instances, this engagement needs to be made obligatory. Given the relative autonomy in practice and decision making granted to professionals, for instance, there is often an obligation upon them to ensure that they are using normative practices. Consequently, social workers, for instance, engage in peer-led conferences to share insights on practices, difficult cases confronted and personal difficulties associated with work. A particular example presented and discussed in this volume is about how sole medical practitioners engage in sustaining quality of their practice, including patient safety, and responding to new understandings and practices in health care (Cantillon, 2016). Despite the autonomy granted in many professions, it has been found that reliance upon professionals' self-assessment of their capacities is inadequate. Hence, for those engaged in occupations in which there could be risk to clients or patients, obligations to engage in professional development activities can occur. As cast in Cantillon's chapter, these activities both respect and honour the extent of professional autonomy granted to such practitioners. Yet, at the same time, there needs to be the provision of mediating processes through which their practices can be subject to appraisal by and discussions with peers, along with opportunities for seeking other opinions and perspectives. Another

example represented in this text is of airline pilots who have to undertake six-monthly assessment of their capacities and associated education/training processes aligned with those assessments (Mavin, Roth, & Munro, 2016). All of this sits within an occupational expectation about the currency of practice, with the assessment process also providing experiences to refresh and update pilots' knowledge of aviation practices. So, in this context, there is a rich alignment amongst processes of assessment of currency for occupational practice, and this assessment of performance being used to redress deficits in performance, as well as updating new regulations, findings, and requirements for practice.

Hence, ongoing learning across working life is cast here as an obligatory practice that is not well captured by a term such as lifelong education, nor how it is often currently portrayed in public policy.

15.2.4 Focused on Workplace Viability and Continuity

Securing workplace viability and continuity stands as another way that workers' ongoing learning can be conceptualised. That is, learning across working life can be regarded as something primarily organised, directed and enacted in ways to achieve workplaces' organisational goals in both the short and long term. Workplaces confront demanding and complex issues associated with their viability. These can comprise responding productively to changing demands for the goods and services, the need to be increasingly competitive, or being able to confront shorter cycles of change in the provision of goods and services, which often increases in amplitude of that change to remain viable. Hence, the focus for their employees' learning across working life is tightly associated with achieving workplace goals (Tyler, Dymock, & Henderson, 2016). In particular, management within workplaces is likely to be concerned about and most likely to support and sponsor provisions of experiences directly associated with achieving workplace goals. In studies associated with cost-benefit analysis of provisions of enterprise-based sponsorship of workers' learning, it was workplace imperatives such as meeting new regulations, generating new products or enacting novel processes that attracted investment in employees' development by enterprises (Smith & Billett, 2005). This approach is often the focus of what is referred to as human resource development: preparing and advancing employees' capacities to achieve workplace goals. In this way, it is a common and legitimate conception of learning across working lives. It also needs to be reminded here that whilst these programs are directed towards institutional interests of the workplace, the sponsorship of most educational provisions is aligned with either state or religious interests. Hence, qualitatively there is little to distinguish state and private sector sponsored continuing education efforts, except perhaps in the scope and focus of the application. However, a key distinguishing factor will be the degree by which individuals come to engage and take up opportunities for learning, in the absence of structured programs and teacherly guidance. An example of such an approach is the use of workplace errors as a basis for improving

performance in critical areas of practice, such as nursing. By using actual workplace events (i.e., important occasions, such as when errors occur) a consideration of what led to the error can be used to prevent a re-occurrence (Bauer et al., 2016). So, the concern here is related to responding to performance issues within particular workplaces and avoiding repetition of errors or mistakes. It is the context where performance is seen to have failed that can be used to promote further learning to avoid subsequent errors. All of this is associated with workers' ongoing learning to sustain their workplaces' viability, as mediated by how they come to engage with such opportunities.

15.2.5 Phased and Intentional Processes of Individual Development

Most of the above conceptions of learning across working life are directed towards institutional facts: those of societal institutions (Searle, 1995). They are focused on or through practices within particular occupations and workplaces. However, ongoing learning across working life can also be associated with intentional process of individual development, that is, something focused upon the particular needs and trajectories of individuals as workers. This conception is often captured through the term professional development, in ways that many of the conceptions above would not. Many occupations have hierarchies through which individuals will move across their working lives, albeit at different paces and to different levels, and there are developmental processes associated with those levels. Boelryk and Amundsen (2016) provide an instance of this approach through a teacher professional development program in which individuals engage in a four-phased and sequenced process of development, the first arising from disequilibrium or problems experienced in teaching practice; the second, a process of supported interaction to generate a response in terms of changed or enhanced activities; thirdly, the implementation of those activities; and fourthly, deliberations about the outcomes of those processes. That is, the commencement and engagement is founded on issues that these workers have encountered and seek to redress. So, although consideration is given to both the social demand and contribution, and also individuals' engagement in and with the process of development, the focus here is based upon individuals' trajectories that represent quite distinct conceptions of learning across working lives.

15.2.6 Organised, Directed and Enacted by Workers

Aligned with the previous conception is another focussed strongly on individuals which may sit outside of any organised program labelled as professional development or continuing education and training: that is, something organised, directed

and enacted by workers themselves. This might comprise a process through which they need to identify, initiate, plan and enact a process of development to sustain their employability across changing work life circumstances and workplace changes (Poell & Van Der Krogt, 2016). In this way, professional development or continuing education is positioned as something that is essentially self-constructed, directed and enacted by individual workers. This, of course, raises issues associated with self-directed learning, and the degree by which the purposes for that learning as well as its enactment are able to be directed by individuals alone. Yet, sitting within this issue is a broader one about the way in which provisions of experiences prompted, promoted and enacted by institutional factors come to be engaged with by individuals and actually shape what they learn.

15.2.7 Conceptions of Learning across Working Life

The above consideration of conceptions of learning across working life elaborate the two sets of concerns established in the opening chapter, that is, the degree by which what is advanced as the means through which individuals are to learn across working lives is restricted to the provision of taught courses, with pre-specified intentions that are offered through educational institutions of some kinds (Schuller & Watson, 2009) (i.e., lifelong education), or alternatively, those that are emphasising how individuals come to engage with what they experience and learn across working life (i.e., lifelong learning). In this way, the conceptions through which learning across working life progresses as outlined above indicate that we need to consider such support as being far more broadly based than just through the provisions of taught courses. The latter are often preferred by governments, seemingly for administrative purposes; such courses are reported here also by management of businesses because they give the appearance of being able to offer some certainty of outcomes (Tyler et al., 2016). That is, and with some truth, a particular set of educational experiences directed towards some predetermined goals have the potential to develop the kinds of outcomes that both government and businesses want. Yet, beyond seeking to expand how these means of development occur and might be supported across working life, there is also a need to understand that whatever form of support is made available, there can be no guarantee that it will be engaged with as intended nor that the anticipated learning will arise. What might be proposed as an obligatory or mandatory process by an employer or licensing authority may well be engaged with superficially or enthusiastically depending upon the disposition, intentionality and capacities of the learner. It is perhaps worth returning here to consider the case that Cantillon (2016) used to open his chapter: the dramatic account of the sole medical practitioner Harold Shipman who is estimated to have murdered at least 250 of his patients in the northern English city of Manchester. Cantillon reminds us that it is unlikely that any of the mandatory or voluntary processes to promote learning across working life would have prevented these murders. So, although these conceptions indicate something of the diversity of what

constitutes accounts of learning across working life, they still represent experiences which are ultimately mediated by individuals to engage in and with them.

15.3 Purposes

As with conceptions of learning across working life, its purposes can be quite diverse. Contributions within this edited monograph suggest that such goals are those directed towards realising innovation, currency of work capacities, supporting or directly contributing to transforming practice, developing specialisms and specific response to problems. As a means of capturing these diverse sets of purposes they can be broadly categorised under two headings, those associated with (a) the currency or maintenance of occupational capacities, and (b) transforming practice. Yet, these two broad sets of purposes are themselves delineated into those emphasising institutional (i.e., the workplace) and personal (i.e., workers) imperatives. It is these purposes that are delineated and discussed now.

15.3.1 Maintaining Currency of Work Performance: Workplace and Personal Imperatives

Undoubtedly, a key purpose for ongoing learning across working life is to maintain the currency of occupational performance. This currency can focus on assisting workplaces to be responsive and adaptable, having a workforce which is able to address the demands made upon it. That is, the currency is directed to developing workers' capacities to achieve workplace goals (Choy et al., 2016; Tyler et al., 2016). This kind of purpose also plays out personally, as individuals seek to sustain their employability (Poell & Van Der Krogt, 2016). It can also include individuals demonstrating the currency of their work performance for mandated or legislated reasons that bring together both workplace and personal imperatives. For instance, a growing number of occupations have performance requirements that are periodically assessed and are required to be licensed because of the potentially dire consequences of poor work performance. Airline pilots, for instance, need to regularly demonstrate their competence to fly planes to hold a pilot's licence. In this way, mandatory checking and related training and development activities are a part of airline pilots' work-life cycle (Mavin et al., 2016). Similarly, for medical practitioners there is a strong emphasis on continuing professional development to ensure currency of what they know, can do and value and, in doing so, to sustain the healthcare institution or private practice in which they work (Cantillon, 2016). Analogous purposes are found within models of teacher professional development such as the intentional four-phased process that Boelryk and Amunsden (2016) advance. Here, the concern is to identify and systematically respond to perceptions or actual

problems in teaching work through a phased process of identification of a problem within practice, a consideration of a response, the enactment of that response and then an evaluation of its efficacy. Hence, there are intentional processes of identifying areas of development to maintain individuals' capacities.

There are also broader issues associated with the maintenance of employability that have become a key purpose for continuing education and training efforts. Indeed, stated purposes associated with ongoing development and sustaining employability were evident in a large national study of learning across working lives (Choy et al., 2016). In particular, workers consistently reported their key purposes were about achieving goals associated with employment, sustaining that employment and then seeking advancement, all of which are captured within the broad concept of employability (Smith & Kelly, 2016).

Yet, beyond the broad concern about employability, quite consistently, workers interviewed for this project indicated that personal purposes about their ongoing competence and advancement were important. It follows then that conceptions and considerations of models for ongoing learning support across working life (i.e., lifelong education) need to be more broadly cast to account for how individuals make choices about learning to promote their employability (Choy et al., 2016). Another associated approach to sustaining both institutional and personal work capacities is through addressing workplace errors and using these to develop further workplace competence by identifying and utilising such errors. That is, using grounded and focused approaches for supporting ongoing learning and development through addressing errors in performance can promote effective practice in the future (Bauer et al., 2016). Noble and Billett (2016) also note how pharmacists' identification and mediation of prescribing errors by junior doctors can both assist those doctors' capacities, and also the quality of healthcare. Consequently, the purpose in these instances is to augment everyday thinking and acting through processes that, in turn, intentionally promote active consideration of this evidence and its applicability to individuals' practice.

Securing opportunities for sustaining occupational competence can include overcoming barriers such as social isolation in practice. There can be a range of consequences for workers engaged in socially-isolated circumstances that extend beyond the currency of the technical professional knowledge. For instance, sole practising medical doctors can be subject to burnout and injurious behaviour, and require processes of revitalisation (Cantillon, 2016). Hence, as with pilots, the purposes of professional development are seen as being more than sustaining technical competence. In addition, there may be particular factors that need to be addressed, such as supporting practitioners who might otherwise be socially isolated. In an earlier study, it was found that beauty therapists who worked alone engaged in "product nights" offered by cosmetic companies as much as a vehicle to engage with other therapists, overcome isolation, and share stories and concerns, as to learn about the new products (Billett et al., 2003). Similarly, truck drivers whose work is socially-isolating find it necessary to engage with others to address issues associated with their learning (Lewis, 2005).

For similar purposes, Poell and Van Der Krogt (2016) note the importance of individuals engaging in organising and directing their own efforts to sustain their employability in quite personally strategic ways. These include workers creating career development programs as well as identifying and maximising learning opportunities to achieve the kinds of goals which are important for them. So, personal purposes about preserving employability may extend beyond the particular workplace or work area in which individuals engage. However, here the activities are associated with an important sub-purpose of being highly strategic and focused on individuals actively seeking out and achieving their desired employment outcomes. With these personal purposes, comes a shift away from an inherent privileging of courses and didactic approaches to those presenting a range of approaches that emphasise learner engagement. Such approaches highlight the importance of learners' agency and intentionality. That is, they recognise that for effective learning, individuals have to be engaged and active: their goals, processes and mediation of what they learn are shaped by learner intentionality.

A subset of maintenance of performance is the purpose of advancement: working in ways that advance individuals' career, remuneration or status of employment (Choy et al., 2016; Smith & Kelly, 2016). For instance, doctors' learning of medical specialism is not just aligned to their professional development per se, as having a specialism is essential for their employment and, therefore, any form of advancement. In many ways, the same kinds of issues associated with ongoing professional development are revisited here. Yet, as with others, Eppich et al. (2016) seek to find effective modes and models of continuing professional development that assist in realising these goals. Their concerns are that the current modes are ineffective, and more practice-based, engaged and authentic activities are required to overcome their limitations.

In these ways, a key purpose for learning across working life is maintaining occupational competence and in ways that both workplace and personal purposes. The imperatives can be found in the requirement for external certification to practise and to be employed, and can play out differently across occupations, work and workplaces and, accordingly, be subject to diverse bases of support for that learning. The kinds and extent of support that are afforded airline pilots, and perhaps some medical practitioners, might be quite different from those whose work is not seen as being worthy of or subject to strong regulation. Hence, whilst all forms of learning across working life will be subject to individuals' engagement and interest, the burden for the development and the kinds of support available as well as the appropriateness of that support are likely to be manifested in different ways across the workforce.

15.3.2 Transforming Practice: Institutional and Personal Perspectives

The purposes of learning across working life can extend to transforming either the occupational practice or individuals' capacities. Hence, more than maintaining and developing further what individuals know, can do and value, significant change can also be an important purpose for learning across working life. Securing occupational viability can, for instance, extend to individuals embracing innovation to realise a more responsive work setting or occupational practice as work circumstances change. Without such a transformation the workplace or the occupation may become unviable or redundant. Hence, purpose associated with learning across working life could be to engage in and embrace the process of identifying and securing innovations in practice. Wegener (2016) in her study identified how welfare workers' occupational viability was, as noted earlier, aimed at identifying and enacting innovations in their professional practice. Faced with reductions in funding, they were pressed to engage in shared collaborative processes which required learning to work together in different ways and with clients, but also to identify different ways of working to achieve important professional goals within new resource regimes. Hence, these welfare workers are engaged in remaking and transforming occupational practice. That is, the acts of ongoing learning and remaking the occupation or work practices are co-occurring in response to situational needs and changing work requirements (Billett, Smith, & Barker, 2005) and, in some instances, are transforming the occupation given the extent and scope of those changes (Wegener, 2016). As foreshadowed, achieving these dual outcomes is likely to require considerations of what can be realised through educational programs alone (i.e., lifelong education). For instance, workplace interactions can also be used to transform occupational practice through inter-professional interactions (O'Keefe et al., 2011). Similarly, Noble and Billett (2016) suggest that pharmacists' engagement with medical teams through their involvement in clinical decision making can promote the transformation of occupational practices as they (the pharmacists) engage with doctors' decision making and advance all of the medical teams' knowledge about and nuanced use of pharmaceutical products. Hence, this remaking of occupational practice can respond to changing circumstances and be achieved through these interactions focussed on concerns about patient safety and positive health outcomes being the foremost goals.

Similarly, although much of airline pilots' professional development is associated with maintenance of capacities, the requirements for their work can also change, requiring transformations in how they practice. Mavin et al. (2016) refer to the growing importance of non-technical aspects of flying commercial aeroplanes, after flight deck communications and shared understanding between pilots were recognised as an important aspect of that performance. Put simply, a key source of aeroplane incidents or crashes was from poor communication between pilots flying those aeroplanes. Hence, a key purpose for their continuing training and assessment is to transform pilots' work practices and to integrate the technical aspects of flying

a plane more effectively with enhanced interpersonal interactions and communications between pilots. Analogously, professional development for teachers is often focused on the implementation of educational innovations or policy initiatives (Boelryk & Amundsen, 2016). That is, in response to requests for greater student performance, greater alignment with particular educational goals or societal concerns of some kinds, the task of teaching, and perhaps how teachers practise, is often subject to change. In this way, institutional and personal efforts associated with professional development can be directed towards transforming teachers' work (Vähäsantanen, Hökkä, Eteläpelto, Rasku-Puttonen, & Littleton, 2008). Yet, noteworthy here is that studies have identified the importance of their developing a commitment to new practices with that commitment arising from having developed the capacities to effectively enact the innovation (McLaughlin & Marsh, 1978). Hence, bringing about change or transformation will be heavily premised upon the degree by which individuals come to be committed to that initiative.

In this way, supporting changes in the status and standing of occupations – the act of ongoing learning – can be aligned to significant changes in the requirements for occupations and/or work practice. For instance, the need to respond to emerging requirements of professionalism from the range of occupations which have elevated status or importance, for example welfare work, provides such an example (Wegener, 2016), as does the importance of responding to errors within nursing work (Bauer et al., 2016). In a similar way, the transformation of internet security work (Billett et al., 2005) led to enhanced expectations and more salient roles and higher status of these workers. In these instances, significant changes occurred which led to a strong societal focus on these occupations thereby increasing the requirements and expectations of those who work within them. Consequently, ongoing learning by those undertaking these forms of work is likely to be a necessary requirement to support the changes in the status and standing of those occupations.

So, as indicated above, whilst the purposes of learning across working lives can be delineated into those associated with either sustaining or transforming occupational practice, these purposes have both personal and institutional dimensions. Both kinds and their dimensions need to be accounted for and aligned with the processes that are either enacted by individuals, or are afforded by workplaces, educational institutions or governments to support that learning.

15.4 Processes of Support for Learning across Working Life

Having identified and discussed some of the diverse conceptions of learning across working life and the purposes it is directed towards, it is necessary to consider something of the breadth of modes of support for that learning. As mentioned above, what is referred to as lifelong learning and lifelong education are often conflated (e.g., Schuller & Watson, 2009). More generally, the processes of this learning are often subsumed within and qualified by the discourse of education. All of this is despite learning and education being two very distinct concepts. However, it seems

that within schooled societies (i.e., those where compulsory education, tertiary and higher education predominate) there is a privileging of experiences in intentional and organised educational programs that dominates considerations of what constitutes professional development, continuing education and training, and ongoing development. Hence, even processes that focus on individual development are often captured within such programs (i.e., personal reflection being guided by teachers or artefacts of educational provisions [e.g., reflective logs]). Yet, people learn across working lives in many different ways and through diverse kinds of activities and interactions outside of intentional educational programs and teacherly processes. In particular, the process of learning across adult life is characterised by learning and development arising in ways outside of direct guidance of others and where personal mediation of experiences is pre-eminent, except for crucial learning where interactions with more informed others is required. Hence, it is important that considerations for the project of learning across working life not be limited to those found in intentional educational programs, important though those may be in some ways and at some times for all adults.

From a review of what has been proposed within this edited monograph and supported by other sources, three broad sets of processes are delineated and briefly discussed. These are:

collegiate interactions;
everyday work activities and interactions;
programmed support; and
personal projects.

15.4.1 Collegiate Interactions

Collegiate interactions are often reported as an important source of ongoing learning across working life. That is, the ability to engage with an informed other, in ways that provide access to peers' ways of thinking and acting to compare, evaluate and assess individuals' practices, be appraised of developments in the professional field and monitor moderate performance, are important contributions to that learning. These interactions are often seen to be potent support for learning because they comprise a process where interlocutors verbalise or otherwise indicate accounts of their thinking and acting, and submit them to appraisals by others, thereby allowing processes which are ordinarily invisible or opaque to become accessible and engagable by others. These kinds of experiences are those used in the major professions in which workers enjoy high levels of autonomy in decision making, and yet need to engage to ensure that their practice is current and decision making well founded (Cantillon, 2016). There are likely to be particular kinds of processes deemed to be helpful and appropriate for particular occupations. For instance, Cantillon reports that a professional etiquette exists amongst doctors to engage in collegiate interactions and this is important for building trust over time and

permitting open engagement in such interactions. Then, there is the talk amongst peers to which Eppich et al. (2016) refer in their account of learning by hospital-based medical practitioners. A central part of these interactions is collaborative problem solving and innovation efforts that promote individuals' attempts to negotiate understanding through joint encounters (Hutchins, 1993; Rogoff, 1995), that is, situations in which co-workers engage in processes whereby they have to work together to identify and respond to emerging problems in occupational practice (Filliettaz, Durand, & Trébert, 2015) and generate innovative responses (Wegener, 2016). Scribner (1984) suggests that this kind of problem solving emphasises the "continual interplay between internal representation and operations and external reality through the course of a problem-solving activity" (p. 23). These kinds of processes are engaged with as part of work-life activities, and can also be structured to assist both the achievement of occupational goals and the promotion of learning about an occupation. For instance, doctors' morbidity and mortality meetings are those through which patient safety can be monitored, and are sometimes scheduled as a regular workplace meeting event, but they also provide enormous potential for participants' learning. Cases are presented, processes outlined and outcomes stated. Yet, through discussions about these cases, alternative approaches, options, interlinked factors and diverse kinds of outcomes can be articulated, considered, appraised, and judgements about them made (Orr, 1996; Suchman, 1997).

Such experiences are important for developing deep understanding and strategic procedures (Greeno, 1989). These experiences can be highly supportive of the kinds of learning required across working lives, yet are of themselves difficult or impossible to replicate within an educational institution (Collins, Brown, & Newman, 1989). Indeed, such institutions sometimes expend significant resources on trying to replicate, through virtual reality, these kinds of experiences which are part of collegiate interactions. Importantly, something such as a morbidity and mortality meeting will be engaged in quite distinct ways by individuals given what they know, can do and value. Then, there are the inter-professional interactions in workplaces that can lead to rich learning outcomes. For instance, in the study of junior doctors learning prescribing, the role played by pharmacists in checking their prescriptions has the potential to provide productive learning experiences for junior doctors, but also to contribute to the ongoing development of the medical teams' prescribing practices (Noble & Billett, 2016). In this way, collaborative interactions stand as a process through which ongoing learning across working life can be organised, embedded in everyday practice, and also have pertinence for the work task being undertaken and relevance to the goals of individuals, and their workplaces.

15.4.2 Everyday Work Activities and Interactions

More broadly, everyday work activities and interactions support and promote learning across working lives. This learning often arises in two distinct ways. Firstly, there is that which arises through individuals' everyday engagement in their

occupational activities. Not only are these deemed to be effective modes of supporting that learning (Billett, 2001; Eraut, 2004; Marsick & Watkins, 1990; Tynjala, 2008), but also for many workers this is the preferred means by which they want to engage in ongoing work-life learning. It was found in one large study (Choy et al., 2016; Smith & Kelly, 2016) that workers' preferences were for (a) learning experiences to be enacted at and through work, (b) learning needs to be supported in work settings and through individuals' engagement in work, and (c) learning needs to be supported in ways which are convenient and accessible, which is often the great attribute of workplace experiences. That is, the kinds of experiences they need to support and promote their learning are available gratuitously in and through work. This preference in many ways rehearses what has long been understood about the efficacy of learning through practice (Billett, 2011), and specifically referred to here in terms of workplace talk (Eppich et al., 2016). A key aspect of support for learning provided through workplace activities and interactions is the quality and kind of oral communication at work (Filliettaz et al., 2015). For instance, Eppich et al. (2016) focus on the role of oral communication (i.e., talk), both within particular kinds of work activities and also work-related social interactions (i.e., professional conversations during meal breaks). They refer to long-standing practices of medical case presentation and the use of questioning in clinical rounds. Yet, like others (Billett, 2001; Filliettaz, 2010), these authors indicate that there can be weaknesses and limitations of professional learning experiences arising through everyday work activities. They point to poor oral communication or miscommunication through talk. Consequently, they refer to means by which continuing professional development can utilise these experiences yet can also be supported and augmented through engaging in enhancing interdisciplinary collaboration on ward rounds, using artefacts such as safety checklists, promoting the use of simulations to improve workplace communication and explicitly aligning particular kinds of simulations with specific kinds of workplace learning activities. Elsewhere, it has been found that these interactions can be enriched through the use of practice-based pedagogic strategies such as heuristics (Billett & Rose, 1997), and mnemonics (Rice, 2008; Sinclair, 1997).

Secondly, there are particular kinds of work activities and interactions that are inherently pedagogically rich that can be used to promote learning. For instance, nurses' handover meetings and doctors' morbidity and mortality meetings are particular kinds of work activities that offer experiences that can inherently promote this ongoing learning. These events provide experiences that permit active engagement, consideration of cases, comparisons of options and circumstances, and that otherwise offer means through which individuals can secure new knowledge. They are also of the kind that can develop links and associations amongst what they already know and can do, and that are required for developing depth in understanding and procedures that are strategic (Brown, Collins, & Duguid, 1989; Collins et al., 1989). They can also be personal practices on the part of experienced workers who might for instance talk aloud as they engage in tasks (Gowlland, 2012). Then, there are events that are outside of everyday work activities that are used to promote learning from events arising through everyday work activities. Broadly, these are

referred to as "teachable" moments. A particular instance is the use of workplace errors as a platform for further developing workers' capacities (Bauer & Mulder, 2007). That is, when a mistake or error has occurred in the workplace, these events are used as a basis for workers' ongoing learning and specific forms of development (Bauer et al., 2016). As with handovers and morbidity and mortality meetings, there are conventions associated with making these as effective learning experiences. For instance, there seems to be a distinct difference between the quality of interactions when morbidity and mortality meetings comprise a group of doctors who work together, perhaps held in their own work area, and when they are part of a large hospital-wide meeting held in a conference room type facility with many participants.

There are also likely to be the case with learning through errors. Tolerance in the workplace to making errors and using these as a basis for individuals or work teams to consider what has occurred and how that can be used to develop further workers capacities is essential. Hence, an environment in which workers feel comfortable to acknowledge errors have been made, and work to ensure that learning arises from these errors, is likely to be required. For instance, airline pilots are open to reporting errors that have occurred in the long-term interest of passenger safety, rather than being fearful of censure. In a recent instance, reported in the popular press, two pilots both fell asleep and overflew the destination city, then had to return after being woken up by request from air traffic control. They reported it and an investigation into tight timeframes between shifts led to considerations about pilot fatigue, associated with shifts and accommodation between flights.

So, there is significant potential for ongoing learning across working life from engaging in everyday work activities and interactions. Yet, that potential is particularly rich in specific kinds of workplace activities in which cases or issues are discussed and options and diverse practices can be appraised in terms of their utility. Beyond these, more generally, it is suggested that these workplace experiences can be enhanced through how communication is enacted, and the use of specific pedagogic strategies to enrich the experiences provided gratuitously through work. Yet, it is also evident that the basis for productive interactions is not necessarily just given. Indeed, it might be necessary to construct an environment in which productive interactions can occur and errors, when made, can be seen as opportunities for learning rather than apportionment of blame.

15.4.3 Programmed Support

As noted, there are important roles to be played by having intentional program of support and engagement across working life. A programmatic approach is quite frequently adopted when there are particular imperatives associated with either individuals' performance or new initiatives or requirements for change in practice. These kinds of professional development processes are quite common, with training programs perhaps the most common. For instance, Mavin et al. (2016) refer to the

close alignment between assessment and training processes for commercial aviation pilots. These programs have clear intents associated with assessing pilots' current competency and having training experiences aimed at updating or addressing perceived shortcomings in their performance. These kinds of interventions are seemingly preferred by workplace managers who often view intentional programs as providing some certainty of outcomes (Tyler et al., 2016). For these managers, rightly or wrongly, a set of pre-specified outcomes and educational processes identified and enacted to achieve them offer some certainty about securing the kinds of goals that workplaces want. Hence, when continuing education and training programs are sponsored by employers or workplaces, they may have very clear statements about outcomes to be achieved, but also strongly privileged training programs, seen as a reliable way of securing those outcomes. In this study, it was found that workplace managers are having an increasing role in decision making about how resources are used to support employees' learning across working life. Yet, these managers may have limited experience in, or understanding of, how to make effective decisions about the kinds of experiences to be provided. Hence, there is a need to consider on what bases workplaces invest resources in supporting work-life learning, and how that investment is best utilised. Moreover, in terms of workplace imperatives, in some instances training programs require specific kinds of essential infrastructure to provide experiences which would not ordinarily occur through practice. For instance, the use of simulations and simulators for assessment and training of airline pilots is necessary in areas of high risk, as Mavin et al. (2016) describe. Similarly, Cantillon (2016) refers to the online resources such as virtual morbidity and mortality conferences through which isolated practitioners can participate to gauge the responses to medical scenarios and assess the currency of their medical competence.

Well-established models such as action learning, action research and so on can be categorised as programmed support. Many use a particular sequence of activities that are designed to engage participants in a set of experiences that are intended to generate change in their practice. For instance, the four-phased model proposed by Boelryk and Amunsden (2016) is of this kind. It involves identifying a particular practice-related problem or area of required development, the generation of a response, its trialling, and an appraisal of its worth. These kinds of models can be either open ended or directed towards specific kinds of learning outcomes. Such an approach is also evident in Avby's (2016) use of reflective groups that aim to go beyond personal reflections and promote a critical engagement with evidence from practice and research. She describes and advocates for the use of these groups to engage in intentional and planned processes guided by a facilitator. In this approach, the developmental processes emphasise shared discussion and collaborative engagement and also emphasise effortful engagement by participants. The intentional processes here can extend to deliberate engagement in responding to feedback and considering others responses and individuals' personal development through the use of logbooks and such artefacts. Also, in some models, facilitators are seen as being necessary to guide the development process. This may be particularly appropriate when such a group might have participants from different levels within

hierarchically-organised workplaces. As Avby (2016) acknowledges, the ideas here build on Dewey's (1977) earlier concerns (i.e. originally in 1911) about the importance of improving how we think and act through intentional efforts to do so, and the term reflection that he coined. It is evident that there are likely to be circumstances where that promotion of effective thinking and acting needs to be supported through structured arrangements and guidance by others who play roles either as expert informants or as individuals who work to support the learning process, or both.

Yet, what is also required within provisions of intentional and programmed educational experiences such as those mentioned above is the need for learners to engage effectively and effortfully in those experiences. For instance, in Avby's (2016) account, emphasis is given to workers enacting deliberate practice (Ericsson, 2006) as a means to support their learning, through engaging with the sources of knowledge they encounter. Consequently, as well as the organisation of experiences and the efforts of educators, workplace trainers, professional development practitioners and experienced co-workers, how those who are positioned as learners come to engage in those work-related learning activities and interactions is central to the nature and quality of learning outcomes.

15.4.4 Personal Projects

As noted above, the kinds and quality of ongoing learning across working life will inevitably be shaped by what individuals know, can do and value. Ultimately, this mediates how they engage in processes associated with developing further their work-related capacities. Hence, the process of ongoing learning, professional development or whatever it is referred to within a particular disciplinary domain will always be premised on and mediated by individuals' readiness to engage (i.e., their capacities, including interest intentionalities) (Malle, Moses, & Baldwin, 2001). This includes how they come to engage with what opportunities, experiences, provisions of support, educational programs, mentoring arrangements, projects and so on that they are afforded (Ericsson & Lehmann, 1996). This individual mediation of learning and development is enacted in a number of ways and at different levels of engagement. At a foundational level, that mediation shapes the degree by which individuals come to engage and learn through everyday experiences and the kind of opportunities referred to above (Billett, 2009, 2014). For these experiences to have significant consequences for workers' learning will ultimately depend on how they engage with them. Hence, much learning across working life is premised upon individuals' decisions to engage with what is afforded them. At another level, the degree by which those learning-related efforts are specifically directed towards strategic goals, which may or may not relate to the particular workplace in which they are employed, are also mediated by individuals' intentions. So, whether that learning is everyday sense making and responding to work activities and interactions or intentional efforts to achieve specific learning outcomes, individuals' mediation is quite

central. Poell and Van Der Krogt (2016) referred to a number of processes that individuals use to achieve the second type of goals. This includes them establishing learning pathways or trajectories upon which to progress to secure the opportunities for the learning they desire. Then, there is intentional networking to secure that learning, and actions that are quite explicit in seeking to achieve those goals. This can include engaging with managers or supervisors and, in proposing and negotiating, securing opportunities they need to learn effectively in and through their work. Then, either explicitly or implicitly, there is a process of individual planning which is important for these goals to be enacted and achieved.

Although much attention is given to practices often referred to as individual reflection upon performance, such reflection likely requires more than the practitioner's introspection. Direct information about actual performance is also likely to be required for these practices to be helpful. As with airline pilots, it was found that sole medical practitioners' ability to self-assess performance is limited (Cantillon, 2016). Mavin et al.'s (2016) study indicated that pilots' self-assessments were unreliable as were techniques which sought to draw on and reflect upon memories of events that had occurred. Low levels of reliability in the recall of flight events, particularly those in demanding circumstances, and matters associated with those events, indicated that self-assessment is insufficient and, potentially, error-prone. Hence, the importance of arrangements in which examiners make judgements about performance and then are able to engage with pilots about their performance was underscored. In this instance, artefacts and information, including replaying what the pilots had said and done, was essential because recall and introspection on that recall were seen as being insufficient. For this reason, the examiners' notes, flight details, and recordings played a role in providing a form of recall that informed the developmental process rather than being based upon practitioner speculation. The important point here is that a very common process advanced for professionals and other workers' ongoing development is critical reflection on practice. However, what this study indicates is that the basis for the reflection may be quite insubstantial unless it can be enriched by data, and perhaps the insights of somebody able to analyse that performance.

So, regardless of whether the learning is about individuals securing the capacity to undertake some specific work activity, or whether it is about workers making highly strategic decisions about their career trajectories which may extend beyond the particular workplace in which they are currently employed, all of this is a product of individuals' intentionality and engagement. Consequently, it is not possible to consider the processes associated with learning across working life, without a consideration of how individuals actively mediate those experiences for better or worse. This means that independent efforts can be quite limited, and interdependence, including the contribution of others, is quite central even to what is seen as being individual learning projects. As noted, the ongoing development of workers' capacities, as in continuing professional development, can be realised interdependently through inter-professional encounters. For instance, interactions between pharmacists and junior doctors can be used to improve their prescribing skills, because these junior doctors engage in a range of rotation through different hospital wards

and will be unaware of the particular specialist pharmaceutical requirements of each ward (Noble & Billett, 2016). However, that ongoing development is realised through the role that pharmacists play to ensure pharmaceutical security and patient safety. Hence, their ongoing interactions with junior doctors provide advice and feedback that is supportive of their ongoing learning, and if systematically engaged, also the development of the entire medical team.

It sum, there are a range of processes for supporting effective ongoing learning across working life that extend well beyond the orthodoxy of intentional programmed experiences, and this learning, by degree, is realisable through work activities and interactions. Sometimes, these experiences will need to be augmented with the use of specific strategies, and, seemingly always, the quality of workplace sociality will mediate the degree by which these strategies can be used and are engaged with, and the extent to which individuals are willing to participate in workplace collaborations. It is unnecessary, therefore, to restrict the kind and range of experiences that can support ongoing learning to those associated with intentional programmed experiences. These might best be left for those outcomes to which they are most suited to achieve. For it is certainly the case that individuals' actions and mediations alone will be insufficient for developing particular kinds of knowledge, and that which is hard to access and learn is certainly among those forms of knowledge. Moreover, given the criticality of much of the kinds of learning discussed above, it is important that measures exist to moderate and guide individuals' mediating efforts.

15.5 Learning across Working Life: Conceptions, Purposes and Processes

To conclude, it has been proposed in this final chapter that the conceptions of, purposes for and means of supporting learning across working life are not singular, linear or merely the product of learning experiences intentionally organised to achieve particular kinds of outcomes. Instead, there are a range of conceptions of learning across working life, many of which are richly embedded in the practice of work itself, its enactment, progression and transformation. There are also those that can be used to enrich what is provided gratuitously through workplace activities and interactions through the use of particular kinds of practice pedagogies. Nevertheless, there is also the need, in some instances, to secure a separation of work and working life to achieve outcomes that might not be realisable through everyday work activities and interactions alone. Then, purposes are broadly seen as comprising the maintenance of occupational skills, on the one hand, and associated with transforming practice in response to changing work requirements, on the other. Yet, within each of these there are both institutional purposes (i.e., those of the workplace, community, nation state) and also those for the individual (e.g., their personal trajectories, employability or advancement). Sometimes there is rich alignment between these

two dimensions. Then, finally, sets of processes through which support for learning is found and can be potentially enhanced have been delineated. These include support that can be found within collegiate interactions, everyday work activities, programmed experiences and also the personal projects of individuals. Across all of these processes, what is evident is a duality between support or interventions that can be provided by the social world and their relationship with how workers come to mediate what they experience, including that support. All of this then contributes to a comprehensive consideration of what constitutes learning across working life in terms of how it needs to be considered, the kind of goals it is proposed to achieve and the means by which they can be achieved.

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