WORKPLACE PEDAGOGIC PRACTICES: PARTICIPATORY FACTORS IN LOCALISED ARRANGEMENTS

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Identifying and understanding workplace pedagogic practices is central to finding ways to develop individuals’ vocational practice throughout their working lives. Key to these concerns are workplace participatory factors 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 localised factors shape workplace pedagogic and participatory practices, through the activities, guidance and support they afforded to workers which influencing their learning through work. These findings to contribute to and elaborate a pedagogy for the workplace.

Workplace pedagogic practice
Learning through guided engagement in everyday work activity constitutes a pedagogic practice that draws upon a complex of contributions. Principally, these contributions comprise participation in work activities, direct guidance provided 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 guided learning by more expert coworkers aims to enrich the learning in workplaces by making accessible understandings, values and practices that would not be learnt unaided through everyday participation. 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 and the artifacts and physical objects that are interacted within workplaces. All these have been proposed as contributing richly and persistently to the development of individuals’ practice in workplaces (see Billett 1999, 2001b). However, individuals’ access to workplace activities and guidance is not benign, uncontested or equally distributed in workplaces. Consequently, it is necessary to understand how this access is shaped by the norms, practices and values that constitutes its work practice. Together, these bases both shape and constitute workplace pedagogic practices.

This paper reports 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. The first plane comprises individuals’ access to activities and the direct and indirect guidance that workplaces afford 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 and tasks. 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.

These three planes of participation and guidance are intended to be enacted synchronously as part of everyday activities in the workplace. 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. 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**

A workplace pedagogy is needed to establish bases to propose how learning occurs at and through work, and how that learning can be maximised. Such a pedagogy needs to be premised on workplace practices and exigencies, rather than those of educational institutions, as they are founded in a different kind of social practice (see Billett 2001c). It also identifies the central role that learning through work plays in developing and maintaining individuals’ vocational practice throughout their working lives (Boud & Garrick 1999). For many sectors of employment, the workplace presents the only location to learn the knowledge required for work, because vocational courses are either unavailable, inappropriate or inaccessible. Furthermore, for most workers, the workplace is the location where they will have to maintain and develop further their vocational knowledge throughout their work lives. Therefore, a robust, empirically-based and well-theorised workplace pedagogy constitutes a necessary and worthwhile project.

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 studies assessed the potential of guided workplace learning to address some limitations of learning through everyday activities and to develop practices that would be adaptable to new tasks. However, 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. Instead, anthropological (e.g. Lave 1991) and sociocultural views (Suchman 1996) use concepts of practice to identify how situational factors constitute performances 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) (Billett 2001a).
However, 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. Workplace factors determine how opportunities are distributed to engage in activities and practice and gain access to the support and guidance that is essential for robust learning. Furthermore, how individuals elect to engage in the workplaces and what incites engagement also comprises a component of a workplace pedagogy. 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 diverse. Their commonality is their focus on relations between individual cognition 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) provides 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 inform about the cultural-historical genesis of the activities that individuals engage in and their socially-derived cognitive consequences. How activities are shaped situationally by the division of labour, the rules and norms for practice (Engestrom 1993), as well as the local ordering (Engestrom & Middleton 1996) and negotiations (Suchman 1997) helps understand the kinds of interactions and access that workplaces afford particular learners or groups of learners.

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, influences 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 selected and prepared for their roles as Learning Guides, which included the use of particular guided learning strategies. The guides were selected on their technical expertise and predicted capacities to guide others’ learning. 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. Four rounds of critical incident interviews were also conducted. These 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. Having describing three kinds of workplace impasses, learners reported the utility of each of the strategies in resolving work problems. That is, learning new knowledge about work. 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 mid way 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.

Initial findings
Three forms of finding are briefly presented here. Firstly, findings of the overall effectiveness of the guided learning model. Secondly, how workplace affordances were manifested in the three work areas is identified as were, thirdly, factors associated with individual workers’ engagement in the workplace. Overall, patterns arising in initial analyses illuminate differences in the affordances of each work areas that shaped the opportunities and access to guidance being afforded. 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 models’ three planes. Firstly, there are those contributions that are readily accessible in the workplace through everyday participation. These comprise Observing and listening, Everyday activities, Other workers, Support of guide and the Workplace itself. Other contributions were those provided through guided learning strategies whose use was intended to develop understanding or procedures that would not be learnt through participation alone. These require opportunities and intentional 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 were identified. Firstly, some contributions to learning are consistently and highly valued across work areas and workers. Strongly supported are: Observing and listening; Everyday activities and Other workers – contributions that the workplace affords workers as part of everyday participation. This was consistent with earlier studies. Of the intentionally used strategies, Questioning, Explanations and Extending knowledge were reported as having high levels of efficacy which are of a different kind than the contributions of everyday activities. The correlation between the relative levels of utility of the guided learning strategies and the frequency of their use is noteworthy. There is 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 also determined the frequency of use. 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 elevated in the relative weightings (Questioning, Support of guides) while others have declined. When linked to the qualitative data, 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. This may illustrate the particular utility of strategies at particular points in individuals’ development, a conclusion supported by the qualitative data. Thirdly, some contributions remained consistent in their relative weighting (e.g. Observing and listening, Other workers, Diagrams), that 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 of relative weighting reflect different bases. These might include changing needs for learning, developmental changes being reliant on particular contributions at particular stages of change, enhanced competence with the use of the guided learning strategies, enhanced interest to engage in interaction by the learners or even data gathering interference. These kinds of measures need to be considered in conjunction with data that refers to their utility, as associations between these bases and measures of utility were noted. In the progress and summative interviews, learners and guides described the utility of the guided approach to workplace learning and individual strategies. Overall, these were positive (with the exception of Diagrams) thereby reflecting the critical incident interview data.

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 the workers’ knowledge. This suggests that everyday participation without guided learning, and vice versa, may be limiting. Collectively, from these data, the initial analysis suggests that, when used, the model of workplace learning demonstrates some potential to achieve its goals of developing and extending knowledge. However, the perceived 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. Factors other than perceptions of utility determined both their use and the bases for reporting their utility. Moreover, over the duration of the investigation, the reported frequency of strategy use declined. While 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 were able to 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 to be used as part of everyday activities in the workplace, the guided learning strategies require intentional deployment, 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 and 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, replacement staff and options for pausing to use the strategies were proposed generally as impediments. 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. These affordances were identified in each 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.

*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. An elaboration is not possible here. However, some illustration is warranted. In the Customer Service area, all workers are on the same day shift, they enjoy collegiality within and outside of their work area. They are all female, many of whom are long time employees in this area and who work in close proximity to each other. Regular team meetings and briefings are held in this area. Their work is homogenous and the workers share common concerns in addressing and responding to customer concerns. During the project, the role of this work area expanded and became more complex. Towards the end, a new data management system was introduced. Both of these changes made particular demands upon the workers.

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 their work when product sales declined and the work teams were found work in other area. There was no opportunity for promotion from undertaking additional training because all the allocated senior positions were occupied. There is limited prospect of staff movement in this area. The environment is very noisy (requiring ear protection to be worn at all times) making direct communication difficult.

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>
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<tr>
<td>Client Advisory Centre</td>
<td><em>Encouraging</em> – training schedule, positive feedback, demanding work, support from manager and coworkers,</td>
<td>Interest, perform work effectively, valued team member, work effectively</td>
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<tr>
<td></td>
<td><em>Inhibiting</em> – changes to work through legislation, products and procedures. Time and reports</td>
<td></td>
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<tr>
<td>Extrusion</td>
<td><em>Encouraging</em> – team work, management’s plan, Inhibiting – Doesn’t encourage participation, support from</td>
<td>Learn as much as possible quickly, personal achievement, adequate training and</td>
</tr>
<tr>
<td></td>
<td>supervisor (level 4), lack of training, lack of incentive, management’s attitude</td>
<td>recognition for achievement, like learning new things</td>
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<tr>
<td>Packaging</td>
<td><em>Encouraging</em> – management support and interest, team meetings, circulates and asking of questions by</td>
<td>Pride in work, job security, effective work practice, promotion and increased</td>
</tr>
<tr>
<td></td>
<td>production manager, opportunity to train, management support</td>
<td>responsibility, enhanced understanding of work, job satisfaction, promotion and job</td>
</tr>
<tr>
<td></td>
<td><em>Inhibiting</em> – rotating shifts, product and packaging not organised enough, inequity in access to</td>
<td>security</td>
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<tr>
<td></td>
<td>opportunity to train, not enough trainers to support learning, focussed ongoing training lacking, shortage</td>
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The work teams in the Packaging area have been recently formed as a result of the enhanced mechanisation of the work area. It is also a noisy work area, requiring ear protection to be worn at all times. The small teams worked on three shifts and comprised combinations of male and female workers. There was a positive perception.
of and attitude towards ‘management’ (at least initially) 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 the demonstration of workplace competence, as the quota for higher level positions was not fully met. 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 – affordances. For instance, whereas 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. These concerns illustrate differences in bases for individuals’ engagement in their work and, consequently, how they engage in the effortful process of learning new knowledge. 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. For instance, workers in the Customer Service area were keen to be working collaboratively and supportively. Consideration of others in the team was a key factor. In the Packaging area, workers’ efforts were also directed to be seen 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. There were also examples of individuals who were pursuing quite pragmatically personal goals (promotion, job security), which was understandable from their perspective.

The workplace environments and the workers’ perceptions of the invitational qualities were not fixed, as 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 effected 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 compared with the previously benign responses from the
packaging area workers. Almost universally, they questioned whether the company was really interested in improving production and productivity as they were curtailing training. In this way, the invitational qualities became constructed as being reduced and were constituted more critically by workers.

Workplace pedagogic practices
Consistent with earlier work, the use of guided learning strategies when embedded in everyday work activities has been shown to develop the kinds of knowledge 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. This suggests that workplace pedagogic practice needs to integrate contributions of everyday activities and those provided intentionally by expert coworkers. Prescriptions are not useful given the different kinds and stages of individual development and the dynamic workplace requirements for performance. However, 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 can be identified as useful bases for workplace pedagogic practices. The scope of what comprises these practice needs to be extended to account for the factors that shape participation (and hence learning) and how these intersect with the learners’ perceptions of and interest in engaging with the workplace. Central to the former are the situational or contextual factors (i.e. local, ordering and negotiations) that shape work practices, including its norms and values. The affordance is 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). These local and cultural factors represent one side of the reciprocal relations that determine individuals’ engagement, with its consequences for learning and participation.

The workplace is the site where the dynamic and evolving social practice comprising the work practice intersects with individuals’ unique personal histories as tasks are generated and actions needs to be taken. More than the completion of work, this intersection shapes participation and learning (development) and perhaps identity formation and transformation. However, the interdependence that constitutes this intersection is reciprocal and negotiated. Therefore, it is necessary to account for these contextual factors and consider them as being constructed 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. Therefore, workplace pedagogic practices need to 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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