# Chapter 27
# Learning in the Circumstances of Professional Practice

**Stephen Billett and Raymond Smith**

**Abstract** This chapter discusses what constitutes learning in the circumstances of professional practice. It progresses from the perspective that examining learning in and through work supports opportunity to make visible and interrogate the complex array of factors that necessarily combine and transform to identify and explain learning as the process and product of engagement in practice. Its elaboration of these factors is framed by two sets of interrelated concepts. First and primarily, the chapter advances learning in practice as the integration of three learning attributes or perspectives of practice. They are; curriculum practices, pedagogic practices and personal epistemological practices. Together, these three perspectives comprise a framework that enables the incorporation and consideration of a second set of concepts, namely, social, situational and individual contributions to the enactment of learning in the circumstances of work as the integration of curriculum, pedagogy and personal epistemology practices. Learning is advanced throughout as co-occurring with work and the practices by which it is constituted. More than being relational and interdependent, the practices of and contributions to work are viewed as negotiated and always generative of change due to the transactions that characterise the dynamics of workers' engagement in the activities of their particular occupational practice. Practice is transformative of the people, places and practices engaged in its enactment. Here, these factors, their interrelationships and consequences are discussed in terms of understanding and enhancing learning experiences in the circumstances of professional practice that is work.

S. Billett (✉) • R. Smith
School of Education and Professional Studies, Adult and Vocational Education,
Griffith University, Mt Gravatt campus, Messines Ridge Road 176,
4122 Mount Gravatt, Brisbane, QLD, Australia
e-mail: S.Billett@griffith.edu.au

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## 27.1 Work, Learning and Practice

Learning through practice has been, and continues to be, the principal process through which work, the production of goods and services on which human society depends, is enacted and developed. Work may be viewed from many personal and social perspectives. It may be seen in terms of occupations and professions and vocations that are entered into, taken up, learned and practiced through doing what is necessary to make a way in the world, to secure a present and future livelihood (e.g., Noon and Blyton 2007). Equally, work may be seen in terms of skill development and deployment, structured and guided participation in culturally organised practice and the formation and positioning, also the transformation and repositioning, of knowledge, identities, systems and values (e.g., Billett 2010b; Rainbird et al. 2004). Further, work may be seen as the site, process, function and outcome of effortful endeavour characterised by purposefully bringing together all the material, ideational and personal resources necessary to accomplish things, to get things done (e.g., Smith 2012a; Edgell 2006). So, work is a complex human activity that can be viewed from many different perspectives, each enabling some illumination of how it is enacted and accomplished as a personal and social practice. In all, work and the socio-personal practices by which it is recognised and conducted can be understood as workers' engagement in and the legacies of being and learning in circumstances of professional practice. Understanding how people learn through their work, through their experiences in circumstances of professional practice, and potentially seeking to promote and improve that learning is important for the continuing and sustained development of the people, systems and resources necessary to human flourishing and the production of goods and services on which this depends.

This chapter discusses what constitutes learning in circumstances of professional practice and some of the considerations necessary to its promotion and improvement. In doing so, the chapter elaborates some of the bases of professional practice from which workers' actions and interactions can be examined as factors and processes of learning. Workers of any and all occupational persuasions (i.e. from astronauts to zoo keepers in would seem) are always actively, and to varying degrees, engaged in and with all the resources that constitute their practice. Accounting for these resources and the range of relational and interdependent processes that hold among them assists understanding learning as both practice and practise, that is, as the act and the activity in which workers are engaged (Smith 2012a). Through this elaboration, the chapter advances and discusses a conceptualisation of learning in circumstances of professional practice as comprising three inter-related attributes or perspectives of workers' participative experience. First, workers' engagement in practice comprises the requirements of

work; the tasks, tools, systems, colleagues and all the negotiations and encounters engaging with these requirements demands. Such experiences may be said to constitute a curriculum of practice, a set of enactments required and afforded by the work to be conducted. Second, workers' engagement in practice comprises the ways and means by which their enactment is enabled, supported and enhanced (or equally, constrained and hindered). These experiences may be said to constitute a pedagogy of practice, a set of guiding and shaping actions and activities that mediate work. Third, workers' engagement in practice emerges out of their personal understanding and construal of the goals and requirements of work. Workers bring their personal histories or ontogenies, their purposes and priorities to the conduct of their work, ensuring their engagement in practice is always a personal enactment of self in action. These experiences may be said to constitute a personal epistemology of practice that is based in the legacies of previous experience and a trajectory into shaping how the unfolding future will be constructed and comprehended (Billett 2009; Smith 2006).

Together, these three perspectives of workers' participative experience advance a threefold framework of learning in circumstances of professional practice. The framework conceptualises learning through its co-occurrence with work in ways that account for and illuminate its negotiated qualities. These qualities are more than being relational and transformative, that is, varyingly meditational and generative of change. Rather, learning here may be seen as intentionally enacted as workers' bring into purposeful relationship, that is negotiate, the numerous resources that constitute their practice. Equally, change is transacted. The transformation of person, place and practice that accompany purposeful engagement in work are shaped by those who work as they negotiate their enactment of their work. So, the conditions, processes and outcomes of learning that comprise its enactment in circumstances of professional practice are interdependent and accountable in identifiable relationships of engagement and transaction rather than simply visible as relational properties of workers' interactions (Smith 2012).

The chapter concludes its discussion with a focus on enhancing learning through practice. Possibilities for the promotion and improvement of learning in circumstances of professional practice may well be founded on the explicit and supported integration of workers' experience across the curriculum, pedagogy and personal epistemological bases of engagement advanced. Acknowledging the co-occurrence of work and learning as the two sides of the coin of professional practice supports the need for an examination of the actions and interactions that constitute workers' enactment of the participative practices that comprise their engagement in practice. More than 'doing', and more than 'doing with others', learning comes to be seen as both an act and a context, both a process and an outcome, both a personal and a social accomplishment that is negotiated in the enactment of engaging in practice. When the circumstances of that practice are more visible, acknowledged and integrated in experience and the transactional qualities of practice as the purposeful transformation of people and resources are equally visible, then, learning may be enhanced (see the Billett and Choy, Chap. 18, in this Handbook).

## 27.2 Learning in the Circumstances of Work: A Curriculum of Practice

Understanding how people learn through their work and potentially seeking to improve that learning is important for a range of personal, workplace, community and societal reasons. It can assist individuals secure and sustain their employment, realise their occupational goals and contribute to the continuity of their workplaces. This learning also often serves the needs of their communities and nations. The services and goods provided by these workers are often essential to their communities and, collectively, for the social and economic good of nation states. Moreover, the viability and continuity of those workplaces is also usually premised upon their workforce's capacities as work requirements change. Yet, preparing occupational capacities, extending further and sustaining them across working life have all traditionally been realised through the circumstances of work (Billett 2010b). The term 'the circumstances of work' is adapted from the 'circumstance of practice' coined by the anthropologist Jordan (1989) and is used here to describe the range of situations in and through which paid work activities are undertaken. These are sometimes labelled as workplaces such as in: shops, factories, hospitals, schools, warehouses, hairdressing salon, offices, etc. Yet, much work, and learning about it, is undertaken outside of these kinds of workplaces. For instance, for truck and taxi drivers, their vehicles are the places where they work and learn, as are aeroplanes for those who pilot and attend to passengers in them. Then, there are sites of work that are temporary as in building sites, gardens being tended, offices being cleaned, and homes where patients and the aged are visited, etc. Then, there are those who perform their work largely alone and/or from home, for instance, or in airports and on planes. Consequently, the term 'workplace' does not fully capture the range of spatial and social settings where individuals engage in their occupations: paid employment. There is also often a need to understand the kinds of engagements, relationships and interactions that comprise work, and through them individuals' learning.

The work activities and interactions individuals engage in are central to how and what individuals learn through their work. Hence, they constitute key elements of practice-based curriculum, that is, the set of enactments and resources necessitated by work and the learning on which it is based. Also, a consideration of circumstances accommodates the fact that these activities and interactions occur at particular moments in time, and in response to specific requests, needs or problems. In these ways, the term 'circumstances of work' is seen to be inclusive of the physical and social circumstances where occupational practice are enacted, the kinds of activities and interactions that occur and the dimension of time and societal imperatives that shape how they are enacted. Moreover, these circumstances and their attendant activities and interactions are central to the learning required to realise the abovementioned goals, even though the importance of this learning is not always recognised in an era of institutionalised education, training and schooling. Therefore,

for these reasons, it is essential that the curriculum processes and resources of learning through practice be more fully understood, including identifying how experiences in the circumstances of work can effectively secure the kinds of learning workers want and workplaces and national well-being requires. Freed from the constraints of learning through practice being only associated with institutionalised educational provisions, the process of what constitutes human learning in and through work activities can be approached in ways that captures more typically how these processes and attendant resources progress. That is, how the curriculum of work practice is (i) suggestive of workers' appropriate action, (ii) realised as the subsequent action workers undertake and (iii) is generative of the outcomes or legacies of workers' actual enactment of their practice. Each of these three elements of the curriculum of work practice is elaborated below.

### *27.2.1 Suggesting Appropriate Action – The Intended Curriculum*

First, work may be viewed as a highly structured, goal-directed sequence of activities and associated outcomes. The resources and processes that enable work are purposefully brought together in ways that shape and direct what 'should' happen, what workers 'should' do and how activity 'should' progress. In this way, work constitutes a set of intentions that can be viewed as comprising an intended curriculum. The intended curriculum of work practice is what 'should' occur. So, machines will be serviced and their effective operation ensured when the correct procedures are enacted. Production costs will be lowered when workers perform their tasks more quickly and efficiently and the ratio of outputs per unit of input increases. Following instruction in the correct use of equipment the incidence of unsafe practices should decline. With sufficient and correct practice expertise will be developed. Such statements capture the nature of learning through practice as the accomplishment of desired outcomes or intended aims and objectives. Unsurprisingly, much of work and the learning on which it is based is shaped and guided by such 'intents', that is, the structure and content of work tasks and materials support the achievement of that which is intended. So, more than being suggestive of workers' appropriate actions, work as an intended curriculum is directive of the goals to be achieved and procedures that accomplish these goals. Much of this is captured and made visible in the manuals, protocols and policies that proceduralise work and can be attributed to those who organise, govern and monitor work. Equally however, the intended curriculum can be tacit and internalised as sets of expectations that 'should' be met or 'will hopefully' be met when action is required. The intended curriculum is held, both materially and ideationally, in the planning for and anticipation of what action is required and what outcome is desired.

### 27.2.2 Realising Action – The Enacted Curriculum

Second, and following from its intentions, work is the enactment of those intentions within the enabling parameters of the specific context and situated conditions in which it is conducted. The nature of that enactment is variation, altering conditions (sometimes favourable and sometimes less so) and the practicalities of dealing with what is available and possible at the time as work requirements change. Work in this sense is the conduct of what is possible, what is enacted under operant circumstances. In this way, work constitutes what can be viewed as an enacted curriculum. The enacted curriculum is what 'happens in practice' and this as the realised and subsequent action of what was intended. So, drawing on and extending the illustrations above, the machinery was only partially serviced due to the lack of suitable replacement parts and will need to be re-serviced when those parts arrive. The full and correct procedures could not be followed. Production costs were not lowered because despite the greater efficiencies achieved by workers' increased efforts, the costs of raw materials increased. Further instruction in the correct use of equipment, beyond that previously provided, may be required due to the proposed introduction of new and different equipment. Opportunities to practice and thereby develop greater expertise have altered due to the partial servicing of current equipment and the introduction of new equipment. Such variations are familiar aspects of work and capture the nature of learning through practice as being able to do only that which can be done - despite the best intentions (documented or otherwise) of planning and expectation. The enacted curriculum of work practice is the implementation of intentions. Within the constantly altering actualities of work it is unsurprising that what is done differs from what was intended.

### 27.2.3 Outcomes of Action – The Experienced Curriculum

Third, and following from what is enacted, the outcomes or legacies of what workers secure from their experiences in tandem with their construal of and personal investment in those experiences, shapes how and why they enact their work in the ways they do. So, work is different for each individual worker due to their variable ways and means of making sense of their experience. Similarly, for any single worker, the meaning of their work is constantly shifting as they progress through their enactment of it in the varying circumstances of their levels of engagement (as mediated by their equally varying levels of interest, motivation, fatigue, concerns for quality, etc.) In this way, the curriculum of work practice may be said to constitute what can be identified as the experienced curriculum. The experienced curriculum is what learners 'make' of their practice. So, again drawing from and extending the illustrations previously used, for some workers, the prospect of having to re-service machines because appropriate parts were not initially available is frustrating and perhaps a hindrance to their learning. Yet, for others, this prospect may be

welcoming because it grants them another opportunity to engage in preferred practices and so enhances their learning. The failure of production costs to fall was a disappointment for those who benefit from productivity bonuses but became a source of personal pride for those workers who experienced their increased efficiency as indicative of their commitment to their colleagues. The further instruction required to operate the new equipment was class room based and became a rewarding experience for those who learned best by watching and listening and a very unrewarding experience for those who learned best through greater hands on opportunity with the equipment. The reduced opportunities to use the equipment demotivated those wanting to develop work specialisation on that equipment but energised those who now had additional time to pursue other work interests. In this sense work is a diverse set of potentialities for learning that cannot be predetermined. Rather, the learning qualities of work as curriculum are based in learners' appreciation of their experience and the meaning and value they construct and secure from what they do. It is unsurprising that workers will differently interpret and value their work and learning experience.

These three perspectives of curriculum, (i) the intended, (ii) enacted and (iii) experienced curriculum, highlight how the practice of work and the learning it generates and requires is partly established in the sets of resources and interactions on which it is based. These resources and interactions guide, push and cajole workers into necessary acts and activities that as much as they are designed and goal directed, they are equally context and process limited and person dependent. The successful integration of these aspects of practice as curriculum can support learning through practice as a coherent sequence of welcomed and valued activities. Equally, poor integration of intention, enactment and experience can make work and learning through practice a difficult and unrewarding path to follow.

### *27.2.4 Curriculum – Origins and Structures*

The original meaning of curriculum is a pathway or a track to follow (Marsh and Willis 1995). Its usage derives from the Latin *currere,* meaning 'to run'. This conception provides a strong basis for understanding how curriculum practices are constituted in the circumstances of work. For instance, the 'learning curriculum' was proposed by Lave (1990) through what she found in her study of apprenticeship learning of tailoring in Angola. She noted that these novices progressed through a series of work activities that were structured to support the learning of tailoring. The structuring of these activities allowed the apprentices to initially understand the goals (e.g. standard of work) and outcomes of the work in which they were engaged and also permitted them to progressively participate in activities organised on the basis of difficulty and tolerance of error. Progression along this path of activities was premised on being able to effectively complete tasks of increasing difficulty and that had higher error cost (i.e. consequences when mistakes were made). Similar arrangements have been identified in other cultural practices and occupational fields

including the manufacturing of pottery in Japan (Singleton 1989), the building of minarets (Marchand 2008), in the production and packaging of food products (Billett 2000), and how hairdressers learnt their skills in hairdressing salons (Billett 2001). In historical accounts, these kinds of arrangements have been identified as the perennial means for learning crafts within family and commenced with children engaging in play-like activities associated with the family's business, as exampled in early India (Menon and Varma 2010) and in Hellenic Greece (Lodge 1947). As Lodge writes of learning crafts in Hellenic Greece:

> The son learned his trade by growing up in his father's family and participating in the family activities, imitating what he saw his father doing. At first the imitation would be playful and childish, carried out with such toy tools as a child could handle. Later it would become more deliberately purposive. Practice produced technical proficiency in details and the growing boy would act first as his father's 'helper', then as his associate, and would eventually himself become the head of a family, and the centre from which further training in the family craft would radiate. (Lodge 1947: 18)

So, the key feature of this work-premised curriculum is a pathway of activities moving from being those that can be easily undertaken by novices, and where mistakes can be tolerated and opportunities to practice are provided, and then progressing slowly through to engaging in more demanding activities that require greater levels of skill and build upon understandings and practices developed earlier in the pathway. For instance, Marchand (2008) refers to the earlier development of understanding about stone, cement, structure and work organisation later assisting apprentice minaret builders move to roles that ultimately permit them to have proximity to and then engage in constructing the most important parts of the minaret (i.e. the outside walls). Billett (2001, 2006) outlines how hairdressers learnt through participating in a sequence of activities largely premised on the linear progression of hairdressing. Firstly, they learnt to greet clients, and seat them, and also negotiating whether they would like a hot drink (i.e. tea or coffee). Even these seemingly straightforward and binary negotiations deployed and developed capacities that were built upon later. The negotiations about whether the tea or coffee was to be black or white, with or without sugar lead to other and incrementally more negotiations about water temperature when washing hair and then discussions about the style and type of hairdressing that was requested and whether it was possible to accede to and fulfil that request. The progression of the apprentices' tasks continued through washing clients' hair in preparation for being cut through to washing out dyes and chemicals when clients had had those kinds of procedures. Then the novice hairdressers practice cutting on men, before they were permitted to cut women's hair.

Further, the practice of hairdressing across four different hairdressing salons in different locations was found to be quite situationally-distinct in terms of goals, range of activities, workplace practices, clientele, location, and interactions among employees and between clients (Billett 2001, 2006). Moreover, the learning curriculum differed across these salons. The salon that had a large number of hairdressers and apprentices was able to adopt a production line like approach with the most experienced hairdressers undertaking the more demanding tasks and leaving the

apprentices to largely engage on washing hair and rinsing away chemicals and dyes, cleaning and providing drinks to clients. Yet, in another salon where there was an expectation of each client having their own stylist, apprentices had to engage in the entire range of hairdressing tasks earlier on. Because of these situated requirements for performance, a particular hairdresser's capacities would not easily adapt to practice in another salon. Whilst all of these practitioners might be able to perform the procedures required of hairdressers (i.e. cutting, shaping, colouring hair), commonly understand the precepts for practice (i.e. identity what your client wants and respond), and the dispositions associated with such a form of service occupation, there were profound differences that would defy the ability to be successful by merely shifting locations. In one salon, the hairdressers needed to know their clients' life histories and families, because companionship and social engagement was a part of the hairdressing task. Many clients were lonely old widows who came as much for companionship and to meet friends, whose appointments were scheduled at the same time. Consequently, without knowing the clients' personal histories, their hairdresser cannot fulfil the goals associated with this social intimacy, because they would lack appropriate familiarity.

So, there are bases in the organisation of workers' activities that are part of the circumstances of work that are structured and can assist their learning experiences in ways that comprise a curriculum for the circumstances of work. It is this ordering through the curriculum that provides and sequences the activities and interactions from which individuals learn their occupational capacities. Yet, this ordering is mediated by the intentions that shape it, the enactments that realise it and the personal experiences that bring meaning and purpose to this curriculum of practice. Never fixed, but always dynamically integrated, the curriculum of practice maybe viewed as the negotiation of what is desired, what is possible and what is emergent from the bringing together of work requirements, work practice and the workers who make it happen.

## 27.3 Learning in the Circumstances of Work: A Pedagogy of Practice

Pedagogy is the means by which learning experiences are enriched in some way and most likely goes beyond the mere provision, organisation and sequencing of experiences in the circumstances of work (i.e., the practice curriculum referred to above). Pedagogy can be purposefully and intentionally structured as in the provision of learning support through guidance and instruction. Such views can narrow pedagogy to only those elements of learning through practice that are supported by teachers, most often in the form of vocational instructors and trainers. However, pedagogy can be incidental and an emergent quality of engaging in activity. Dewey (Dewey 1916: 310) emphasised the pedagogic nature of practice when he stated "the only adequate training *for* occupations is training *through* occupations" (Italics in the original). In expressing such sentiment, Dewey acknowledges the pedagogic

qualities of doing something because it is required to be done and the authenticity of this doing as the primary base of enriching learning experience. Work is not a benign activity. Goal directed and culturally driven, work makes demands of workers, to act, engage, participate and contribute. These demands are pedagogic, authentic defining aspects of work and cannot be considered as external to practice. Smith (2005) captures this sentiment in acknowledging the necessity of action as the foundation of workers' learning in and through work. Such views broaden the conception of pedagogy as encompassing practice and practise, the act and the activity in which workers are engaged. They move beyond concepts of pedagogy as embodied in the actions of instructors or the support materials of learning guides and the experiences they encourage, beyond the didactic, to view learning in the circumstances of practice as inherently pedagogic and identifiable across the range of actions workers enact in the work activities in which they are engaged.

Hence, the pedagogy of practice is very much premised upon learners' actions and the authenticity by which these actions are enriched (or impoverished). Within work, these learning actions are supported by learning processes that comprise observation, imitation, listening, questioning, judgement and effortful practice as the continuing and transformational re-enactment of required tasks and procedures by learners. So, just as work demands action, so it demands watching and listening and communicating with others. That is, just as workplaces demand learning, they demand teaching, or more fully, they demand and secure pedagogic practice as all that is watched, all that is listened to and all that is communicated with, become the pedagogic resources from which learning and work progress.

Close indirect sources of learning support (e.g. observation, listening) and guidance by more experienced workers whether in the form of interpersonal assistance (e.g. coaching, direct modelling, scaffolding) are consistently reported as providing access to and the means of engagement in and with much of the knowledge required for work. This pedagogy can also be enriched by particular work activities through which individuals come to engage, utilise, articulate, test, predict outcomes and monitor their progress. For instance, particularly rich pedagogic work activities are those meetings where workers have to discuss work activities, evaluate their approaches and consider the viability of options. These activities permit both novices and the experienced to engage in a process of aligning and reconciling what they know with what is being discussed or enacted, and then construct responses as a result of these interactions. Nurses' handovers are an example of such events. At these handovers, there is often a five stage process that is inherently pedagogic. Firstly, the patient is discussed in terms of their age, gender, circumstance and capacities, etc. Then, the condition or conditions of the patient are stated, followed by the treatments they have been prescribed and that are being progressed. Following this, the patients' progress with these treatments is then presented and evaluated and then, finally, the prognosis--likely outcomes for the future, are discussed, in which predictions are made, discussed and evaluated. All this comprises a rich pedagogic experience that affords opportunities for workers to engage in different ways and with particular levels of understanding and knowledge of procedures. Individuals can align what they know with what is being discussed, evaluate the options being advanced, and then

reconcile what they do not know or are uncertain about, and through following and evaluating the discussions also access and make judgements about conceptions, procedures and postulated outcomes. Together, these experiences can assist in processes of knowledge construction associated with their viability (Van Lehn 1989) or to overcome disequilibrium with understanding (Carlson 1997).

As indicated, nurses' handovers at the time of changing work shifts are rich pedagogic experiences established through workers' engagement in the routine requirements of their practice. These procedures mediate and enrich learning. In the very different work circumstances of fruit and vegetable packers, Smith (2006) identifies other learning enriching qualities of workers' engagement in practice. Such work begins in the very early hours of the morning. Sunrise marks orders yet to be packed as being late because the standard expectation is that all customers should get their produce first thing in the morning. For some workers, the imposition of deadlines to complete and dispatch orders at specific customer-required times demanded quick decisions that encouraged their learning. This fast response learning through the press for decisions about product quality and suitability contrasted with the relaxed conversations about customer preferences and anticipated future orders that took place towards the end of shifts where cleaning and restocking were less time dependent and, therefore, less rushed work tasks. In both circumstances, of constraint and abundance, time available represented a significant pedagogic aspect of the work and learning conducted. Additionally, Smith (2006) notes how novice packers learn the varying levels and areas of expertise enacted by their fellow workers. Some colleagues know more about some kinds of fresh produce than others as a result of the orders, customers and products most common to their work. Questioning and seeking support from the most appropriate colleague can enrich learning, save time and ensure customer satisfaction. However, the accuracy and reliability of information received from colleagues cannot be guaranteed, despite their expertise. So, for novices who are unable to accurately assess the reliability of the information they receive, questioning colleagues may prove a hindrance to learning as they act on poor or purposefully false information that is supplied out of ignorance, anger or in jest. For some novices, the lack of access to certain more experienced colleagues (because they were busy or elsewhere) proved beneficial for their learning as they fortuitously avoided receiving false information that would have caused them to make errors. Colleagues and their expertise are clear pedagogic aspects of learning in the circumstances of work. Engaging (or not) with them through the routine interactions that comprise work is not always structured by procedure or supported by circumstance. It does, however, remain highly pedagogic.

### *27.3.1 Pedagogy – A Relational Social Practice*

So, the pedagogy of practice, premised on the actions of learners, is founded on the relational qualities of learners' capacities and opportunities to engage in and with the resources of their work. Beyond curriculum aspects of work, pedagogy

identifies forces of constraint and affordance and their sources in the range of resources that mediate participation in work and the occupational practices by which work is identified and performed. These resources include all the elements of work practice, for example, its social, situational and personal qualities. Enriching learning, and similarly impoverishing learning, is the relational enactment of both competing and complementary social, situational and personal practices that are dynamically transforming through time and place. Personally, the novice fruit and vegetable packers came to learn much about each other and much about the varying characteristics of fresh produce and the customers they were servicing as their relationships developed through the practices necessitated by their work. Situationally, the specific procedures of nurses' handovers defined that particular time and those particular practices as pedagogic aspects of their work. The necessities of practice hold strong pedagogic qualities. Socially, the same is true of occupations, as they have come to define particular and familiar sets of vocational practices. This is so much so that even those who have never worked in those domains have learned something of what it means and takes to perform such work. Such are the means of cultural communication that many 'know' the work of forensic scientists, hostage negotiators and north sea oil rig workers. Occupations, their mere titles, have pedagogic qualities as markers of vocational practice.

Occupations are cultural artefacts that arise through human and societal need and exist because they meet or address particular societal purposes (Billett 2011). Some occupations have existed across human history and are likely to continue do so. The satisfaction of basic human needs (e.g. food all year round, ongoing health care, personal needs, legal matters, financial management), as well as those associated with our well being (e.g. clothing, hair, transport) means that occupations addressing these needs will likely exist as long as humanity does. Nevertheless, even these enduring occupational practices are subject to transformation as social and societal imperatives change, and understandings and technologies modify. Hence, for example, the shortage of doctors in some countries is leading to an expanded role for other healthcare practitioners, builders' work has evolved as technologies and construction techniques and regulations have changed, as is the case for printers and watchmakers for instance. There is nothing new about transformations in occupations reflecting societal needs. Indeed, across human history, some occupations emerged to address particular needs and subsequently disappear or only have lingering status (e.g. fletcher, milliner, potter, smith, mason, cooper, miller etc) and are replaced by occupations that address emerging societal needs (e.g. software specialists, paramedics, pilots, educators). Moreover, occupations are positioned in distinct ways across different societies. So, in many countries nursing and midwifery are seen as being a paraprofessional occupation worthy of a university education, yet in others these occupations are held in lower esteem and status, and deemed not worthy of a university education (in Germany, for instance).

It follows that the occupations individuals engage in likely arise from societal need, are manifested in particular cultural contexts, have standing and means of participation that are often societally-premised (Billett 2011). Moreover, these factors directly shape or even regulate access to these experiences and thereby the ways

these learning experiences are enriched or impoverished. The legitimacy and standing of occupations is linked to their perceived importance and potential consequences for the community or individuals and a degree by which they are codified and regulated. Beyond the immediate perils that novice pilots, builders, doctors, accountants might bring, there are also concerns about those who teach children, nurse the sick, care for the aged and disabled, etc. So, not all occupational practices are equally available to be engaged in and learnt about, that is, accessed. In particular, occupations that are hierarchically ordered (e.g., health, military) or demarcated through historical divisions (e.g., trades work) or exercise potentially dangerous practices (e.g., electrical work, airline pilots), have regulated access. Put simply, the ability to access and engage in occupational practice and participate in attendant and associated pedagogic activities and interactions is mediated by social forces of perceived need and status.

Equally interdependent with, and therefore mediating of, the pedagogic qualities of work, is how they are enacted in specific workplaces and at particular points in time: the circumstances of work. Such are the diverse situational requirements, kinds of activities being undertaken and imperatives of the particular circumstances that they constitute the manifestation of occupational practice and what constitutes its performance requirements. That is, what constitutes domains of work activities is not limited to the exercise of canonical occupational knowledge. There is a complex of situational factors that determine performance requirements in the circumstances of work. These circumstances are those in which the occupational practice is enacted and judgements made about performance will be assessed. What constitutes expertise is the ability to reasonably successfully negotiate non-routine domain-specific problems within a domain of activities (Chi et al. 1982; Ericsson and Lehmann 1996). Yet, this expertise is premised on a profound knowledge of the domain of activities in which the problem-solving occurs. Hence, the capacity to be an expert practitioner and to be pedagogically supported through the development of this practice is likely to be quite situational and arises through engagement in very particular circumstances (Billett 2001). Therefore, in these ways, the circumstances of work are central to its enactment, remaking and transformation, as well as learning about and for it. The important point here, is that the particular activities and interactions that comprise what individuals will encounter and from which they learn constitute a pedagogy of practice that, beyond the organisation of experiences from which individuals learn (i.e., the practice curriculum), provide opportunities to assist observing, support listening, enable questioning, generate reflection, etc., (i.e., enrich learning), are shaped by situational factors. Therefore, more than being a set of social circumstances, the particular circumstance of work is central to the experiences provided for individuals to engage and learn through practice, as these two processes co-occur. This includes who is allowed to engage in it, what kinds of activities and interactions are afforded, and for what reasons, and the kinds of guidance from more experienced co-workers: i.e., the workplace participative practices (Billett 2004; Billett et al. 2004).

In sum, the organisation and enhancement of those experiences that enable and support workers' ability to access and learn an occupation constitute a pedagogy

of practice. This pedagogy is shaped by the set of cultural, societal and situational factors that comprise the circumstances of work. The social value of practice, rights to and methods of accessing practice, the learning requirements of the activities that constitute practice, the supportive qualities of the situational resources that enable practice and dispositions of individuals towards the circumstances of their practice, all hold capacities to enrich or impoverish learning. These capacities do not 'meet' in the benign construction and acceptance of positive and negative work opportunity. Rather, they co-occur as the negotiation of engagement in the circumstances of work to constitute a pedagogy of practice.

## 27.4 Learning in the Circumstances of Work: The Personal Epistemology of Practice

Much of the learning through everyday activities and interactions in the circumstances of work is dependent upon how learners engage with the activities and interactions they are afforded. Just as in education, learning through the circumstance of work can be viewed as invitations to change. However, unlike in education where teachers' intentions direct and shape the circumstances of learning, learning in and through work is enacted in the actualities of vocational practice where inequities of access to the kinds of knowledge that supports effective performance are experienced and sanctioned through such mechanisms as job demarcation, occupational status and organisational structures and capacities. In these circumstances, the kinds and qualities of learning that arises are largely dependent upon how individuals take up the invitations afforded them, negotiate the boundaries of access, construe the meanings and values of their experiences and transact the possibilities generated through their participation. More than curriculum practice that is enabled, enhanced and or hindered by varying pedagogic qualities, learning in the circumstances of work is person dependent as individual workers enact their occupational practice in their unique ways that are reportedly shaped by learners' observation, imitation and practice and largely mediated by their own agency, interests, intentionality, perception and energy (Billett 2009).

Personal epistemology conceptualises all that is distinguishably specific to an individual and the ways they learn. It, thereby, accounts for the different ways and focuses of what is observed, imitated and practiced and the varying values and priorities that are the bases of individuals' agency and actions. So, the personal epistemology of practice may be viewed as the sum of all the personal resources individual workers bring to their learning experience. It is more than their beliefs about knowing. It is the ways and means by which individuals make sense of their experience, frame it as theirs and project themselves into the future their actions enable. As such, personal epistemology represents the legacy of individuals' life time of engagement in social practice and their deployment of that legacy in immediate experience. It conceptualises ontogenetic development in terms of

learning and the very personal ways knowledge and experience are constructed and apprehended through active engagement in social activity. This active process of engagement is idiosyncratically unique and discernible in the personal practices workers enact, what Smith (2012) refers to as evidence of the self-in-action. It has been described as authoring the self (Holland et al 1998), peripheral participation in communities of practice (Lave and Wenger 1991), the meaning making process of implicit learning (Bunn 1999), the exercise of personal agency (Archer 2000) and, even, stealing knowledge (Marchand 2008 – in circumstances where a lack of learning support is characteristic of workers' situational experience and where more experienced workers deliberately conceal the knowledge necessary to successful work performance from their co-workers). Further, it is through these active processes of engagement that workers enact and develop their personal identities as practitioners, as workers, as learners, as people who, through varying levels of capacity and motivation, invest themselves in the purposes of their effort. Personal learning through practice is as much about constructing viable personal and vocational identities, exercising self and securing personal goals as it is about meeting the demands of occupational and workplace goals. Work and learning are always personal and always evidence of the unique ways individuals engage in their social world.

### *27.4.1 Work Learning and Person Dependence*

The identification, examination and evaluation of personal epistemology of practice is partly based in the array of choices and changes (personal, occupational, etc.) workers enact through their actions in work. This enactment is richly complex with the reasoned plans and accidental discoveries of learning, the rehearsing and re-enactment of what is already known amidst the unceasing prospect that things are always changing, chosen responses to situational circumstance can always be adjusted or improved and that new learning is always required and always potential in even the most mundane of activities because every moment is new, every decision multivariate and every solution temporary. In such circumstances of work, workers may not be free to choose what they respond to but they may be free to choose how they respond to what is experienced and so influence the changes enacted in their work. For example, Hodkinson and Hodkinson (2004) describe the very different ways two teachers engage in and with similar practices and demands of their work. Both teachers worked in the same school, were white males of similar age and experience and were subject to the same staff performance review and management system. Where one viewed these performance management requirements as the imposition of external control that threatened personal practice, the other saw it as supportive and encouraging of personal practice. From such different interpretive bases, the two teachers enacted equally different sets of choices and responses. The former reflected on his practice as an individual accomplishment. His learning was based in personal judgements made through his enactment

of 'doing' his work, much of it immediate, unplanned and emergent from surviving through meeting others' needs (e.g., students, employer). The latter reflected on his practice as collaborative and future oriented. His learning was based in pursuing best practice, watching and adopting what others did and taking advantage of training provisions afforded by the employer. These kinds of differences, personal differences of perception, attitude and expectation enacted by these teachers in relation to similar work circumstances and requirements, highlight and evidence the significance of individuals' dispositions as the personal bases from which workers construe and construct their experience of professional practice. Of course, none of this is surprising. Different people see things differently and, therefore, act differently. What remains salient within a context of personal epistemology is the relational nature of individuals' subsequent activity and the ongoing negotiations by which their practice is sustained and developed. If workers fail to identify where and how they 'fit' within their practice, if they are unable to appreciate and capitalise on the positive affordances their practice generates or if they are negatively disposed to work requirements, then their learning is compromised. At best, they may struggle to progress their practice. At worst they may construct inappropriate or dangerous practice. Individuals' dispositions, to work, to learning, to opportunity, indeed to all the aspects of their practice are significant elements of the personal epistemology of practice.

The relationships individuals hold and develop are also significant elements of personal epistemology. Practice is always collective, mediating of and mediated by capacities to enact and manage ones' self with and for others. For example, Chan (2009) notes the intentions for learning are partly based in being seen by others as a worthy worker and being recognised as such. The criteria by which such worthiness and recognition are assessed and bestowed are often empirical measures of productivity open to the observation of others (e.g., colleagues, managers, customers, etc.). Expertise is calibrated against the clock in terms of time taken to successfully complete a task, competence is made visible in repeatedly demonstrating accuracy and performance gauged by quantities and qualities of output achieved. And so, workers' personal practice can be based in meeting measurable performance goals (for self and others). Striving (or not) to meet such targets can be viewed as aspects of workers' self-management, that is, personal practices enacted as means of managing what others think of them. Such practices address issues of relationship management that are foundational aspects of personal epistemology.

Smith (2012) describes how one particular fire fighter, at the beginning of every shift, checked specific items of equipment to ensure they were fully operational so there could be no doubt about their functioning correctly when needed in an emergency response. From an organisational perspective there was no need of this extra checking because such checks had already been conducted by designated others. However, this fire fighter's previous experiences of supposed checked equipment failing to function correctly when needed stood now as a personal priority to be enacted. Further, this personal practice was additionally justified (beyond being a legacy of previous experience) as being personally purposed to support fellow fire fighters' need to know their colleague was reliable. In this way, those fellow fire

fighters could be confident, in the event of an emergency response, that their colleague was fully prepared and able to assist in their very dangerous work – to the extremes of life and death situations. The personal practice of checking equipment, premised primarily on addressing previously experienced equipment failure, was also partly enacted as a means of managing colleagues' perceptions. To colleagues, this fire fighter would be seen as reliable and, thereby, a worthy worker.

Such examples of workers' personal practice illustrate the importance of personal cares and concerns as foundational of how and why individuals enact their practice in the ways they do. To view workers as merely pressed to make these choices and the occupational changes they generate through this exercise of agency is to over emphasise contextual influence and mitigate the significance of the personal values and priorities workers bring to their practice. These priorities also include the unique ways workers approach their learning and the preferences they enact as evidence of these approaches. Learning practices of observing, listening, imitation, questioning, rehearsing and reflection, may well be considered universal due to human capacities and the social nature of work and the interactions with tools, colleagues and procedural systems that work requires. However, this universality is not consistently practiced. An appreciation of individual differences (be they physical, psychological, ideological, etc.) alerts that workers' perception, apprehension and subsequent actions through the events of their practice cannot be homogenised by similarities of work instances and task requirements. Smith (2005) describes a novice fruit and vegetable packer's self-account of thoughtfully considering and reflecting on the requirements of his next task while being berated by the supervisor for mistakes made on an earlier order. The worker describes how the supervisor's actions, requiring him to stop what he was doing and pay attention to what he was being told, afforded him some time away from the immediate demands of his work and how he chose to use the time to think more fully about what was to come rather than what was actually occurring in the moment. This worker was purposefully not listening to the supervisor. This choice was not evident in his actions as he stood quietly before the supervisor. His personal approach to this learning experience highlights that listening is a personal practice, a prerogative exercised through choice and not a learning process that can be assumed because of the seeming curriculum and pedagogic qualities of the circumstances of work. Similar person dependent practices were evident when fire fighters were given opportunity to inspect the site of a fire they had attended the evening before (Smith 2012b). Such opportunities are extended to fire crews when senior managers are of the opinion that the site inspection in the full light of day could assist their training through reflection and debrief. Some fire fighters choose not to attend, describing the experience afforded as previously unhelpful and therefore likely to be so again. Yet, others welcome the experience and describe it as supportive of their learning as they can retrace their movements and see more clearly the results of their actions that were enacted in circumstances of very limited visibility and extreme danger.

In sum, learning in the circumstances of work is a highly person dependent practice. How workers construe and construct their learning though the experiences their work affords is the relational and interdependent process of engaging in and with all

the resources that comprise that experience. A significant and discernible set of those resources are workers themselves who bring unique personal epistemologies (e.g., skills, dispositions, priorities, values, etc.) to the negotiations between curriculum and practice, between self and situation and between current occupational practice and its press for transformation into better ways of doing things.

## 27.5 Transacting Practice Through the Negotiations of Learning

Learning in the circumstances of work, that is, the circumstances of professional practice as they are shaped by the specific requirements and particularities of situated production, is conceptualised here as the threefold integration of (i) the experience of curriculum that is (ii) mediated through pedagogy and (iii) enacted as personal practice. This integration constitutes practice as the interactive enactment of knowledge (Billett 2010a, b) that is always socially sourced and transformed through the collective and individual tensions and dynamic qualities of work. Contemporary work is characterised by contest and competition, by risk and immediacy, by temporary solutions and unceasing problems and by creative invention and opportunity as well as accident and insecurity (Beck 2000; Bauman 2000).

Bauman (2000) has described this complexity as 'molten capitalism', drawing on the metaphor of the immense power and volatility of the planetary core to capture the force and ceaseless pressures of globalised production, marketing and consumerism that makes work (as social institution and personal practice) unstable and unpredictable. In ways that retain this metaphor, Beckett and Hager (2001) describe the personal practice of work as 'hot action'. By this is meant that work is increasingly characterised as the difficult endeavour of meeting the pressured demands of taking responsibility for being ill prepared to make the immediate decisions necessitated by newly emergent problems, all with the "nagging doubt that action might be inadequate – superficial, hasty and inappropriate" (Beckett 2001: 74). Clearly, from these perspectives, urgency, danger, risk and anxiety are central qualities of work (Beck 2000). However, more than volatile, the complexity of contemporary work is better captured by the speed and continuity of its transformation (Vallas 2001; Doogan 2009), that is, the degree by which occupational practice is changing.

### *27.5.1 Occupational Change*

In its manifestation as occupation, that is, as the identification and demarcation of specific vocational practice, work identifies distinct capacities and requirements that categorise and valorise its complexities. For example, fire fighters risk life and

limb in social service. Their work is dangerous, physically and psychologically threatening as they deal with the destruction and trauma that fire can cause. Yet, the nature of fire fighters' work is changing as modern building regulations and safety systems are reducing the number of fire emergency responses. Increasingly, fire fighters' work involves attending motor vehicle accidents and engaging in public education exercises for the benefit of those such as property developers, highrise building managers and residents and school children (Smith 2012). The occupation of fire fighter is being transformed, and with it, new dangers and risks emerge as vocational practices that now include the dissemination of information, the development of interpersonal and organisational communication skills and the capacity to develop teacherly rapport with young school children are enacted. Given that learning and work co-occur and are dependent upon enactment of occupational practices, it is necessary to understand the form and dynamics of those practices. Indeed, their changing form, status and organisation all shape how participation in and learning through work co-occurs and does so, perhaps more evidently, in times of increasing economic turbulence and transforming occupational practice.

However, beyond addressing specific human needs, occupations are also both shaped and transformed by societal developments, including their history, technology and population. For instance, the organisation of work and the concept of skilled workers developed distinctly within Western and Chinese traditions, possibly on the basis of differences in populations. Skilled craft workers in Europe required an array of skills to perform the entire tasks required of trades workers in their locales with relatively small populations (Deissinger 2002). Yet, in Imperial China, the population was so large that the need to produce mass quantities of products arose far earlier than in Europe, and realised through teams of workers working together and contributing their specific set of capacities, (Barbieri-Low 2007; Ebrey 1996) rather than through solitary crafts workers fashioning the entire artefact, as in Europe. Indeed, the mass population and early development of metal working, porcelain, printing, woodworking and lacquer work in Imperial China was based on modular forms of construction, manufacture and even writing (Ledderose 2000) that has only existed in western countries in the most recent of times and led to distinct premises in occupations and occupational practice. So, the occupations individuals engage in likely arise from societal need, are manifested in particular cultural contexts, have standing and means of participation that are often societally-premised (Billett 2011). Moreover, these factors directly shape or even regulate access to these experiences. As noted earlier, the legitimacy and standing of occupations is linked to their perceived and accepted importance. The ability to access and engage in practice, participate in activities and interactions associated with the occupation mediates opportunities for individuals learning about those practices. For instance, learning a craft trade in many countries requires securing employment as an apprentice. Those unable to secure such employment cannot learn the trade, regardless of their interest in and potential to be a good tradesperson. In some countries, eras and situations, apprenticeships have been exercised within family or community (Aldrich 1999). For example, being apprenticed is restricted to members of a particular community for sustaining customary practices (Singleton 1989),

or to respond to local imperatives of ensuring young people are effectively employed and prepared (Aldrich 1999).

So, access to opportunities for learning can be constrained by societal and situational factors. Ultimately, this accessibility is also shaped by the fluctuating societal demand for the occupation, and any constraints associated with accessing and engaging in it.

Yet, beyond the manifestation of occupations in a particular country or region and era, is how they are enacted in a specific workplace at a particular point in time: the circumstances of work. Such are the diverse situational requirements, kinds of activities being undertaken and imperatives of the particular circumstances that they constitute the manifestation of occupational practice and what constitutes its performance requirements. For example, note the situational distinctions of the hairdressers and teachers referred to earlier. It is in these circumstances of professional practice that work and learning co-occur. And that co-occurrence, like the practices on which it is based, is evidence of the relational interdependence of societal, cultural, situational and personal needs, enactments and transformations that characterise occupations. Moreover, occupational practices, as advanced above, enable an understanding of learning in the circumstances of work as the integration of curriculum practices, pedagogic practices and personal epistemological practices. This conceptual framework enables the relational interdependencies of work and learning to be examined as learning practices that do not simply differentiate the contributions of the societal, situational and personal levels of engagement in activity, but, rather, as sets of integrated learning attributes or practices that are in constant negotiation and thereby, generative of learning through practice. At its simplest, individuals' integration of those practices may be viewed as a job and learning the exercise and action of effort necessary to perform that job and thereby indicative of the personal ways in which those practices are integrated. In more complex terms that integration may be viewed as the emergent and on-going process and product of the negotiations among all the resources brought together in and through its accomplishment. In this sense, learning through practice is the active evidence of those negotiations in action: the strategies available, enabled, deployed, the actions and decisions taken in evidence of this move and the outcomes accomplished and evaluated as the base of the next moves to be taken. From this perspective, learning in practice may be said to be transacted in the negotiations of curriculum, pedagogy and personal epistemology.

### *27.5.2 Purposeful Change – Negotiation and Transaction*

The fundamental quality of negotiations and the transactions by which they are enacted, is transformation. Transaction is a conception of activity that captures the inherent unity and connectivity that is the nature of all actions. All action is transaction (Dewey and Bentley 1975). Transaction conceptualises the constant state of flow and transformation of all that is experienced. Rather than interaction,

as if things are separate, come together and then separate again, transaction holds everything together (weakly or strongly) in the unity of simultaneous influence and continuity that are the necessary conditions by which human activity is collectively accomplished. Dewey and Bentley (1975) make this point in various ways. For example, the air is not external to the body. The body is always and simultaneously in the air and of the air. People do not interact with air. Rather, the transaction of breath transforms the gases of the air into essential elements of bodily function. Likewise, the transaction of farming and harvesting and eating transforms plants into food, into essential nutrients, to be further transacted through the chemical processes of cellular activity that sustain bodily function. Similarly, the transaction of felling turns trees into wood and the transaction of milling turns wood into timber and the transaction of building turns timber into structure and so on as the flow of negotiated activity transforms the resources enacted through the transaction of practice. Equally, as for things so for people. As Dewey and Bentley (1975) observe when using the example of a commercial transaction where goods are exchanged; there can be no buyer without a seller – "both *parties* (the idiomatic name for *participants*) undergo change; and the goods undergo at the very least a change of *locus* by which they gain and lose certain connective relations or "capacities" previously possessed" (Dewey and Bentley 1975: 276). So, for example, in the negotiations that transact the sale of a motor vehicle, the buyer is transformed to become an owner, the seller to become unencumbered of an unrequired asset, the vehicle to become, perhaps, a prised possession, no longer unrequired. Through transaction, as commercial exchange and as the enactment of bodily and occupational activity, the resources, processes and relationships that characterise one set of experiences are transformed to become the basis of yet another set of related experiences. From this perspective, in the circumstances of work, to learn is to transact occupational practice and so transform personal and cultural practice through engagement in the negotiations among curriculum, pedagogy and personal epistemology.

So, people (e.g., their perceptions, positions and self-understandings, etc.), the situational resources enacted (e.g., tools, processes, meanings, occupational practices, etc.) and the relationships between them (e.g., trainer, practitioner, supervisor, novice, colleague, friend, etc – in conflict, collaboration, trading, caring, etc.) are always changing through the transactions that bring and hold them together in generation of the new relationships, new practices and new understandings that characterise their togetherness. Learning is often the term used to describe and explain these changes. Recall the nurses' handover scenario referred to earlier. The nurses engaged in their routine handover activities are transacting their practice and through it all kinds of transformations are being enacted. For example, patients are being transformed as they move from being people who are description and evidence of a specific set of conditions and procedures that have been practiced to being people who will benefit from the continuing or altered treatment they are yet to receive. This transformation may be subtle and indistinguishable as when previous practice is re-enacted. Nonetheless, it has occurred. Sometimes this transformation may be pronounced as when decisions are taken to markedly alter treatment in pursuit of better patient outcomes for those who have not responded well to past

practice. Physically, the patient remains in their bed, a person to be cared for and respected. However, as purposes to be enacted, observations to be made and progress to be monitored, that is, work to be conducted, the patient is transformed through the considerations and conversations enacted by the nurses handover, particularly in relation to the prognosis stage of their practice. Patients may or may not notice the different ways they are treated when nurses' understandings of them change. However, this patient awareness is not the primary evidence of the transformation enacted. That evidence resides in the altered practices of the nurses who transact their work and learning in the circumstances of their practice that require handover consultations. Indeed, the transformation of patients may well be considered the primary purpose of nurses' practice. As much as the recuperative powers of the body are strong, so are the capacities of nurses' practices to enhance those powers through managed care that is a recognisable outcome of learning through practice. Nurses' practice may be conceptualised as transformation of the unwell into well (not necessarily physical) and this accomplished through the particular negotiations among curriculum, pedagogy and personal epistemology that constitute their practice. Such transformation is more than the transformation of the meaning of patients through negotiation. Rather, it is the actual transformation of patients (one of the many resources transacted in nurses' practice).

Similarly, the nurses are transformed as they transact their practice in the circumstances of work. Handovers demand active participation, the contribution of what is known and has been learned through the negotiations of the work. Patients' interactions with nurses, with medication, with family, with doctors, with the bed they are lying in, etc., are all important sources of information that need to be communicated and evaluated for handovers to be successful aspects of nurses' practice. Now aware of the altered conditions of their patients and the different practices that are planned for their on-going treatment, the newly arrived nursing shift moves into what could be described as reflective practice. This learning process begins with planning, is sustained through monitoring and culminates in evaluation. Just as nurses enact this reflective practice with a focus on their patients and evidence this in the handover, Jarvis (2004) advances that they, as adult learners engaged in socially directed activities, will similarly plan, monitor and evaluate themselves for the purposes of making sense of their experiences and making the necessary preparations for their next activity. Just as nurses practice transforms patients, so it may be considered to transform their understanding and practice of themselves, for example, as more or less competent, as more or less motivated or willing to embrace additional requirements of work, as more or less personally invested in the purposes of their work. Personal epistemology, more than the sum of what is brought to the negotiations of work, is constantly being transacted through practice as workers learn more about themselves through learning more about the procedures and requirements of their work.

As for nurses, so also for fire fighters, teachers, hairdressers and coal miners, who, as they transact their respective practices, transform themselves, their purposes and the very practices that mark the nature of their work. To capture the nature of this transformation and the working and learning on which it is based requires

a conception of practice that simultaneously comprises the distinctions of societal, situational/cultural and individual contributions to participation in work and the distinctions of curriculum, pedagogy and personal epistemology that mediate engagement. Concepts of negotiation and transaction can assist in making the diverse aspects and resources of practice more visible and accountable as learning. So, learning in the circumstances of work is the relational enactment of numerous interdependent elements of practice, the process and product of which is the continuing transformation of that practice. This enactment and transformation may be conceptualised as negotiation, that is, the purposeful bringing together of all the resources necessary to individuals' engagement in socially derived activity. Further, these resources may be viewed as comprising the integration of curriculum, pedagogy and personal epistemological practices.

In these terms, the promotion and improvement of learning through practice resides in making more explicit and open to evaluation the transactive nature of learning and supporting learners to negotiate more astutely and forcefully within the negotiations that constitute their particular circumstances. For example, curriculum is more than the content of what is to be learned. Rather, it is a set of intentions, actions and experiences that learners, those engaged in the immediacy of enacting professional practice, need to be aware of and supported to construct and manage as it is transacted. So where the intentions of curriculum reside wholly with instructors and accreditation regulators, this needs to be acknowledged and flexibilities established that enable learners' contributions both initially and throughout the processes of enacting, not others' intentions, but the negotiated intentions of all parties concerned. In this way, the transactions of professional identity and practice that will ensue through learning are explicit, open and accessible as shared experience rather than implicit, that is, closed and unrevealing of the compromise and contestation that marks ones enactment of others' intentions. Similarly, pedagogy is more than the methods of delivery adopted by instructors. Rather, it is the enriching qualities of learning experience. Much of what is undertaken in practice has pedagogic capacity that needs to be acknowledged and interrogated particularly given the learning practices of observation and imitation that underpin the bases of guidance that work and workplaces afford workers. And equally, personal epistemologies are more than workers' previous learning dispositions. Rather, they are sets of values, priorities and aspirations that mediate what individuals will invest themselves in and how much of themselves they will invest. Engaged and motivated learners cannot be assumed within circumstances of work that are increasingly characterised by change. Learning support requires assisting those who enact professional practice to be self-aware, cognisant of the preferences and prejudices they enact in their learning and how these act as criteria by which they evaluate their learning and qualities of the context in which it is enacted. Such criteria should not be simply accepted or assumed by those who support learning. Rather, encouraging and supporting learner engagement resides within the negotiations of what constitutes quality and how it is to be recognised and accomplished. These negotiations need to be explicit and all involved aware of how and why they contribute to these negotiations in the way they do.

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