

TOWARD A WORKPLACE PEDAGOGY: GUIDANCE, PARTICIPATION, AND ENGAGEMENT

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This article proposes bases for a workplace pedagogy. Planes of intentional guidance and sequenced access to workplace activities represent some key workplace pedagogic practices. Guidance by others, situations, and artifacts are central to learning through work because the knowledge to be learned is historically, culturally, and situationally constituted. However, the quality of learning through these planes of activities and guidance is ultimately premised on the workplace's participatory practices, which shape and distribute the activities and support the workplace affordances workers and from which they learn. Situational and political processes underpin these workplace affordances. Yet participatory practices are reciprocally constructed because individuals elect how to engage in and learn from what workplaces afford them. A workplace pedagogy is founded in these coparticipatory practices and needs to account for how workplaces invite access to activities and guidance and how individuals elect to participate in what the workplace affords.

Over the past decade or so, interest in workplaces as learning environments has intensified. Much of this interest is founded in pragmatic concerns associated with reducing the cost of vocational skill development and enhancing its access and relevance to industry sector needs as well as pertinence to particular enterprise requirements (Boud & Garrick, 1999). Other, perhaps more enduring, interests, however, are now pressing for the formulation of a workplace pedagogy directed at developing expert vocational practice through work and throughout working lives.

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First, for many workers—indeed, for large cohorts of workers across a range of industry sectors—the workplace provides the most likely situation to initially develop vocational knowledge. For these workers, there are either no existing courses for their vocational specialization, or those that do exist are either inaccessible or inappropriately presented to workers or both (Billett, 2001a). Accordingly, the experiences and support provided by workplaces are often the primary or only sources of individuals' initial learning of their vocational practice as well as its further and ongoing development throughout their working lives.

Second, workplace experiences make important contributions to learning vocational practice. Many highly prized vocational preparation programs (e.g., for the trades, law, medicine) include lengthy periods of workplace experiences (e.g., as apprentices, articulated clerks, interns). Acceptance into these vocations is not possible without lengthy periods of workplace practice supervised by more experienced coworkers.

Third, workplace experiences are increasingly being prized in educational programs for diverse purposes ranging from understanding the world of work, the development of specific vocational skills or to contextualize what has been learned in educational institutions. However, it is the exception that workplace experiences are conceptualized as providing kinds of learning that are legitimate in their own right. Instead, they are often seen as providing experiences that augment and support what is being taught in educational institutions.

Fourth—and perhaps most important—most of the ongoing development of workers' skills throughout their working lives will occur through participation in work. Vocational practice changes and the requirements for work performance transforms over time. Therefore, robust, strongly empirical and conceptual bases for how learning at work should best proceed—a pedagogy for the workplace—is now urgently warranted to inform how vocational development should proceed through working lives. This pedagogy is particularly important during a period in which many enterprises are withdrawing their responsibility for the maintenance of their workers' skill currency, viewing this as an individual obligation (Carnoy, 1999). Without a clear account of how learning proceeds at work, it is difficult to appraise the consequences of this pedagogy for the workplace or other issues associated with learning through work.

Therefore legitimate, worthwhile, and pressing reasons exist to formulate a workplace pedagogy. The pragmatic interest of governments, industry, and enterprises in workplaces as learning environments needs to be countered by a consideration of workplace pedagogic practices that aim to develop robust vocational practice in individuals. This means the development of the capacities that permit individuals to liberate their practice from the particular circumstances in which it was initially learned in to apply it elsewhere and to new tasks. However, this is likely to be a hard-earned goal and unlikely to be achieved without intentionality in the organization of workplace activities and support. For these reasons, understanding

how individuals can best learn at work constitutes a worthwhile educational and pedagogical project (Boud & Garrick, 1999).

Everyday participation in work activities has been shown to develop many of the capacities required for effective work practice (Billett, 2001a). In addition, the use of intentional guided learning strategies has demonstrated a capacity to augment the contributions of these everyday experiences by making accessible and developing understanding and procedures that are unlikely to be learned alone (Billett, 2000). Although these contributions are salient, a workplace pedagogy, however, needs to comprise more than intentional guided learning through work. Other, and more foundational, factors need to be included. Central to these are workplace participatory practices: Engaging in work activities that are novel and thereby extending individuals' capacities, securing appropriate guidance from experienced coworkers, and being able to access practice in prized tasks are all salient in developing, honing, and extending individuals' vocational knowledge. These kinds of participation likely lead to the development of robust vocational practice. However, access to these opportunities is not always distributed evenly across workforces, as they are subject to workplace practices that reproduce inequities through contested workplace relations. These relations may seek to marginalize women, non-English speakers, migrants, and others (Bierema, 2001; Hull, 1997; Tam, 1997). Workplace cliques and affiliations serve to distribute opportunities to participate and learn by affecting access to guidance and prized activities. So the opportunities afforded to individuals to participate in and learn through work are shaped by workplace norms and practices and by intentions associated with learning to sustain the work practice—albeit protecting and promoting the particular interests and affiliations of groups or individuals within the workplace.

However, workplace affordances only represent one side of the reciprocal processes of participation and learning. Individuals' agency also mediates engagement with activities and what is learned through participation. They might elect to engage effortfully in some components of vocational activities, although participating less effortfully (or even resentfully) in others. In all, individuals' engagement with work is held to be coparticipative—an interaction between how the workplace affords participation and how individuals elect to participate in that social practice. In these ways, individuals' thinking, and acting, and learning through work is shaped by reciprocal social contributions that compose the cognitive and social experience (Valsiner & van der Veer, 2000). These include the kinds of goal-directed activities that can be accessed, the kinds of goals they are seeking (which are often constituted situationally), the culturally derived norms and practices that shape participation in the vocation, and the transforming expectations about performance, as well as the unique but socially derived personal histories of the individuals themselves that constitute the cognitive experience.

These reciprocal workplace participatory practices are central to understanding learning for and in the workplace. Accordingly, the following three bases for a

workplace pedagogy are proposed: (a) how the intentional and indirect guidance that can be accessed as part of everyday work activities; (b) how workplaces afford opportunities to participate in work activities and access guidance; and (c) how individuals elect to engage in workplace learning, subject to workplace practice.

The argument commences with a brief rehearsal of views about how learning through work proceeds as an interpsychological process. This review elaborates the centrality of participatory practices in considering learning through work. This theme is developed further in the next section, which discusses the role of direct guidance for learning that would not otherwise be realized through individual engagement alone. However, as access to opportunities such as direct guidance are subject to the social and political factors that compose workplace norms and practices, bases of workplace affordances are discussed next in terms of participatory practices that reflect these interests. This is followed by an elaboration of the reciprocal nature of workplace participatory practices through a consideration of individuals' engagement in work and concludes with a consideration of how an orientation toward workplace learning might progress.

LEARNING THROUGH WORK

Investigations in a range of industry sectors (i.e., coal-mining, secondary processing, transport, clerical, distributive, service, manufacturing, and the public sector) have used workers' experiences and views to identify key contributors to the learning of their vocational practice through work (Billett, 2001a). These are as follows: (a) engagement in everyday work tasks, (b) direct or close guidance of coworkers, and (c) indirect guidance provided by the workplace itself and others in the workplace. These workers proposed that the workplace provides authentic learning experiences that are highly applicable to the circumstances in which they are learned. Everyday work activity can also provide combinations of new learning and practice that can assist, reinforce, refine, and extend what was initially learned. However, there is no guarantee that what is learned in one workplace at one point in time will adapt to novel workplace tasks or to other situations and circumstances (Lave, 1990).

The views of these workers are also consistent with those found in both the cognitive and sociocultural constructivist literatures. These literatures hold learning to be the product of engaging in goal-directed activities (Rogoff, 1990, 1995; Scribner, 1984), which entails encounters with impasses or problems of different kinds (Greeno & Simon, 1988; Prawat, 1993), such as those encountered at work. The negotiation with and resolution of these tasks (even if it is partial) has cognitive consequences as these activities transform individuals' knowledge. From the cognitive view, the kind of goal-directed activities individuals engage in—for instance, whether they are routine (familiar) or nonroutine (novel) activities—has consequences for what is learned at work (Groen & Patel, 1988). Frequently engaged work tasks serve to reinforce and refine, or hone further, what is already known, whereas work

tasks presented as new activities with novel requirements are the source of new learning that extends what individuals already know. Therefore, depending on their novelty to individuals, workplace activities likely serve to reinforce, refine, or transform individuals' existing ways of understanding and responding to workplace tasks. Hence, different kinds of learning are likely to arise from participation through work, depending on the degree and frequency of these experiences. For instance, midwives claim to develop a highly nuanced understanding of a birthing mother's progress from having engaged in hundreds of birthing situations of different kinds (Billett, 1999). They contrasted their nuanced way of knowing with that of gynecologists, who only regularly engage with part of the birthing process and often only with particular (difficult) kinds of cases.

This example also promotes another attribute. Workplace artifacts—such as objects, signs, tools, and symbols—also provide access to the knowledge required for performance, as do other forms of visual clues and cues provided by observing coworkers (Scribner, 1984; Suchman, 1997). As Lave (1990) found, these less direct forms of social guidance provide access to subgoals and goals for performance as well as approximations of procedures for achieving those goals, which workers gain through observing and interacting with other workers and the workplace. In these ways, access to goal-directed activities and guidance shaped by and linked to the requirements of particular workplaces, workplace experiences distribute opportunities for individuals' learning.

However, through the same workplace studies, workers also identified limitations associated with learning through work (Billett, 2001a). These limitations include the following: (a) learning that is inappropriate (e.g., dangerous, shoddy, inflexible practices), yet available and reinforced in workplaces; (b) the contested nature of work practice inhibiting individuals' access to activities and guidance required for rich learning; (c) difficulties in learning knowledge not readily accessible in the workplace (e.g., conceptual and symbolic knowledge); (d) difficulties with accessing appropriate expertise and experiences required to develop vocational knowledge; and (e) the reluctance of workers to participate in learning vocational practice through their workplace experiences. Therefore, despite the significant contributions of everyday work experiences, they alone may not always provide access to or develop the kinds of learning required to perform in that workplace. Nor does it follow that everyday work experiences are conducive to adapting or transferring workplace learning to other circumstances and situations. Hence, learning solely through participation in everyday work activities may not be a sufficient basis for adapting to the changing demands and requirements of work throughout working lives.

To consider how to enhance workplace learning experiences and address some of these limitations, it is necessary to elaborate on the mediating roles of more experienced coworkers who have already learned the knowledge required for performance at work. These roles comprise pedagogic practices including avoiding or mitigating against learning dangerous or inappropriate practices, facilitating access

to work activities and guidance, assisting in accessing knowledge that is hidden or inaccessible, making hard-to-learn knowledge accessible, and the securing of effortful engagement by learners. These contributions are discussed below, as guided learning at work.

GUIDED LEARNING AT WORK

Coworkers' pedagogic practices can influence the quality of learning experiences. Principally, these practices are of two kinds: (a) the direct interpersonal guidance in assisting less experienced workers to access and develop capacities that they would not secure through discovery learning alone and (b) managing and guiding access to workplace experiences. To elaborate, the knowledge required for vocational practice does not emanate from within the individual. Instead, it is socially constituted and refined over time. Therefore, interpsychological processes (Vygotsky, 1978)—those between the individual and social sources—are essential to individuals' development of vocational knowledge as these interactions provide access to knowledge that has social geneeses. Direct guidance by experienced coworkers and indirect support and guidance from workplace artifacts and other workers aid access to socially derived knowledge and assist in the development of the intrapsychological (within the individual) attributes required for workplace performance. The transfer from the social to the individual often requires the mediation of social partners who have already appropriated that knowledge. Direct guidance is most salient when it makes knowledge accessible to learners that would otherwise remain inaccessible. Learning this knowledge alone may be too difficult (e.g., the knowledge is hidden) or inappropriate (e.g., imprudent shortcuts might be learned).

It is possible to identify key roles through which more expert others can guide the learning of individuals in the workplace. More experienced coworkers can be instrumental in assisting learners' development through managing the pace and the sequencing of activities for learners. Usually, some sequencing activities exist in workplaces that represent a pathway of experiences along which individuals progress toward fuller participation in the work practice. This pathway is analogous to what Lave (1990) referred to as the "learning curriculum," premised on access to tasks of increasing criticality and accountability. That is, sequenced access to activities is that which moves from those where imperfect performance has negligible consequences through to activities that have high levels of criticality and where mistakes carry significant consequences. For instance, hairdressing apprentices initially engage in tasks associated with keeping salons clean and tidy and getting drinks for clients. Successful performance in these tasks comes before engaging in more accountable tasks such as washing and removing chemical treatments from hair, and then later the shaping, cutting, and coloring of hair. The development of procedures required for autonomous practice—without the need of conscious thought—such as cutting hair, coloring, selecting hair treatments, may also require

access to guided practice. This guidance includes being sensitive to learners' readiness to progress to more accountable tasks and being realistic about expectations of learners. For instance, learning initially might focus on the development of specific procedures (e.g., wiring a power point), with the performance requirements being linked to current and tangible goals (e.g., flow of electricity), before moving on to consider a wiring scheme for an entire building. This development includes the learning of heuristics (e.g., tricks of the trade) that assist with easy performance with workplace tasks. Together, these contributions can illuminate a pathway of activities (the workplace learning curriculum) that leads to full participation in and competence with hard-to-learn tasks that require direct guidance to be learned. It is these kinds of pedagogic practices that can augment the contributions of everyday work activities and inhibit some of the limitations of learning through work identified earlier.

From these considerations, workplace pedagogic practices comprising three interdependent planes of guided engagement with work activities are proposed as bases to assist the development of a robust vocational practice—a practice that can respond to the transforming requirements of work places (see Figure 1). These planes are as follows: (a) everyday participation at work, (b) guided learning for work, and (c) guided learning for transfer.

The first plane comprises the organizing of access to and the guidance and monitoring of engagement in work activities of increasing accountability, including access to the direct and indirect guidance that workplaces provide freely through everyday work activities. Access to the knowledge to be learned is also provided through observing and listening, as well as understanding the goals required for work performance.

The second plane comprises direct guidance in the form of intentional learning strategies (e.g., modeling, coaching, questioning, analogies, diagrams) directed toward developing the values, procedures, and understandings that would not be learned through experience or discovery alone. These strategies aim to develop both specific and strategic procedures (e.g., through the use of modeling, coaching, and questioning) and to make accessible and develop workplace concepts through direct interaction and shared engagement between more and less experienced coworkers (e.g., through the use of questioning, diagrams, analogies, explanations). Also embedded within workplace practices and concepts are the dispositions (i.e., values, attitudes, and norms) that underpin the work practice of the particular workplace and apply more widely to the vocational practice. For instance, these dispositions might include the requirement for care with hygienic practices and what that means in different food production or service provisions. Vocational practices require the enactment of particular values—for example, doctors being discreet, pilots being careful, nurses caring, teachers exhibiting fairness. As their purposes may be opaque, the promotion of these values and making their salience accessible may require guidance by more expert coworkers. Guided participation at work may enhance the prospect for learning effective vocational practice, including

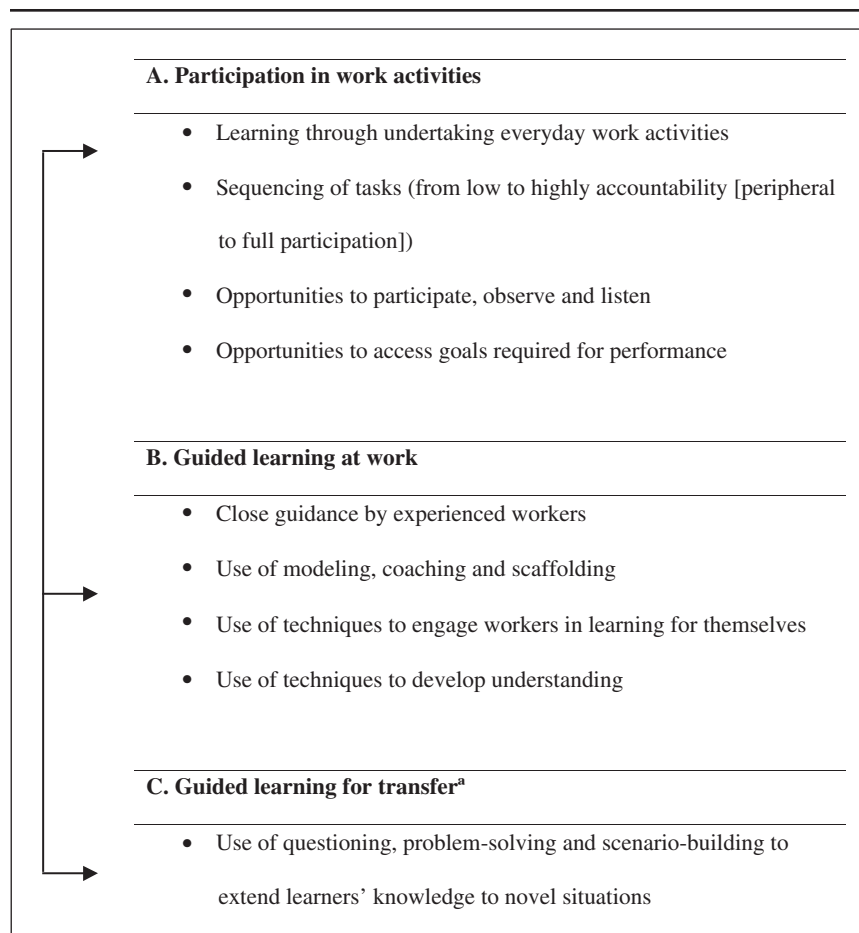


Figure 1. The Three Planes of Workplace Pedagogic Practices

a. Transferable outcomes will also be developed on the other planes.

its application to other related vocational tasks and new circumstances as the requirement for work change. These strategies and interactions have been shown to assist in the development of these attributes (Billett, 2000, 2001a).

The third plane of guidance focuses on extending the adaptability of individuals' knowledge to other situations and circumstances. This adaptability is aimed to be achieved through specific strategies (e.g., questioning dialogues and group discussion) to assist individuals to appraise the scope and limits of their knowledge and evaluate the prospects of its transfer to novel tasks and new circumstances. These

strategies purposefully incorporate projective practices—attempts to consider how individuals' current knowledge can be extended to use in other situations and circumstances. In the cognitive literature, this adaptability of learning is referred to as *transfer*. However, the cognitive view of transfer refers to the reapplication of knowledge within a domain based on a unitary view of the domain as something to be learned uniformly by individuals. The sociocultural practice view incorporates the idea of domains being shaped by the social practices where the knowledge is deployed and learned (Cole, 1998; Scribner, 1984). Importantly, this adds a social dimension to the development of adaptable use of learned knowledge and accepts that both cognitive (individual) and social experiences shape cognition (Meade, 1913; Valsiner & van der Veer, 2000). In doing so, this perspective de-emphasizes a reliance on the individual as a skilful thinker (e.g., Glaser, 1990). As Lave (1991)—an anthropologist—suggests, transfer is not like the frog leaping from lily pad to lily pad to catch the fly, instead different social practices have diverse bases and contexts and, therefore, performance requirements. There are different bases for what constitutes expert vocational practice in different situations in which the practice is being enacted (Billett, 2001c; Engestrom & Middleton, 1996). How the knowledge of hairdressers, cooks, or builders is required to be deployed varies across hairdressing salons, restaurants, and building sites because the requirements for what constitutes performance and the bases by which those judgments are different. Moreover, the application of previously learned knowledge can be obscured by practices that might mask commonalities. For example, how food service or cooking is practiced in different kinds of restaurants and in different cuisines may well mask invariance that will assist the broad application of knowledge. More experienced coworkers can illuminate similarities in goals and practices (e.g., inquiring about clients' needs and providing available food in a timely fashion and with a presentation that reflects the restaurant's character) in what might seem quite different practices. In these ways, learners can be guided to see both variance and invariance across workplaces where the same vocation is practiced.

These three planes of workplace pedagogic practices should not be seen as distinct and separable. They are to be enacted synchronously, albeit in a balanced way, as part of everyday work activities (as indicated in Figure 1). Together, these planes of guidance constitute workplace pedagogic practices that can promote the learning through work. As such, they comprise elements of a workplace pedagogy.

WORKPLACE AFFORDANCES

However, despite the significant contributions of the pedagogic practices composing guided participation (Rogoff, 1995), there are more foundational and pervasive workplace participatory practices. These practices influence individuals' learning in the workplace by shaping their participation in work. Workplaces afford learning through participation in work activities, direct guidance (e.g., interactions with coworkers), and indirect guidance (e.g., observing and listening in the

workplace). How the workplace provides and supports—affords—these activities, and offers guidance, shapes both the unintentional (e.g., everyday contributions of work activities) and intentional learning activities (e.g., direct guidance by experienced coworkers). That is, the workplace shapes learning through the kinds of access provided for learners to engage in particular kinds of activities and the direct and indirect guidance that individuals are able to access.

However, these affordances are not distributed equally across the workplace, which has direct consequences for individuals' learning. For instance, workers restricted to routine work (familiar tasks) may never learn a wider range or diverse procedures because they are inhibited from participating in new tasks. Similarly, the availability and quality of access to direct guidance will also determine the learning of knowledge that is not easily learned alone. In these ways, opportunities afforded by the workplace and coworkers' willingness to provide this guidance are also key pedagogic practices. Those individuals afforded rich access and guidance likely achieve quite different (i.e., potentially better) outcomes than those unable to secure this level of support. Although those denied rich support can still learn through activities and indirect guidance, including interactions with and observation of other workers, artifacts, and the physical environment, these outcomes may not be wholly adequate. True, the apprentices in Lave's (1990) study learned the concepts and procedures required for tailoring with little or no direct guidance. However, the requirements of much contemporary work are perhaps less easily accessed than they are in tailoring, where they are largely observable. The increasing need to learn the symbolic knowledge required by technology (Martin & Scribner, 1991), the opaque quality of work processes obscured by technology (Barley & Orr, 1997), the remote processes of technology work (Zuboff, 1988), and the complex relations between coworkers (e.g., Bernhardt, 1999) place a greater emphasis on gaining access to understandings and procedures that may not be learned through discovery alone. This heightens the need for the workplace to be invitational in providing access to hard-to-learn knowledge. Yet workplace affordances are constituted and distributed by workplace hierarchies (Danford, 1998), work practices (Darrah, 1996), historical development, group affiliations (Billett, 1995), personal relations, workplace cliques, and cultural practices (Hull, 1997). So potent political (Solomon, 1999) and power relations (Fenwick, 2001) are played out in the workplace in ways that shape participation and therefore learning. Women, for instance, often find workplaces uninviting for their participation and development (Bierema, 2001).

So beyond or even instead of judgments of individuals' competence, opportunities for participation are distributed on a diverse range of socially derived bases. These include workplace and other affiliations, individuals' acceptability, willingness of more experienced workers, and the status and bases of individuals' or cohorts of individuals' employment. Take employment bases first. Contingent workers (i.e., those who are part-time and contractual) are particularly susceptible to securing only limited workplace affordances (Grubb, 1996; Hull, 1997). Part-

time contractual and home-based workers are often rendered peripheral by their mode of participation at work and may have difficulty maintaining their competence in the constantly transforming requirements for work practice (Noon & Blyton, 1997). These workers may struggle to be kept informed and to be granted opportunities to expand their role and access support. Part-time women workers have particular difficulty in maintaining their skills currency and are frustrated in realizing career aspirations (Tam, 1997). Nevertheless, concerns about restrictions on participation are not restricted to part-time workers. The acknowledgment of performance, support, and intentional opportunities for learning is directed toward high-status workers (Darrah, 1996). Those whose role is less valued in the workplace, or whose status is low, may be overlooked—even when they perform demanding and essential work tasks.

Demarcations of workplace tasks can also influence participation at work. For example, the industrial affiliations of coal workers determined which workers were granted access to prized workplace tasks (Billett, 1995). The influence of personal affiliations is also pervasive. These affiliations may determine how information is shared and with whom, how work is distributed, and how individuals' efforts are acknowledged and judged. This kind of workplace contestation seems to be an enduring feature of work practice. It is likely to exist between “newcomers” or “old-timers” (Lave & Wenger, 1991) (as concerns about displacement are manifested with the arrival of newcomers); between full- or part-time workers (Bernhardt, 1999) (as concerns with workloads, displacement, and the quality of work tasks become salient); and between workers with different roles and standing in the workplace (Darrah, 1996; Hull, 1997). Tensions also occur among institutionalized arrangements such as those representing workers, supervisors, or management (Danford, 1998). In these ways, the invitational qualities of workplaces—what the workplace affords individuals—are far from being benign. They shape how opportunities to engage in activities and guidance are made accessible to and distributed in workplaces.

The prospects for the adoption and implementation of the guided approach to learning described above are premised on the invitational qualities or workplace affordances (Billett, 2001b; Billett & Boud, 2001). As noted, each workplace is likely to have a particular pathway of activities and goals that are a product of its unique activity system. These pathways may not be commonly thought of as structuring the workplace curriculum and learning experiences, if assumptions of school-based pedagogies are adopted. However, these pathways are central to a workplace pedagogy founded on activities and guidance. This structuring reflects the need for continuity of practice, including the contestation between the competing interests of cohorts of workers in the workplace (e.g., full-time and part-time workers). In these ways, the kinds of activities and guidance afforded learners by the workplace, and the power and political relations that shape these affordances (e.g., Fenwick, 2001; Solomon, 1999), compose key pedagogical foundations.

In sum, how the workplace invites and structures individuals' participation in work shapes the kind and quality of their learning. This is likely to be particularly true where the knowledge to be learned requires the close guidance of coworkers to access and understand it. So participation in workplace activities and access to guidance is contested and distributed asymmetrically premised on workplace affiliations, fear of displacement, status of employment, acceptability of individuals or groups of workers, and perceptions of personal competence. In these ways, workplace norms shape participatory practices and, in doing so, mediate individuals' learning of the vocational practice as it is constituted in the particular workplace. These bases represent key pedagogic practices.

However, participation and learning are reciprocal processes. It is therefore also necessary to consider the relationship that exists between what workplaces afford and individual's interpretation of and interest in engaging in what is afforded them. The next section discusses this reciprocal dimension of learning through work.

ENGAGEMENT WITH WORKPLACE ACTIVITIES AND GUIDANCE

Despite the strong contributions provided by workplaces, individuals' participation in and learning from workplace experiences are not wholly situation determined. Individuals' agency also influences how they elect to participate in work activities, as well as interpret and respond to the affordances of the workplace. Learning new knowledge (i.e., values, understandings, and procedures) is effortful and interpretative and not constructed uniformly. Therefore, how individuals engage in work activities and interpret the worth of that participation will also influence the quality and nature of their learning (i.e., how they engage with, construct, and organize the knowledge that is afforded). Workplace affordances are not constructed objectively. The offer of guidance by more expert coworkers might be construed by individuals as being welcomed and supportive guidance or as an affront to their competence. For example, the best efforts of a workplace mentor and a structured induction program were rejected by a new employee who believed his own competence to be greater than his mentor's and his own practices superior to those of the workplace (Billett, 2000). To take another example, coal miners perceived offers of additional safety training as the mine site management's attempt to delegate the responsibility for mine safety to the miners. Consequently, they engaged reluctantly and skeptically with this workplace training (Billett, 1995).

The concept of individuals exercising their agency through their engagement in social practice is consonant with the reciprocal process of learning socially constituted knowledge. Individuals' agency—how they exercise autonomy in thinking and acting—is likely shaped by their personal histories (Cole, 1998; Scribner, 1985). These histories result in particular ways of knowing and responding to the social experiences in which they engage (Billett, 1997). The interdependence between the cognitive and social experiences is well acknowledged in the learning

of socially derived knowledge (e.g., Meade, 1913; Valsiner, 1994) and in sociologically derived theories where the relationship between agency and structure is well elaborated. Giddens' (1984) theory of structuration proposed relations between social structure and human agency, and Davies (2000) accentuated the contested character of that relationship. From an anthropological perspective, Lave and Wenger (1991) proposed "a theory of social practice [that] emphasizes the relational interdependency of agent and world, activity, meaning, cognition, learning, and knowing" (p. 50). Valsiner (1994) referred to the degree of relatedness between the individual's interests and values and those of the social practice. The greater this relatedness, the greater the likelihood of full-bodied and committed participation and the appropriation of the social experience, rather than its rejection or at best superficial compliance (Wertsch, 1998). Of course, discord between the individual and the social practice can also lead to rich learning arising from dissonance rather than relatedness. Such learning can lead to a rejection or disidentification with the practice that was supposed to be learned (e.g., Hodges, 1998). Moreover, as noted, individuals participate simultaneously in a range of social practices. The effort and attention directed to each practice is unlikely to be uniform, with individuals' interests and priorities mediating their participation in work. For instance, workers engaged in one set of workplace training may be uninterested in another if it falls outside their vocational interest or immediate career path.

In sum, relations between individuals' interests and the values of the work practice are a central mediating factor in determining their engagement in work practice and the kinds of learning that arise. In this way, individuals' engagement and learning is interpretative, critical, and reciprocal.

TOWARD A WORKPLACE PEDAGOGY

It has been proposed that the reciprocal participatory practices in the workplace constitute the foundations for a workplace pedagogy. These foundations shape the prospects for the kinds of learning provided by everyday workplace activity as well as those through intentional pedagogic practices, such as guided learning at work. Premised on reciprocity between what the workplace affords and how individuals engage in the workplace are three key interdependent elements of a workplace pedagogy. The first is the intentional structuring of participation in activities and the provision of guided participation to supplement the contributions provided freely through engagement in everyday work activities. The second is to acknowledge the consequences of different kinds of workplace affordances. How individuals are permitted to participate in workplace activities, the kind of activities they are able to participate in, and the support they are afforded are central to the quality of their learning. The third element emphasizes the role of individuals' agency in shaping how they engage in workplace activities and what they learn through their participation. Effortful and full-bodied engagement by individuals is likely to be required to develop the robust vocational practices and concepts rather than situationally

specific knowledge. The basis of this engagement is located in relations between the workplace's invitational qualities and individuals' interest as shaped by their personal, albeit socially derived, history.

However, having discussed the processes of learning and the vocational goals, there remain legitimate and largely unresolved concerns about the worth of and the process of what is learned through work. This learning is sometimes assumed to be concrete (Marsick & Watkins, 1990) and procedural rather than conceptual (Ericsson & Lehmann, 1996). It is perhaps too easy to categorize and dismiss workplace learning as being technicist or reproductive, on what are claimed as objective bases, intents, and goals. Given the basis of critical engagement that individuals employ when participating in social practice and in the construction of knowledge, such easy critiques need to be carefully reappraised. Also, for many, the exercise of their paid vocation has purposes that go beyond just securing remuneration. It also embodies the fulfillment of important personal goals (Noon & Blyton, 1997) and subjectivities (Somerville & Bernoth, 2001). From a Deweyian perspective (1916), individuals' engagement in their vocational practice offers the prospect for achieving important personal goals. These criticisms can also be tempered in part by pointing to similar concerns about learning in educational institutions, which is subject to the same criticism—that it does not readily adapt to other situations. However, this merely reinforces the weakness of learning derived in single social practices (e.g., Rogoff & Gauvain, 1984; Scribner, 1984). It also seems that although both procedural and conceptual kinds of learning can be achieved through workplace experiences, the development of some kinds of conceptual and symbolic knowledge are only likely to be learned through interventions directed to this end (Billett, 2001a). This is, however, no easy goal to achieve in workplace settings. Gaining ongoing commitment to workplace interventions may ultimately be an insurmountable barrier. Moreover, the focus of workplace activities is production or services. Therefore, the kinds of support needed for guided learning can be difficult to secure.

Nevertheless, the goal for and processes of learning through work remain contentious. A key goal for a workplace pedagogy is to develop robust vocational knowledge. This has been justified in terms of its utility for individuals and their advancement as well as in terms of the workplace and its continuity. Many will suggest this outcome is still being too narrow and failing to address concerns that may not be readily supported in workplaces (e.g., concerns for environment, social justice, aesthetics). In terms of broader goals for learning, concerns arise that critical insights and goals beyond the vocational practice itself, such as social inclusiveness and strategic concerns for the environment, community, and professionalism of practice, may not be learned in workplaces (Fenwick, 2001). Consequently, there may be a continuing inclination to label workplace learning as technicist, despite the emancipatory potential it has for individuals and evidence of contestation in workplaces that identifies and responds to exploitative and discriminatory practices. Workplaces continue to reproduce inequities (Bierema, 2001; Fenwick,

2001; Solomon, 1999) as they afford experiences that are shaped by power and political interests and forces. It is the enactment of these interests that shapes the kind of experiences that individuals are afforded.

In conclusion, considerations of a workplace pedagogy cannot be restricted to intentional participatory practices enacted in the workplace. It also has to account for how cultural, social, and situational factors interact with the individuals' interests, preferences, and capacities. Reciprocity among these factors shape workplace participatory practices. Together, understanding more about the relations among these factors may edge us closer to developing a clear pedagogy for the workplace.

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