Chapter 1
Integration Between School and Work: Developments, Conceptions and Applications

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Abstract Integration of students' experiences in and between education institutions (as in schools, vocational colleges and universities) and workplaces, to develop vocational competence, is a central tenet of contemporary educational systems and provisions. Educational institutions and workplaces are no longer seen in isolation for pre-employment preparations as well as continuing development of the workforce. However, researchers (e.g. Onstenk J, Blokhuis F, Education + Training, 49(6):489–499, 2007; Billett S, Integrating practice-based experiences into higher education. Springer, Dordrecht, 2015) argue that the concept of 'integration' remains underdeveloped, both theoretically and conceptually. In this chapter we summarise some of the more general developments and complexities around integration of students' learning experiences in schools and work sites. We discuss the historical intentions and progression of pedagogical means into curriculum design and delivery of vocational education to better prepare individuals as skilful and productive workers. The account here outlines conceptualisations and development of processes of integration as vocational education systems transformed in their manifestations, purposes and practices. Examples of different types of integration and typologies and their theoretical bases are summarised. We then outline examples of common applications, i.e. pedagogies and arrangements suited for integration. Three main units of analysis (individual, context and cultural and historical) are also introduced. While integration often has been an issue for two parties, school and workplace, students' agency is also considered and given a foregrounded position here. An identified challenge in researching integration is to recognise agency intertwined with structure. The concluding section contends that the main aim of integration is to jointly interpret knowledge and knowing in the social cultural

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contexts of different settings and achieve a 'common sense of mutuality' (Edwards A, Revealing relational work. In Edwards (ed) Working relationally in and across practices. A cultural-historical approach to collaboration. Cambridge University Press, New York, 2017, p. 2). We recommend more research to further illuminate this complex phenomenon of integration.

Keywords Integration · Vocational education and training · Connectivity · Pedagogies for integration · Workplace learning

Developments Towards Integration

Historically learning a vocation has always involved practice settings and participation in ongoing work. The major impetus in vocational education, its aims and purposes commenced during the post-war period when reconstruction for economic revival through development of skilled workers became a priority. The advent of industrialisation also pressed forward the collapse of home and local workshops as sites of skill development and gave impetus to vocational education through traditional schooling systems. Transformations in vocational education systems across nations have been driven by national imperatives, albeit realised through government-sponsored vocational education institutions. Regardless of the national agendas around vocational education, the goal of vocational preparation globally has always been to combine education and work experiences. This is manifested through apprenticeships, cadetships and traineeships typical in trade courses. Such a goal is manifested through, for example, article clerk ships within law[1] and extended periods of practice in hospital settings for nurses and doctors.

A range of terms are used to describe the combination of learning: work-integrated learning, work-based learning, workplace learning, career and technical education, internships, experiential education, experiential learning, vocational education and training, fieldwork education, service learning, project- and problem-based learning, practicums and work placements (Bartkus and Higgs 2011, p. 73). Many of these terms are used interchangeably and tend to have more commonalities than differences in interpretations. However, work-integrated learning remains a common umbrella term that captures various intentions of experiential learning in different sites aimed at developing vocational and occupational capacities of individuals. Accordingly, work-integrated learning has become a common feature of the landscapes for vocational preparation of the workforce across nations. Although a central feature of the vocational curriculum, the concept of 'integration' remains underdeveloped, both theoretically and conceptually (Onstenk and Blockhuis 2007; Billett 2015).

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[1] The terms and their meaning may vary between occupational sectors and nations – still the kind of phenomenon they are related to are common in many countries.

During the early days of vocational education, little scientific attention was paid to the concept of integration or approaches to augment the benefits of learning in different sites. In contemporary vocational education programmes for pre-employment training as well as continuing education and training of workers, integration of workplace experiences is central. That is, integration of learning is a key consideration for the benefit of learners, vocational education practitioners, employers, other stakeholders and nations. Given that ultimately all learning leads to the preparation of citizens for work and society, it is pointless to separate education and work. Equally important is the acknowledgement that learning extends beyond just educational pursuits because individuals need to engage in lifelong learning and constantly respond to changes in work requirements (Jensen et al. 2015). So, learning to make and remake new knowledge will likely extend beyond the education-work classification. Nonetheless, individuals need to be skilful in integrating learning from diverse sources and sites.

A growing interest and response to integration is driven mainly by factors that include rapid societal changes, new economies, workforce mobility, rising unemployment and recent societal tensions such as migration with new streams of refugees preparing for employment in their host countries. These dynamics manifest in transformation of national educational systems, driving a policy quest for vocational education that teaches students and workers ways to cope with uncertain futures. Such an imperative is further intensified by contemporary debates on lifelong learning (Cedefop 2009), stimulating educational demands, embracing discourses of individualisation and employability that anticipate the making of 'entrepreneurial' individuals who are always ready to change and adapt to new working life circumstances – or accept short-term project-based employment instead of permanent employment (see, e.g., Billett et al. 2013; Cort 2010; Lawn 2011). Not surprisingly, integration as a principle within vocationally oriented curriculum has gained precedence in a growing body of research (see Billett 2001a, b, 2002, 2004, 2006, 2009; Coll and Zegwaard 2001; Collin 2006; Eraut 2004; Fuller and Unwin 2004; Virtanen et al. 2009). Several studies highlight distinct yet complementary contributions of learning in education institutions and work settings. More importantly, the tradition of learning primarily *for* work now extends to an interest in learning that takes place *in* the workplace (Billett 2009). However, integration is not just about connecting the content but rather includes the dualities as learner *and* worker. This is because the learning episodes also expect demonstration of competency that results in productive work outcomes.

In the main, integration remains a benchmark for contemporary vocational education and a significant feature of its curriculum. While workplaces have long been considered as useful learning sites, it was industrialisation and mass education that gave legitimacy to the formation of vocational education practices. The impact of industrialisation on vocational education is summarised in the next section to foreshadow developments that called attention to integration.

Industrialisation as the Activator for Vocational Education

Vocational education has played an important part in the making of societies where workers sustain employment and well-being. Its origins can be traced to the start of industrialisation in Europe. Thenceforth the connection between the nation States and educational systems has remained tight. The influence of industrialisation on vocational education in Europe can be traced to the end of the eighteenth century, originating in countries like Britain, France, Germany and Switzerland and spreading quite rapidly. Training offered by the guilds, and at family business operations at home, was no longer considered relevant for emerging societal needs. Instead, a more formalised vocational education system was deemed necessary. This was premised on the grounds that societal development and scientific achievements effected economic development (Benavot 1983). In the beginning, vocational education became a precondition for work in agriculture, forestry, health care, trade and commerce and other emerging sectors. Manufacturing of goods took a more modernised route – from small-scale handicraft work in homes to use of machines in new factories designed for mass production. This was also a period characterised by profound and extensive societal changes, embracing the economy, political systems, new technology, development of mass education and many people's ways of living as they moved from rural areas to the cities.

Vocational learning took place when individuals worked and learnt under management control. Taylor (1911) perceived this as applying 'scientific methods' to train workers. Precise and detailed work tasks were broken down into small segments allocated to groups of workers to perform and be controlled by management (Taylor 1911). A limitation in Taylor's model was that workers would only have knowledge and skills for a very small segment of the production process and they would remain isolated from the rest of the workers to avoid any influence of other work groups because that, in his view, would risk management control over the production process. For the most part, vocational training under 'Taylorism' was restrictively instrumental – that is, implied a narrow set of skills, conforming to subordination and doing what was demanded by the system. A similar view on vocational training is evident under 'Fordism', though here knowledge of production workers was literally built into the machine (for details see Wood 1988).

It was a debate in 1914 between John Dewey and David Snedden (republished in 1977), about general and vocational education, that brought to light institutional contexts of vocational education as a contested field during a period of growth in mass-producing industries (Labaree 2010). Snedden advocated vocational education for ordinary people, to prepare them for the more common tasks in society. He proposed a separation of liberal and vocational education, claiming that:

> vocational education and liberal education cannot be effectively carried on … in a way which permits of a considerable blending of the unlike types of instruction. To attempt this is to defeat the aims both of liberal and of vocational training (Snedden 1977, p. 43).

His point was that school systems already met the training needs of professions, but not for other vocational callings such as carpentry, cooking, farming, etc. Snedden went on to argue that specialised schools would contribute to competent workers, which in turn would result in higher income and, more broadly, a solid societal economy. His proposal was to model vocational education around arrangements for professional education of lawyers and medical doctors, for example. However, even at that early stage, he pondered how experiences in general and liberal education as a basis for vocational schooling would need to be connected. Dewey (1916), on the other hand, argued against a narrow school-based vocational education. The exchange between Snedden and Dewey stimulated advocacy for a shift in the role of schools with its genesis set on liberal education to become *the* place for preparing students for specific vocations and a democratic means for preparing young people for a changing working life (Dewey and Dewey 1915). During the early phase of vocational education, there was little mention of 'integration' to connect learning for occupational purposes.

Still, there were a few early local examples of integration between educational institutions and workplaces evident in mainstream national systems for vocational education. In Sweden, for instance, at the turn of the nineteenth century and long before school-based upper secondary vocational education became mainstream, the cotton industry responded to low levels of work literacy in workers trained at the local public schools. The industry went on to establish its own schools for workers. The curriculum in these factory-based schools was designed to develop literacy for the industry (i.e. vocational literacy) as well as work in general (literacy for employability). This local example was not unique in Sweden – similar schools were established for trade (Kristmansson 2016) and technical industries and craft (Larsson 2001).

Later, during post-war reconstruction for economic revival, industrialisation and consequential demands for labour completely altered vocational education policies and practices – albeit with national variations. In the 'dual-corporate model' (as in Germany), for example, vocational training is clearly separated from the general education system. In this model, students, as contracted employees, are educated by a company while also attending a public vocational school – supposedly facilitating and enabling integration of what is learnt in the two sites.

These days three main modes of vocational education in practice are common: (1) based primarily in educational institutions (e.g. in Sweden and Finland), (2) based primarily at workplaces (e.g. through apprenticeships as in Germany and Denmark) and (3) a blend of vocational education in colleges and workplaces (e.g. in Switzerland, Austria, Holland and Australia). Each of these is designed to include practice-based learning that need to be connected and integrated. We argue that it is the practices and processes for *integration* that underpin connections between learning in different sites to develop appropriate capacities for work. In the next section we discuss concepts that underpin integration between the two sites.

Conceptions of Integration

Integration is central to vocational education policies and practices, yet the fundamentals of integrating *students' experiences* easily become neglected when viewed as a theory – practice divide. Similarly, learning is described as formal or informal where learning in educational settings is regarded as formal and that in workplaces as informal (as if it is not worthwhile). Learning in both sites and in in-between spaces outside the work site (Edwards 2017) comprises the curriculum for developing skilled workers – to sustain work-life learning. All the same, it is the theoretical positions and how integration is conceptualised that underpin those constructs that influence ways in which the outcomes are realised.

Theoretical Positions

The origins of studies on integration can be traced back to the seminal work of Jean Piaget and Lev Vygotsky on learning theories. To explain the work-education experiences, Dewey (1938) and Kolb (1984) took this further to develop experiential learning theory. Experiential learning is defined as the 'process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience' (Kolb 1984, p. 41). While Kolb's experiential learning theory continues to be used widely, other theories such as activity theory (Vygotsky 1926; Leont'ev 1978), reciprocal-reflective theory (Schön 1987), workplace learning theories (e.g. Billett 2001a, b), cognitive motivational theory (see Johari and Bradshow 2008) and impression management theory (see Sung-Chan and Yuen-Tsang 2008) have also been used to understand education-work experiences. Likewise, integration is ordinarily perceived and discussed in terms of learning at educational institutions and workplaces – understood as complementary sites that make distinct types of contributions. Svensson et al. (2004) elaborate the notion of integration as the 'intellectualisation of work associated with modern, integrated production systems' (p. 479), implying that not just theoretical knowledge but also intellectual skills are necessary. This implies there is a set of processes that lead to integration. Based on Piaget's (1985) qualitative typologies of learning (assimilation, accommodation and reflective abstraction), Baartman and de Bruijn (2011) propose three types of integration processes relating to what is demanded of the students during their placement in work sites. The first is *low-road integration* which concentrates on practice towards automation, fluency and making knowledge implicit (*assimilation*). Learning in this case tends to be surface in nature – without necessarily understanding the rationale. New knowledge is connected to existing mental models that are compatible – not in conflict. The focus is on learning the 'what' and 'how', but in actuality knowing 'what' and 'how' does not necessarily translate into 'doing'.

The second process is labelled as *high-road integration* when knowledge and skills are connected through conscious reflection (*accommodation*). Baartman and Bruijn (2011) explain that conscious reflection takes place within the frame of reference of an individual, who internalises societal norms and values and is focused on (implicit) assumptions about how to solve a problem. When time to think is available, processes are more deliberative or analytic, depending on reflection, review of the situation and discussion with others. Here, activities are planned actions which are periodically reviewed and consciously monitored (p. 129).

Of importance here is that reflection extends beyond just in and on action per se. Baartman and Bruijn draw on Gibbs' (1988) six stages of conscious reflection: (1) detailed description of the event that individuals reflect on, (2) feelings and thoughts during the event, (3) evaluation of the event, (4) analysis of the event, (5) conclusion and synthesis and (6) formulation of actions for future events. Coll and Taylor (2008) recommend that these six stages be aligned to formative or summative assessment to ascertain the level of integration. These actions formed the basis for Johnston's (2011) strong recommendation that reflection should be central to all experiential learning.

The third type of integration proposed by Baartman and de Bruijn (2011) is *transformative integration* where 'one's own presuppositions and premises are the object of reflection, opening the possibility for perspective change. Existing mental models are changed and not "just" enriched as in high-road integration' (p. 130). This happens because individual's thinking is challenged, thus causing a disorientation that contradicts their normative thinking. Transformative integration (*reflective abstraction*) requires the individual to withstand and justify his/her current standpoint. So, the theoretical reasonings learnt in school-based curriculum may not apply in the context of problems encountered in the workplace where problems are more complex, dynamic and situation specific, according to Boshuizen (2003). Furthermore, comprehensive sets of new information may also be introduced. The individual goes through a cognitive threshold that leads to transformative integration.

Fuller and Unwin (2004) propose a similar typology, but based on Ellström's (2001) elaboration of Vygotsky's (1926) and Leont'ev's (1978) theories. They articulated it as *restricted* versus *expansive participation* – representing a continuum rather than a dichotomy. These are based on what is dominant in the learning curriculum, the provisions made available for learners and what is expected of learners. Restrictive participation concentrates on routine tasks that may be narrowly scoped in knowledge and restricted to particular locations only. Expansive participation challenges learners' knowing and aims at development of the individual learner and the organisation and hence has potentiation of mutual transformation.

Another concept associated with integration is boundary crossing, proposed by Akkerman and Bakker (2011). They explain that integration takes place when transitioning across boundaries of different sites to negotiate learning in collaboration with teachers, other workers and workplace supervisors. They describe integration as 'finding productive ways of relating intersecting dissimilar practices' (p. 155). This introduces a perspective that is a spiral (not linear) progression involving

transformative conceptualisation and re-conceptualisation that translate into cognitive as well as behavioural changes for development of vocational knowing and becoming. That is, it anticipates behavioural and visible (explicit) as well as cognitive (implicit) outcomes such as new understandings.

One other conceptualisation of integration concerns 'connectivity', with a focus on mediating connections between different situations to meet exigencies arising from school-based knowledge and everyday knowledge of the workplace. Here *mediating* is the operative term, described by Guile and Griffith (2001) as 'the process of mediation that provides learners with a basis for connecting their context-specific learning with ideas or practices which may have originated outside those contexts' (p. 124). This demands cognitive skills.

The different conceptions informed by a range of theoretical lenses enrich our understandings about integration, but it is the application of appropriate pedagogies that facilitate integration of learning in different sites.

Applications: Pedagogies for Integration

Typically, integration is curriculum-driven and intertwined with social, political and economic interests that enable and sometimes constrain the delivery of vocational education. Cooper and his colleagues (2010) assert that integration needs 'careful intentional curriculum planning, well-prepared students and authentic, constructive and mutually beneficial alliances' (p. 6) with stakeholders. They suggest that work-integrated learning has seven dimensions: 'purpose; context; nature of integration; curriculum issues; the learning; partnerships; and support to students' (p. 37). A well-designed curriculum aside, it is widely accepted that integration is not organic just because students are immersed in work sites. Billet (2015) argues that providing practice experiences in workplace settings is not sufficient. '… there is a need to enrich those experiences through preparation, engagement and opportunities to share and reconcile what has been contributed by these experiences to their overall education programs and objectives' (p. 17). Furthermore, integration demands sets of complementary pedagogies to supplement and extend learning beyond classroom settings, thereby acknowledging differences in the role and value of knowledge, the intended curriculum and its origin, how the content is disseminated and the level and type of instruction and assessment tasks (Chin et al. 2000). According to Billett and Choy (2014), what is educationally worth is universally aligned to the learning outcomes. These include learning about task performance, gaining awareness and understanding, experiencing personal development, engaging in team work, participating through role performance, acquiring academic knowledge and skills, learning about distinct ways of decision-making, problem solving, making judgements, preparing for the 'real world', realising personal achievements and networking at work. While achievement of these outcomes may sound easy and optimistic, not all aspects of work are well defined or explicit or even inherently organised for educationally purposeful learning to meet specified learning outcomes in the formal

curriculum of educational institutions. Ellström (2001) contends that individuals need to 'define and evaluate the tasks, methods and results' (p. 423) through two complementary types of learning approaches – adaptive and developmental – to generate reproductive as well as creative learning. He suggests five considerations for integrations:

1. 'the learning potential of the task;
2. opportunities for feedback, evaluation, and reflection on the outcomes of work actions;
3. the formalisation of work processes;
4. employee participation in handling problems and developing work processes; and
5. learning resources'. (p. 425)

Still, the intentions of integration need to extend beyond imperatives of the accredited curriculum characteristically bound by regulations and compliance. This is because personal epistemologies and agency play a significant role in how much individuals can achieve from integration (Billett and Choy 2014). It is their agency that drives critical and transformative perspectives to learning through integration – to extend beyond just canonical occupational knowledge. So, aside to acquiring the technical, cognitive and relational skills, integration within the sociocultural environment of the workplace insists on students to be contributors and co-constructors of knowledge in the workplace. Higgs (2012) proposed a set of pedagogies for practice-based education for purposes of integration. These are supervised workplace learning, independent workplace learning and experience, simulated workplaces, simulated practice-based learning, distance and flexible practice-based learning, peer learning, independent learning and blended learning.

Billet (2002) suggests different dimensions of workplace pedagogies arising from the kinds of activities in which individuals engage (e.g. daily work practices, questioning, observing and listening), their interactions with other more experienced workers (e.g. coaching, modelling) and reference to documented procedures. These form helpful tools to engage in negotiating, mediating and reconciling existing knowledge, to understand the distinct practice architectures of worksites. It involves conscious efforts to analyse and engage in dialogue and reflection to transform declarative knowledge acquired in educational institutions into functional knowledge (Biggs 1999) that can be translated into productive work outcomes. So, it is not enough to know the substantive disciplinary and functional knowledge, rather to know it in terms of pedagogic activities to be able to appropriately integrate knowledge in different settings and situations (Shulman 1986). Because particular tasks have specific meanings in different practice contexts, it is important that the process of integration or connecting the workplace curriculum is made explicit, is aligned with the educational institution curriculum and is appropriately designed to be realised through specific workplace pedagogies. Essentially, a curriculum necessitates appropriate arrangements for integration. Tennant (2000) contends that a different set of skills are essential for integration of learning in the workplace. That is, individuals need to be able to analyse organisational cultures

and particular work tasks – some well-defined and others indeterminate. Students need to function with incomplete information at times or seek assistance from others. This means that they need skills to compose multiple courses of action and justify the most appropriate action, often within short timelines. Furthermore, they need to recognise and access a range of learning opportunities and resources – these too may be contested. These skills enable the individuals to appropriately 'situate' themselves in the sociocultural context of the work site because neither the modes nor opportunities for learning are neatly organised as in educational institutions. Yet, through their agency individuals can engage in intentional and unintentional integration to develop occupational capacities.

How well students integrate learning at educational sites with that in the workplace is influenced and shaped by what Kemmis et al. (2012) describe as practice 'architectures'. Moreover, integration requires technical, cognitive and relational skills, albeit needing teacherly acts to enrich the learning experiences. The arrangements that make up the practice architectures are complex and sometimes unpredictable; therefore integration cannot be left to a simple process of organic fusion. It requires deliberate cognitive and psychosocial processes, appropriate sequencing of content and assistive pedagogical arrangements as well as a range of opportune arrangements for productive learning. As such it is pertinent to clarify what is expected of students, what these expectations look like in real work contexts and the types of competencies and capacities that are to be developed during work-integrated learning. Cooper et al. (2010) report that 'In workplaces, the critical challenge for students is to notice what is important in a complex context and to make choices regarding interpretation, intervention and justification that comply with workplace culture and tacit procedural rules' (p. 77). This means individuals also need to understand what is valued for and by work (as in by employer) and what is valued at a personal level. Value of learning has long been promoted through Kolb's (1984) theory of experiential learning which promoted meaningful learning experiences that contribute to productivity at work. Billett and Choy (2014) quote Dewey (1933/1989) to argue that 'it is action (not theory) that is the starting point for learning because individuals engage and interact with the elements within the work environment to construct meanings, perform tasks, make assertions, solve problems and cooperate with others – all within the rules, values, attitudes and expectations of the contexts of the workplace' (p. 493). Hence personal epistemologies should be a priority when considering learning experiences to facilitate integration.

We now summarise some of the more common arrangements that present opportunities for integration. We commence with Groenewald, Drysdale, Chiupka and Johnston's (2011) contextualised taxonomy of work-integrated learning that suggests four main categories of practices. These are 'Required professional practice (e.g. apprenticeship, internship, professional practicum, cooperative education); Community/service (e.g. Service learning, cooperative education, community-based learning); Field and industry based learning (e.g. Intercalated, sandwich, cooperative education); and Other opportunities (e.g. Teaching/assistantships, work study, work exchanges, research assistantship, select leadership and peer programs)' (Groenewald et al. 2011, p. 19). The case examples in Section II of this book focus

more on the required professional practice aspect of work-integrated learning. Professional practice requirements are to be met by students to complete their qualifications – making integration specifically intentional.

When referring to work-integrated learning, terms such as collaboration, coordination and cooperation are often used interchangeably (Persaud 2017). *Collaboration* implies a formal and long-term relationship. It involves comprehensive planning, with well-defined communication processes aimed at a common goal. *Coordination* is a formal relationship to achieve missions of mutual interest. *Cooperation* is characterised by informal relationships to achieve co-constructed outcomes to be achieved through agreed processes. *Apprenticeship training* exemplifies both, coordination and collaboration for dual outcomes, that is, vocational qualification for apprentices and productivity in the workplace (Stenström and Virolainen 2014). *Practicums* are common in professional fields such as teaching and medicine. Experiential learning here involves an extended period of attachment in a particular work site to engage in unpaid work activities and learn the vocation. The arrangement here is sometimes described as a *placement*. This normally follows a period of theoretical training in classrooms but may also be concurrent with practice-based learning where a student is rotated between different sections of a particular workplace. Experienced professionals in the work sites supervise students who are expected to develop skills and competencies in defined areas of the curriculum. For certain vocations, practicums are a compulsory element of the curriculum and a requirement for graduation, as well as to gain professional membership. *Internships* have similar arrangements as for practicums but are normally scheduled at the end of the programme – as in legal studies. It can be paid or unpaid engagement. *Fieldwork* includes short periods of engagement in work settings for students to gain experience by observing and engaging in peripheral activities. Students are not paid for fieldwork.

A more popular arrangement for vocational education is the *apprenticeship* – an indentured arrangement where the employer supports an apprentice's training for the duration of an agreed contract. The apprentice in turn agrees to follow instructions and attend training on the job as well as off the job. Apprentices are generally paid an agreed nominal rate for their work. Similar to an apprenticeship is the *traineeship* arrangement. The main difference lies in the level of commitment by the employer and the trainee. Normally trainees are not paid, but in some countries (e.g. Sweden) trainees receive a nominal rate of pay. Similar in nature to apprenticeship and traineeship, a *cadetship* includes a contract of employment with paid award wage; however, there is no training contract. Another type of arrangement that presents opportunities for integration is c*ommunity-based learning* and *service learning.* These involve students engaged in learning projects designed to respond to a particular problem. Students learn as they explore a problem, find solutions and implement change. The project is undertaken in collaboration with a team from the host enterprise and is supervised by teachers. Students are not paid for their services.

These are examples of common arrangements, albeit with national variations in terminologies, types of contracts, duration of learning periods in the workplace,

arrangements and payment to learners. Because each of these arrangements has slightly different orientations, intentions, durations and sequencing, there are variations in the purposes and levels of integration that transpires.

The notion of integration can also be traced to three main units of analysis: individual, context and cultural and historical. Where the focus is on the individual, the main interest relates to how students transfer knowledge between different sites. That is, integration is seen as an individual mental process. An extended unit of analysis includes the context – the practice an individual engages in for learning. This comprises the work task assignments, tools and distinct situated communication. A broader unit of analysis pertains to cultural and historical aspects. [For further elaboration on early categorisations of the unit of analysis, see, e.g., Nardi (1996) or Engeström and Miettinen (1999).] While there is some consensus about the goals of integration (i.e. development of vocational expertise), Billett (2015) proposes three conceptualisations that offer a more comprehensive view of integration – which bridges between the individual and the social. These are (1) *situated view* of the contributions made by the two sites and how these may be amalgamated, (2) *personal constructivist* view arising from engagement and reconciliation and (3) *socio-personal* view intimating that personal and situational factors as well as relationships influence the nature and quality of connections. A point of departure is that each site makes distinct types of contributions to students' learning in complementary ways, and these benefit the students, the employing organisations and society as a whole.

Summary

In this chapter, we have discussed developments of integration between school and work, its conceptions and applications. The historical accounts show that integration of learning in schools and workplaces has evolved as a result of emerging societal and industrial pressures and subsequently gained importance in vocational preparation of a skilled workforce. There are variations in how integration is interpreted and practiced in different nations. Given a rather loose framing of the concept, there is likely some slippage in how integration is practised and the subsequent outcomes. On the whole integration is the intentional and effortful 'ecologising' of vocational knowledge, skills and dispositions, to become workers who can appropriately recreate or innovate practices that characterise work in different contexts and settings. We use the term 'ecologise' to symbolise connectivity within the social cultural contexts of practices in different learning/work settings – fittingly – such that knowledge and knowing are jointly interpreted, neatly intact and valued by the culture of the site. In this way workers achieve a 'common sense of mutuality' (Edwards 2017, p. 2). The degree of integration is circumscribed by the idiosyncrasies of particular vocational practices. This makes integration purpose driven – therefore intentional – because students are required to complete defined sets of learning goals. It is effortful in that affordances are made available, specific

arrangements are put in place, and the process is driven by agencies of learners and others who support their earning in the two sites. Integration results in the enmeshment of vocational knowledge and appropriation of skills and dispositions for particular occupations. Hence there is a definite rationale for integration. It involves valuing and utilising students' experiences from within as well as external to the formal curriculum (Boud 2012). The learner is therefore expected to learn and develop 'scientific eyes' to be able to correctly 'read the landscape', know how concepts are used and refashioned and then act accordingly and appropriately – as do experts or other workers in the site. These bases for integration call for different aspects of recontextualisations. Evans and Guile (2012) propose four that underpin integration: (1) content recontextualisation, putting knowledge to work in the programme design [curriculum]; (22) pedagogic recontextualisation, putting knowledge to work in the teaching and facilitating environment; (3) workplace recontextualisation, putting knowledge to work in the workplace environment; and (4) learner recontextualisation, what learners make of these processes (p. 117). Their notion of recontextualisation transcends knowledge from the curriculum, into pedagogic processes for engagement and enactment of what is to be learnt.

The chapters in Section II of this book provide accounts of current arrangements and practices. The authors present theoretically sound models that offer opportunities for rich learning. Some authors use theoretical perspectives that focus mainly on the individual learners, whereas others use a broader unit of analysis which include social and situated conditions that determine what is made available to the individuals for learning. Both contribute to different understandings about integration, giving a more comprehensive view of a complex and emerging phenomenon.

What has been presented in this book synthesises and adds to a growing body of research and understandings about integration. We see this as forming the foundations for more empirical research to further illuminate this complex phenomenon of integration.

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