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WORKPLACE PEDAGOGIC PRACTICES:
A WORKPLACE STUDY

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Understanding workplace pedagogic practices is central to identifying ways of developing individuals’ vocational practice throughout their working lives. Key to these practices are the reciprocal bases of participation which illuminate relations between the workplace and individual. This paper proposes how these practices manifested themselves in different ways across and within a workplace and identifies their consequences for individuals’ learning. The particular workplace was the subject of a year-long study of guided learning in workplace settings. The paper illustrates how local factors shape workplace pedagogic and participatory practices. On the one hand, is how the workplace affords opportunities to participate in the activities and access guidance and support which influencing their learning through work. However, on the other hand is how individuals elect to engage with what the workplace affords. These reciprocal participatory bases assist understanding how learning can proceed throughout working lives and can contribute to a pedagogy for the workplace.

Workplace pedagogic practice

A workplace pedagogy is needed now to provide coherent bases for understanding how learning occurs at and through work, and how that learning can be maximized. The urgency for a workplace pedagogy is based on the need for vocational development throughout working lives that has been accentuated in recent lifelong learning policies. For workers in many industry sectors, the workplace represents the only location in which to initially learn the knowledge required for work and continue to develop their vocational practice throughout working lives. This is because vocational courses are unavailable, inappropriate or inaccessible. Furthermore, for most workers, the workplace is the location where they will most likely have to maintain and develop further their vocational knowledge throughout their working lives. Therefore, a robust, empirically-based and well-theorised workplace pedagogy constitutes a necessary, worthwhile and urgent project. However, such a pedagogy needs to be premised on workplace practices and exigencies, rather than those of educational institutions, as the latter are founded in a different kind of social practice. Moreover, assumptions about learning through taught experiences have become bases by which workplace learning experiences have been judged and erroneously labeled as ‘informal’ (see Billett in press).

As a starting point, learning through guided engagement in work activity comprises a pedagogic practice that is constituted by a complex of contributions. Principally, these contributions comprise participation in everyday work activities, direct guidance by more expert coworkers, interpersonal interactions between experts and novices as well as workers’ interactions with the social and physical environment that constitutes the workplace setting. Intentional learning guided by more expert coworkers aims to enrich learning through work by making accessible understandings, values and practices that would otherwise not be learnt. This guidance also aims to complement and extend the
contributions to learning derived through everyday interactions in the workplace. These contributions include engagement in activities, accessing practice, observing and listening to other workers and interacting with them as well as the artifacts and physical objects that are located within workplaces. All these have been proposed as contributing richly and persistently to the development of individuals’ practice in workplaces (Billett 2001b). However, individuals’ access to workplace activities and guidance is not benign, uncontested nor is it equally distributed in workplaces. Consequently, it is necessary to understand how the access to learning experiences is organised and distributed by the norms, practices and values that constitutes work practice. Beyond what the workplaces affords, it is also important to consider how individuals with engage with what they experience in the workplace. Together, these reciprocal bases both shape and constitute workplace pedagogic practices.

This paper presents and discusses the initial findings of a year-long investigation of the implementation of a model of guided workplace learning in a large processing plant (Billett & Boud 2001). The model comprises three interdependent planes: (i) everyday participation at work; (ii) guided learning for work; and (iii) guided learning for transfer (see Figure 1). The first plane comprises individuals’ access to activities and the direct and indirect guidance that workplaces afford them through engagement in everyday work activities. The second plane comprises the use of guided learning strategies (e.g. modelling, coaching, questioning, explanations, diagrams) that aim to develop the kinds of knowledge (procedures, concepts, values) that would not be learnt through everyday engagement alone. The third plane focuses intentionally on making individuals’ knowledge more adaptable to other circumstances. That is, to attempt to break away from the situational constraints and extend the application of individuals’ capacities to other situations and circumstances. Here, questioning dialogues and group discussions are aimed to assist individuals extend their practice to novel tasks and to new circumstances.

Figure 1 - Three planes of workplace guided learning

A. Guided participation in work activities
   • Learning through undertaking everyday work activities
   • Sequencing of tasks (from low to highly accountability[peripheral to full participation])
   • Opportunities to participate, observe and listen
   • Opportunities to access goals required for performance

B. Guided learning at work
   • Close guidance by experienced workers
   • Use of modeling, coaching and scaffolding
   • Use of techniques to engage workers in learning for themselves
   • Use of techniques to develop understanding

C. Guided learning for transfer*
   • Use of questioning, problem-solving and scenario building to extend learners’ knowledge to novel situations

Note - transferable outcomes will also be developed at the other levels
These three planes of participation and guidance are intended to be enacted synchronously as part of everyday activities in the workplace. That is, they should occur together as part of everyday participation in work activities. The investigation aimed to: (i) identify how the elements of this model contributed to individuals’ learning; (ii) identify how the workplace afforded opportunities to engage in activities and supported learning and (iii) their consequences of for workers in each of three work areas in the plant. However, during the investigation, situational factors were identified that shaped: (i) participatory practice in work activities, (ii) how the guided learning was enacted; and (iii) how workers engaged with the work area. These factors provide bases to understand how participation at work proceeds and influences engagement in and the likely implementation of intentional learning strategies, such as guided learning through work. The findings tentatively contribute to understanding the scope, complexities of workplace pedagogic practices which together assist understanding individuals’ learning throughout working lives.

**Learning through work**

Earlier investigations informed the present study. These focussed on understanding how workers learn through everyday engagement in their workplaces across a diverse range of industries. These investigations identified workplace contributions to the development of vocational practice (including factors that might inhibit or limit this development and investigations into guided learning in workplace settings (Billett & Rose 1999, Billett 2000). These earlier studies assessed the potential of guided workplace learning to address some of the limitations of learning through everyday activities and to develop practices that would be adaptable to new tasks. These studies used strategies that aimed to develop adaptable outcomes through the development of capacities that underpin adaptability, rather than explicitly promoting adaptability during learning. The differences in these approaches are central to current deliberations of how adaptable thinking can be generated. For instance, the cognitive view focuses on developing individuals’ capacities as skillful thinkers (Erricsson & Lehman 1996). Instead, anthropological (e.g. Lave 1991) and sociocultural views (e.g. Suchman 1997, Engestrom & Middleton 1996) use concepts of practice to identify how situational factors constitute performance requirements and the prospects for adaptability from initial learning (i.e. the prospect of learning in workplaces transferring to other and different places or work tasks). Moreover, studies of everyday and guided learning, and anthropological accounts of work (e.g. Darrah 1996), have shown that opportunities to engage in work activities and the provision support are distributed asymmetrically across workplaces, by situational factors. These factors have shaped how opportunities are distributed to individuals engage in activities and practice and gain access to the support and guidance that is essential for robust learning. Conversely, how individuals exercise their agency and elect to engage in the workplaces and what incites engagement also comprises a component of a workplace pedagogy, as this likely influences what they construct from workplace experiences. These dual concerns lead to consideration of reciprocal process of learning comprising, the invitational qualities of the workplace and how, individuals elect to participate in work.
The conceptual bases of the approach to a workplace pedagogy advanced here are found in social and cultural psychological disciplines, constructivism, anthropology and activity theory. Their commonality is a focus on relations between human cognition or practice and the social sources of knowledge and contributions to learning. These relations are central to understanding learning through work. The reciprocity between individuals’ development (ontogeny) and the social sources of knowledge are articulated by accounts within cultural psychology (Valsiner 1994, Valsiner & van der Veer 2000). Anthropology (e.g. Lave 1991; 1993) and cultural psychological views (Rogoff 1990, 1995) provide bases to understand learning and identity formation as participation in culturally derived practices such as those that comprise paid vocational activities. Activity theory (Leontiev 1981) also informs about the cultural-historical genesis of the activities that individuals engage in and their socially-derived cognitive consequences. It can identify how activities are shaped situationally by the division of labour, the rules and norms for practice (Engestrom 1993), as well as the local orderings (Engestrom & Middleton 1996) and negotiations (Suchman 1997) assists understand the kinds of interactions and access that workplaces afford particular learners or groups of learners. Moreover, the interplay between individuals’ cognitive and social experiences (e.g. Valsiner & van der Veer 2000) provides bases to understand the exercise of human agency when individuals engage in workplace practices. Personal histories shape how knowledge is constructed from social sources and how individuals engage in those practices (Billett 1997). These conceptual bases are used to identify and illuminate workplace pedagogic practices.

**Procedures**

The investigation, whose initial findings are reported here, aimed to appraise the model of workplace learning outlined above. It also aimed to identify how situational factors (e.g. local orderings and negotiations) shape workplace affordances and how they, in turn, influence individuals’ participation and learning through work. The site of the study is a large food manufacturing plant. Three work areas (customer service, manufacturing and packaging) were selected for the investigation. Individuals from each of the three work areas were identified and prepared for their roles as Learning Guides as depicted in Figure 2. This comprised being prepared to use modeling, coaching, questioning, diagrams and explanations in the workplaces. The guides were selected on their technical expertise and predicted capacities to guide others’ learning.

**Figure 2 Sequencing and kinds of interviews**

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Learning guide development

Guided learning in the workplace (modelling, coaching, questioning explanation, diagrams), later discussion groups and questioning over a 12 month period)

Initial interview

Critical Incident interview

Progress interview

Critical Incident interview

Critical Incident interview

Critical Incident interview

Summative interview
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Also, 17 workplace learners were identified as informants across the three work areas. Initial, progress and summative interviews of learners were conducted to gather data about: (i) their learning in the workplace, (ii) their interest in learning; and (iii) the invitational qualities of the workplace in assisting that learning. As shown in Figure 2, four rounds of critical incident interviews were also conducted between the initial and summative interviews. The critical incident interviews elicited grounded data on the efficacy of the guided learning strategies and other contributions to learning in responding to workplace tasks. The data comprise qualitative accounts of the work tasks and quantitative measures of the perceptions of the effectiveness of the guided learning strategies, in response to recent workplace tasks. Having describing three kinds of workplace tasks (i.e. where they experienced success, where help was required and were they could not complete the task without assistance), learners were reported the utility of each of the strategies in resolving work problems. That is, how they learnt new knowledge about work and what contributed to that learning. Qualitative data were also gathered describing and justifying the bases for the statements about their effectiveness. Progress interviews were conducted with the Guides and learners after the first four months. These gathered qualitative data about strategy use, perceptions of their effectiveness and factors assisting or inhibiting learning in the workplace. A second round of preparation for the Learning Guides, focussed on the development of adaptable workplace practices, was conducted midway through the trial. This preparation focussed on using discussion groups and questioning to extend existing knowledge to applications in different circumstances and novel tasks. Finally, summative interviews of learners and guides were used to gathered data on the use and effectiveness of guided learning and factors that assisted or inhibited its use.

**Findings**

Three kinds of findings are briefly presented and discussed here: (i) findings about the overall effectiveness of the guided learning model; (ii) how workplace affordances were manifested in the three work areas is identified; and (iii) factors associated with individual workers’ engagement in the workplace. Overall, patterns arising in the initial analyses illuminate differences in the affordances of each work areas in the form of opportunities to engage and access to guidance. This, in turn, influenced the quality of learning that arose.

**Utility of model and its components**

The perceived utility of the three planes of the workplace learning model varied over subjects and work areas. Different kinds of contributions are also identified as being made by the model’s three planes. Firstly, were those contributions readily accessible in the workplace through everyday participation. These comprised *Observing and listening, Everyday activities, Other workers, Support of guide* and the **Workplace** itself. Other contributions were the guided learning strategies whose intentions were to develop understanding or procedures that would not be learnt through participation alone. These strategies require opportunities for their use and comprised initially *Coaching, Modelling, Explanations,*
Questioning, and Diagrams. Later, Group discussions and Questioning to extend knowledge were used to intentionally promote the adaptability of the knowledge learnt in the workplace. In combination, the contribution of everyday activities and intentional guided strategies aimed to complement and augment each other in the development of vocational knowledge. From the critical incident interviews some patterns in the responses about their respective efficacies were identified. Firstly, some contributions to learning were consistently and highly valued across work areas and workers. Strongly supported were: Observing and listening, Everyday activities and Other workers – contributions that the workplace affords workers as part of everyday participation. This finding was consistent with earlier studies. Of the intentionally used strategies, Questioning, Explanations and Extending knowledge were reported as having highest levels of efficacy. There was also a correlation between the relative levels of utility of these guided learning strategies and the frequency of their use. That is, there was an association between perceptions of utility by both the guides and the learners and the frequency of their use. These findings when aggregated support evidence of the strategies’ value to secure the knowledge required to accomplish work tasks. However, ease of strategy use also determined their frequency of their use, with some strategies being identified as being difficult to use (e.g. Diagrams).

Secondly, some contributions fluctuated in their relative weighting over the period of the trial (e.g. Workplace, Modelling, Extending learning). Over the year, some contributions were also elevated in the relative weightings (Questioning, Support of guides) while others have declined. For instance, although Questioning commenced as something undertaken by the Learning Guides, later some workers began using questioning to secure knowledge from more experienced workers. This data is taken to suggest that some contributions are valued in different ways and at different times. For instance, the decline in the standing of Everyday activities and Workplace may represent a shift from requiring a dependency upon situational factors in new tasks, as in development of greater independence of action. Overall, the patterning identified indicated the particular utility of strategies at particular points in individuals’ development, a conclusion supported by the qualitative data. That is they were more or less useful at different stages in the learning of work tasks. Thirdly, some contributions remained consistent in their relative weighting (e.g. Observing and listening, Other workers, Diagrams), which may reflect their enduring level of contribution. Observing and listening was consistently reported positively across the three work areas, whereas Diagrams enjoyed only limited utility (and low frequency of use). These patterns reflect different bases for utility comprising: (i) changing needs for learning, developmental changes being reliant on particular contributions at particular stages of change; (ii) enhanced competence with the use of the guided learning strategies; (iii) enhanced interest to engage in interaction by the learners or (iv) even data gathering interference.

In the progress and summative interviews, learners and guides described the utility of the guided approach to workplace learning and individual strategies. These interviews also identified contributions provided by each component of the model. The intentional strategies and everyday activities, make different kinds and complimentary contributions to the development of workers’ knowledge. This suggests that everyday participation without guided learning, and vice versa, may be limiting.
Collectively, these data suggest that, when used, the model of workplace learning demonstrates some potential to achieve its goals of developing and extending knowledge. However, the reported utility of the model was not uniform across the three work areas. The frequency of strategy use varied across the three work areas, and was optimum in none. It was reported that factors other than perceptions of utility determined both their use and the bases for reporting their utility. These bases were identified as being associated with workplace participatory factors. Moreover, over the duration of the investigation, the reported frequency of strategy use declined. It is also worth noting that, although the preparation time for workplace guides was shorter than desired, the qualitative data from both the guides and the learners referred to valuing the use of the guided strategies and they were able to identify and describe their particular utility. This suggests the need to consider the factors that determine the bases for strategy use in the workplace, the support for their use and also factors that shape how these contributions are valued.

**Participatory factors**

Although intended for use as part of everyday activities in the workplace, the guided learning strategies require intentional deployment as they take time and effort to use. The press of production goals limited the time and effort that was expendable by the guides to use these strategies. Opportunities for their use (e.g. as new tasks arose) often coincided with heightened production demands. It was reported that it was often inexpedient to proceed with the guided learning strategies at these times. A lack of time to use the strategies, shortages of replacement staff and options for pausing to use the strategies were proposed generally as impediments for the less than optimum use of these strategies. These concerns were common across the three work areas. However, there were variations in terms of the frequency of use, factors that determined how the guides interacted with the learners and how the learners decided to engage in the workplace learning processes. That is, there were factors in each work area that shaped how individuals constructed what the workplace afforded them and consequently how they elected to participate in work activities. This participation had particular consequences for the learners. From the progress interviews, data were gathered about what encourages participation at work, how individuals constructed their views of the affordances or invitational qualities of the workplace. Across the three work areas, these affordances were identified in terms of the work area’s capacity to provide: Access to other workers; Time to practice and learn; Inclusion in knowledge sharing; Discussion groups; Access to knowledge; Implementation of training programs; Encouragement; Attitude and skills of coworkers; and Opportunity to practice. These were seen, overall as comprising the invitational qualities or workplace affordances. However, how they were constituted differed across the three work areas.

**Different bases for participation across the work areas**

The three work areas have quite distinct work practices, shift arrangements, continuity of work, team size, technologies and focus. A summary of these differences is presented in Table 1. Some illustration is also useful. In the Customer Service area, all workers are on the same day shift, they seemed to enjoy collegiality within and outside of their work area. They were all female, many of whom were long-time
employees in this area and they worked in close proximity to each other. Regular team meetings and briefings were held in this area. Their work was homogenous and the workers shared common concerns in addressing and responding to customer concerns, and securing information from the production plant. During the project, the role of this work area expanded and became more complex. Towards the end of the year-long study, a new data management system was introduced. Both of these changes made particular demands upon the workers, which were responded to positively and supportively.

The Manufacturing area has three rotating shifts, its workers, all males, were drawn from other, now disbanded, work areas. Throughout the year, there were periods of discontinuity in the work of this area when product sales declined and the work teams were found work elsewhere. There was no opportunity for promotion from undertaking additional training in this area because all the senior positions were occupied. The environment is very noisy (requiring ear protection to be worn at all times) making direct communication difficult. The Packaging area work teams have been recently formed as a result of the partial mechanisation of the work area. It is also a noisy work area, requiring ear protection to be worn at all times. The small teams comprising both male and female workers, work rotationally on three shifts. In this area there was initially a positive perception of and attitude towards ‘management’ and interactions between higher classification workers and other workers in this work area were also viewed quite positively. There remained the prospect for promotion based on developing further workplace competence, as the quota for higher level positions was not fully met.

Table 1 Influence of work practice and motivational bases in each work area (Billett & Boud 2001)

<table>
<thead>
<tr>
<th>Area</th>
<th>Work practices encouraging/inhibiting learning</th>
<th>Motivations to learn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client Service</td>
<td><strong>Encouraging</strong> – training schedule, positive feedback, demanding work, support from manager and coworkers, team support and feedback&lt;br&gt;&lt;br&gt;<strong>Inhibiting</strong> – changes to work through legislation, products and procedures, Time and reports</td>
<td>Interest, perform work effectively, valued team member, work effectively</td>
</tr>
<tr>
<td>Manufacturing</td>
<td><strong>Encouraging</strong> – team work, management’s plan, support from supervisor, lack of incentive, management’s attitude&lt;br&gt;&lt;br&gt;<strong>Inhibiting</strong> – Doesn’t encourage participation, lack of training, management’s attitude</td>
<td>Learn as much as possible quickly, personal achievement, adequate training and recognition for achievement, like learning new things</td>
</tr>
<tr>
<td>Packaging</td>
<td><strong>Encouraging</strong> – management support and interest, team meetings, circulates and asking of questions by production manager, opportunity to train, management support&lt;br&gt;&lt;br&gt;<strong>Inhibiting</strong> – rotating shifts, product and packaging not organised enough, inequity in access to opportunity to train, not enough trainers to support learning, focussed ongoing training lacking, shortage of staff</td>
<td>Pride in work, job security, effective work practice, promotion and increased responsibility, enhanced understanding of work, job satisfaction, promotion and job security</td>
</tr>
</tbody>
</table>

Table 1 presents summaries of data from the progress interviews that reported factors that encouraged or inhibited participation in work activities and what motivated the workers to learn. One distinctive difference is whether the motivation to learn arises from contributing to the work team, the tasks it faced or individual need. The data depicts qualities in each work area and presents different bases for participation – their affordances in terms of how they encourage or discourage participation. For
instance, opportunities for promotion and increases in remuneration were seen as key motivators in Manufacturing and Packaging. However, it was not all to do with remuneration. In the Consumer Advisory and Packaging areas, there was a strong desire to be seen as an effective member of a high performing team (see below).

**Individuals’ Engagement**

The other dimension of participation at work is how individuals elect to engage in the workplace. The bases that underpin individuals’ engagement are the product of their personal history or ontogeny, which is shaped by their social experiences. The importance of these bases is their relatedness to the values and practices of the workplace. The degree of relatedness is central to Valsiner (1994) view about the co-constructive qualities of learning. Bases for engagement identified in the progress interviews included: Satisfaction with performance; Improving performance; Self-interest; Self-motivation; and Advancement.

Differences in bases for individuals’ engagement were identified. For instance, self-interest was sometimes directed towards securing employment or promotion (Self-advancement). Others were concerned to improve their own work performance. Satisfaction with performance is illustrative of how individual factors’ mediate participation. In the Customer Service area workers were keen to work collaboratively and supportively. Consideration of others in the team was a key factor. In the Packaging area, workers’ efforts were also directed towards being viewed as a competent team member and for the team to be effective. For instance, workers would move quickly to overcome production blockages or faults in the packing equipment. If a fault occurred that required the plant to stop, workers immediately began to perform other tasks without any direction or request from the team leader. Key goals for these workers included being able to hand-over to the incoming shift with production targets met and without them having to resolve the relinquishing team’s problems. In the manufacturing plant, performance was often more focussed on individual goals, as the teams appeared less formed and there were tensions between workers in the teams and concerns about cessation of employment. There were also examples of individuals who were pursuing quite pragmatic personal goals (e.g. promotion, job security), which was understandable from their perspective.

However, the workplace environment and the workers’ perceptions of its invitational qualities were not fixed. They transformed over time. Towards the end of the year, the Packaging and Manufacturing areas were informed that funds for training and overtime were being curtailed. Although not directly effecting the provision of guided learning, it influenced workers’ views about the invitational qualities of the workplace and their participation in the guided learning activities. This resulted, for instance, in more belligerent views towards the workplace compared with the previously benign responses from the packaging area workers, for instance. Almost universally, they questioned whether the company was really interested in improving production and productivity as they were curtailing training. In this way, from these workers’ perspective, the invitational qualities were transformed (in this case degraded) over the duration of the investigation.
Workplace pedagogic practices

Consistent with earlier work, this inquiry found that although the everyday contributions to learning through work were most potent, they were augmented by the use of guided learning strategies as part of everyday work activities. These were shown to support the development of capacities required for current workplace performance. Also, although less strongly founded, the evidence suggests the prospect for developing adaptive practice required for novel tasks and circumstances could be achieved through guided workplace learning. However, it seems a combination of everyday and intentional learning experiences that can provide models for, access to, support in, and the development, reinforcement and refinement of these requirements provided a useful starting point to develop workplace pedagogic practices. Therefore, what comprises workplace pedagogic practice needs to include the factors that shape participation (and hence learning) and how these intersect with the learners’ perceptions of and interest in engaging with the workplace. The former are shaped by situational or contextual factors (i.e. local, ordering and negotiations) that shape work practices, including its norms and values. These affordances are also shaped, in part, by cultural factors, such as those that place a particular value on particular work (e.g. the standing of vocational activities – trade work versus production work). In these ways, local and cultural factors represent one side of the reciprocal relations that determine individuals’ engagement, with its consequences for learning and participation. The other side of these relations is individuals’ personal histories that shape how they engage in the workplace and construe its affordances as being invitational.

There are some important implications for vocational educators or human resource developers arising from this study. The foremost is for the adoption of workplace pedagogic practices, not those that have their geneses in the educational institutions. While the strategies trailed in this study are used in classroom settings, the context of their use as part of engagement in everyday work activities is essential to the kinds of learning that these strategies seek to augment. Secondly, intervention may be required to assist in making easier the access to guidance and engagement in workplace tasks that are increasing in their accountability and complexity. That is, there may be a need to overcome some workplace practices that seek to limit workers’ access to activities and guidance. In considering the role of vocational educators in relation to the three phases of the model outlined in Figure 1, the following are advanced. In terms of Guided Participation in work activities, the instructional role could include:

- organising and sequencing of workplace experiences (i.e. the learning curriculum — sequencing tasks which take the learner from being a novice to an expert, and from peripheral involvement to full participation in the workplace);
- providing access to ongoing autonomous practice (e.g. access to routine and non-routine activities);
- monitoring learners’ readiness to progress on the pathways of activities of increasing accountability and complexity; and
- providing access to goals and sub-goals associated with the work practice (e.g. important goals and understanding of requirements for performance).
The instructional role in Guided learning at work includes:

- modelling of tasks to be performed and access to goals to be learnt (e.g. access to experiences which make available the opportunity to understand the required standard for the completed task);
- demonstrating procedures (e.g. physical demonstration of task procedures, including demonstrating and modelling the level of performance required);
- coaching with procedures associated with the activity (i.e. assisting with joint problem-solving to secure successful outcomes for the learner. Providing appropriate levels of support depending on the requirements for task completion);
- making accessible knowledge that is hidden (i.e. using strategies to make accessible that conceptual knowledge that is remote from the learner and will unlikely be learnt without intervention from expert others); and
- monitoring learners’ progress and avoidance of learning inappropriate knowledge.

In Guided learning for transfer, the instructional role comprises:

- engaging learners in opportunities to reflect on what they have learnt;
- encouraging the comparison of individuals’ progress with others;
- assisting learners to understand the breadth of the applicability of what they have learnt; and
- facilitating the abstraction of learning from one situation to another.

An elaborated case of the bases for workplace interventions and instructional acts is made elsewhere (Billett 2001b).

In sum, the workplace is the site where the evolving social practice comprising the work practice intersects with individuals’ unique personal histories as tasks are generated and actions needs to be taken at work. More than the completion of work tasks, this intersection shapes participation and learning (development) and perhaps identity formation and transformation. However, the interdependence that constitutes this intersection is reciprocal and negotiated. In considering workplace participatory practices, it is necessary to account for these interdependencies and consider their construction through these relations. In procedural terms, this includes understanding the readiness of the social practice (the workplace) to afford workers the kinds of opportunities and support to the degree that they will construe it as being highly invitational as well as accounting for the readiness and interest of individuals to engage in the work practice. Workplace pedagogic practices therefore encompass the interplay between the cultural and situational factors that constitute the workplace context in which the activities and interactions of the workplace proceed, as well as the goals and aspirations that are a product of individuals’ personal histories (ontogenies).

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References

Billett, S 2001a, ‘Knowing in practice: Re-conceptualising vocational expertise’ Learning and Instruction 11 (6) 431-452.
Billett, S in press, ‘Critiquing workplace learning discourses: Participation and continuity at work’ Studies in the Education of Adults
Engestrom, Y 1993, ‘Development studies of work as a testbench of activity theory: The case of primary care medical practice’. In S Chaiklin & J Lave (Eds.), Understanding Practice: Perspectives on Activity and Context. Cambridge: CUP.
Lave, J 1993, ‘The practice of learning’ In S Chaiklin & J Lave (Eds.), Understanding Practice: Perspectives on Activity and Context (pp. 3-32). Cambridge: CUP.
Rogoff, B 1995, ‘Observing sociocultural activities on three planes: participatory appropriation, guided appropriation and apprenticeship’. In J. V. Wertsch, P. Del Rio & A. Alverez (Eds.), Sociocultural studies of the mind (pp. 139-164). Cambridge: Cambridge University Press.