Learning through work:
Workplace affordances and individual engagement

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This paper identifies factors that shape how learning proceeds in workplaces. It focuses on the dual bases of how workplaces afford opportunities for learning and how individuals elect to engage in work activities and with the guidance provided by the workplace. Together, these dual bases for participation (co-participation) at work, and the relations between them, are central to understand the kinds of learning that workplaces are able to provide and how improving the quality of that learning might proceed. The readiness of the workplace to afford opportunities for individuals to engage in work activities and access direct and indirect support is a key determinant of the quality of learning in workplaces. This readiness can promote individual's engagement. However, this engagement remains dependent upon the degree by which individuals wish to engage purposefully in the workplace.

1.   Learning though work

The way workplaces afford opportunities for learning and how individuals elect to engage in activities and with the support and guidance provided by the workplace, is central to understanding workplaces as learning environments. These dual bases for participation at work --- co-participation --- and the relations between them, are held to be central to understanding the kinds of learning that workplaces provide. In particular, the readiness of the workplace to afford opportunities for individuals to participate in work activities and access direct and indirect support are key determinants in the quality of learning that arises from that participation. These affordances are salient to the outcomes of both structured workplace learning arrangements, such as mentoring, as well as learning derived through everyday participation at work. The level of enterprise readiness as key determinant for is supported by the findings of an investigation of guided learning in five workplaces (Billett, McCann & Scott 1998, Billett 2000). It was found that guided learning strategies (*Modelling, Coaching, Questioning, Analogies &Diagrams*) augmented learning through everyday work activities. However, across the enterprises participating in this study, there were differences in the use of these strategies and perceptions of their value. Factors such as variations in enterprise size, their activities and workplace goals for learning did not fully explain these differences. Instead, the level of the enterprise's readiness to afford activities and guidance was identified as a key factor. Overall, it seems learners afforded the richest opportunities for participation reported the strongest development, and that workplace readiness

was central to the quality of experiences. Readiness is more than the preparedness for guided learning to proceed. It also includes the norms and work practices that constitute the invitational qualities for individuals to participate in and learn through work. The degree by which workplaces provide rich learning outcomes through everyday activities and intentional interventions will be determined, at least in part, by its readiness to afford opportunities and support for learning.

2.   Work and learning: Participatory practices

There is no separation between participation in work and learning (Lave 1993). Work activities, the workplace, other workers and observing and listening are consistently reported as key sources for workers to learn their vocational activities through work (Billett 1999a). The moment-by-moment learning or microgenetic development (Rogoff 1990, 1995) occurring through everyday engagement at work is shaped by the activities individuals engage in, the direct guidance they access and the indirect contributions provided by the physical and social environment of the workplace. Work activities act to reinforce, refine or generate new forms of knowledge. This kind of ongoing learning is analogous to what Piaget (1966) referred to as accommodation (new learning) and assimilation (refining and reinforcing existing knowledge).

Learning through participating in work can be understood in terms of the how the workplace support or inhibit individuals' engagement in work activities and access to both the direct and indirect guidance. These affordances are constituted in work practices. However, they are not afforded evenly to all workers. The bases for how these affordances are distributed include:

- perceptions of individuals' competence;
- the workers' race (Hull 1997), gender (Tam 1997),
- status of work (Darrah 1996, 1997)
- employment status(Darrah 1996, 1997),
- workplace demarcations (Bernhardt 1999, Billett 1995, Danford 1998);
- personal relations, workplace cliques and affiliations (Billett 1999b).

Given the relationship between participation and learning, how individuals or groups of individuals' participation is invited (i.e. encouraged or inhibited) becomes a central concern for understanding and enacting workplace learning. This is particularly the case because workplaces tend to be contested environments. Access to opportunities to participate, particularly in undertaking new tasks or those of central importance to the workplace, are the source of contestation between:

- 'newcomers' or 'old-timers' (Lave & Wenger 1991),
- full or part-time workers (Bernhardt 1999);

- teams with different roles and standing in the workplace (Darrah 1996, Hull 1997);
- individuals' personal and vocational goals (Darrah 1997);
- or among institutionalised arrangements such as those representing workers, supervisors or management (Danford 1998).
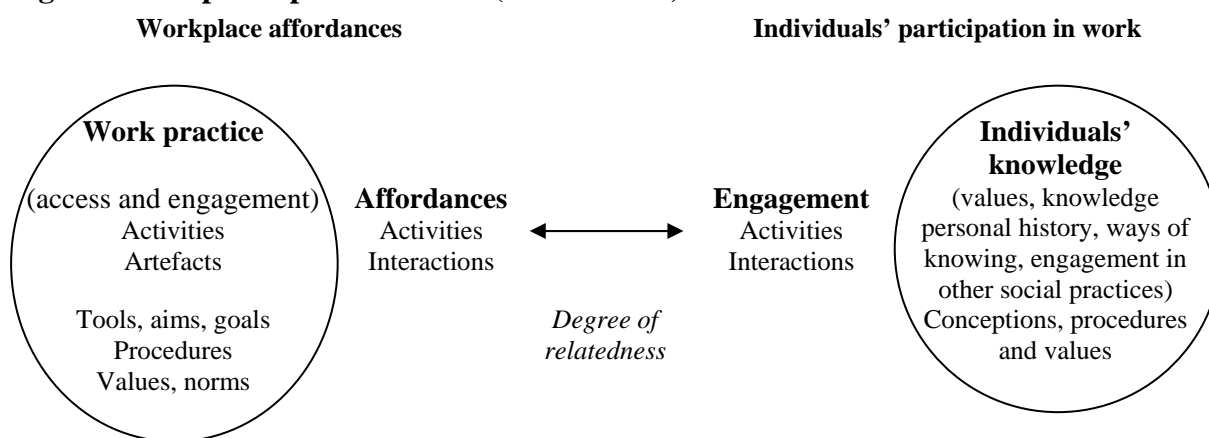
Therefore, participation in work activities is not afforded in similar ways to all who work in the workplace and participation in work activities can the bases of competition and exclusion between competing interests. For example, part-time, contractual workers and home-based workers may struggle to be afforded the kinds of opportunities to participate in the ways available to full-time employees. Part-time women workers have been shown to have difficulty in maintaining their skills currency and realising career aspirations (Tam 1997). Lower status workers may be denied the affordances enjoyed by high status workers (Darrah 1996). Affiliations and demarcations within the workplace also constitute bases to distribute opportunities. For instance, plant operators in an amalgamated union invited fellow plant workers to access training and practice while restricting opportunities to other workers in the same union (Billett 1995). Personal affiliations in workplaces also determine participation and how coworkers' efforts are acknowledged. How individuals access both familiar and new work tasks, and interact with coworkers, particularly more experienced workers, shapes the quality of the learning outcomes. Given that knowledge is held to be socially sourced and its construction mediated by social processes (e.g. access to guidance, observation and interactions with other workers) and artefacts/signs (e.g. workplace and its artefacts) (Valsiner & van de Veer, 2000) these participatory factors are central to understanding how workplaces afford opportunities to learn.

However, while acknowledging the salience of contributions afforded by workplaces, it is also necessary to account for how individuals elect to engage with workplace activities and guidance also shapes the quality of their learning. Learning new knowledge (i.e. concepts about work, procedures to undertake tasks or attitudes towards work) is effortful and refining the knowledge previously learnt are mediated by individuals' existing knowledge, including their values about to which activities they should direct their energies. It would be mistaken, therefore to ignore the role of human agency. Participation in work activities does not lead to the unquestioned learning of what is afforded by the workplace. Individuals are active agents in what and how they learn from these encounters (Engestrom & Middleton 1996). Wertsch (1998) distinguishes between mastery and appropriation. The former is the superficial acceptance of knowledge coupled with the ability to satisfy the requirements for public performance. The unenthusiastic use of standard salutations by supermarket check out operators and airline cabin crews can be used as illustrations of mastery. Appropriation is the acceptance by the individual of what they are learning and their desire and effortful engagement to make it part of their own repertoire of understandings, procedures and beliefs (Luria 1976). However, regardless of whether

appropriation and mastery results from these encounters, they are both the product of individuals' values, beliefs and understandings, which are a product of their life histories, engaging with activities, goals and interactions that are constituted situationally in the workplace. The degree of similarity or relatedness (Valsiner 1994) between the individuals' vales and what the workplace affords may determine whether individuals encounters with workplace experiences result in appropriation or mastery. That is committed or superficial learning.

Figure One depicts the dual bases for co-participation at work, by representing the affordances that workplaces can provide and the outcomes arising from that participation, in the left-hand circle. On the right-hand side are the bases for individuals' engagement and outcomes.

Figure 1 – Co-participation at work (Billett 1999b)

Workplace affordances   Individuals' participation in work

Work practice

(access and engagement)   **Affordances**   **Engagement**   **Individuals' knowledge**
Activities   Activities   Activities   (values, knowledge
Artefacts   Interactions   Interactions   personal history, ways of
                                                                         knowing, engagement in
Tools, aims, goals   other social practices)
Procedures   *Degree of*   Conceptions, procedures
Values, norms   *relatedness*   and values

3.   Coparticipation at work

The findings of an investigation of learning in workplaces reported earlier (Billett, 2000) foreshadowed the significance of the relations between participatory practices and learning through work. The findings of this investigation are useful in illustrating co-participation at work. As noted earlier (Billett 2000), this investigation examined the efficacy of the contributions of both the 'unintended' (i.e. *everyday activities, observing and listening, other workers, the workplace*) referred to as the 'learning curriculum' (Lave 1990) and intended guided learning strategies (i.e. *Modelling*, *Coaching*, *Analogies*, *Diagrams*, *Questioning*) to learning the knowledge required for work performance. The data gathering procedures included monthly interviews over a six-month period that elicited learners' accounts of recently undertaken workplace tasks. Learners were asked about whom or what had helped them complete these tasks or what contribution they needed more of in order to complete tasks. Throughout the investigation, the researchers also made notes about each of the workplaces and how the provision of workplace learning was manifested in each setting. The findings overviewed here are drawn from three workplaces, providing comparisons across and within workplaces about how they afforded participation in work activities. Healthylife[1] is a large food manufacturer, with a history

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[1] The names of the three enterprises referred to here are fictitious.

of in-house training. Workers in many areas of the plant were quite familiar with work-based learning programs. Albany Textiles is a large textile manufacturing company. It has a highly demarcated workforce and hierarchical organisational structure with little in the way of a tradition of in-house training in the manufacturing plant at the time of the investigation. Powerup is a recently corporatised, public sector power distribution company. At the time of the project, it was settling into its new corporate structure and role. The employees of this company were either based in the head office or located across the regions to which that the company distributed electricity. While the findings do not directly inform about how other factors (e.g. gender, language, division of labour and affiliations) shape participation, they contribute to understanding the process of and consequences for participation at work and learning through that participation.

Overall, it was found that where the affordances were richest, the reported learning outcomes associated were higher than where this support was not forthcoming. Yet, there were instances where individual actions worked against the norms of the work place. At Healthylife, the product development area was highly invitational for learning, and accepted and appreciated as such by the learners. These affordances included the mentors' intent to provide the most effective level of guided learning, supported by an environment which was open to constructive interactions. Here, concerns about preparation were focussed on how to best use the strategies to make workplace learning more effective. In some instances, the mentors used the strategies in combination and in ways that allow them to merge effectively when working with learners. This is seen as the desirable outcome of intentional learning strategies being used and accepted as part of everyday practice in the workplace. In contrast, the highly invitational qualities of this workplace were seemingly rejected by an instance of reluctant participation; a new recruit in the occupational health and safety area. His reluctance to engage with the workplace and dismissal of the mentor and the guided learning strategies was quite distinct. He most valued contributions that excluded the mentor (Billett 2000). This illustrates how the affordances of the workplace supported learning (as reported by the mentors and learners), alone cannot guarantee rich learning outcomes when individuals decide not to engage in the work practice. Whereas Healthylife, provided an instance of an individual resisting engagement in the guided learning and the work practice, Albany Textiles provides a case where the opposite was true. Despite the low level of support and readiness for guided learning and low levels of reported outcomes (see Billett 2000), one mentor worked against the norms of practice by providing high levels of support. This was both appreciated by and instrumental for the two learners concerned, thereby making the workplace supportive and invitational for them. The two learners stated that their guide had opened up possibilities for them that they had thought were inaccessible. This action emphasises an important emancipatory role for workplaces in providing opportunities for those for whom there is no option other than to learn in the workplace. Finally, with Power Up, one individual

struggled and persisted when other coworkers withdrew from the workplace learning arrangements, to which the work environment was not ready or committed.

These findings indicate the potential of individual agency to shape what constitutes an invitation to participate. While it demonstrates the capacity to offset some of the limitations of a weak learning environment, it also demonstrates the capacity to marginalise what a potentially comprises a rich level of affordance and support. Also, the degree of workplace readiness influences how activities and support are afforded as part of everyday work activities. The data indicate that the openness and support for learning also influences the learning occurring through everyday workplace activities. Realising the full potential of learning at these work sites and, in particular, the mentoring process is unlikely to be fulfilled without careful scene-setting and thorough preparation. In some ways, these findings are commonsensical. That is, the kinds of opportunities provided for learners will be important for the quality of learning that transpires. Equally, how individuals engage in work practice will determine how and what they learn. Nevertheless, these factors may be overlooked if the links between engaging in thinking and acting at work and learning through those actions are not fully understood. Establishing a workplace training system, without understanding the bases for participation, such as the workplace's readiness to encourage and support that participation, may lead to disappointment for both workers and enterprises.

The identification of these bases for participation and their consequences for learning has three important conceptual implications. Firstly, a current area of deliberation within constructivist theory is to understand the relations between individuals and social practice. Here, it is shown that rather than being a mere element of social practice (e.g. Hutchins 1991) individual agency operates both interdependently and independently in social practices as Engestrom and Middleton (1996) propose. However, this agency manifests itself in a different ways. While there is evidence of interdependence, there are also examples of individuals acting independently in ways inconsistent with the norms and practices of the work practice. This is not to propose a shift back to individualistic psychological analyses. Instead, individuals' socially-derived personal histories (ontogenies) with their values and ways of knowing mediate how they participate and learn in social practice, such as workplaces. Relations between ontogenies and social practice shape individuals engagement in the social practice of the workplace. The kinds of co-participation at work identified in the three enterprises referred to above commence the process of understanding the likely diversity of relations between the individual and social practice that shape individuals' participation and learning.

Secondly, the findings emphasise that individuals' participation at work is not passive or unquestioning. Even when support is forthcoming, --- that is the workplace is highly invitational --- individuals may elect not to participate in the goal-directed activities effortfully or support available or appropriate the knowledge that is made accessible. Individuals need to find meaning

in their activities and value in what is afforded for them to participate and learn. Coal miners, for instance, were skeptical of work safety training which they believed was aimed to transfer the responsibility for safe working practices from the mine management to the miners themselves (Billett 1995). Equally, when workers believed the enterprise focus was too strong in their college-based course they withdrew their commitment, claiming their needs and aspirations went beyond the company's goals and procedures which were represented in the course (Billett & Hayes 2000). Darrah (1997) has vividly depicted how inconsistencies between the values of the workplaces and those of the workers led to a rejection of unacceptable work practices. Indeed, as Hodges (1998) has shown, rather than identifying with the values and practices of the workplace, participation can lead to a dis-identification with those values and practices. At Heatlthylife, the new occupational health and safety officer might have been more competent than his mentor and had something special to contribute to the OHS policies within the workplace. This suggests different kinds of invitational qualities are required, such as those able to engage reluctant participants and assist them finding meaning through participation in ways that permit them to transform and/or contest existing values and practices.

Thirdly, in so far as they can offer individuals access to crucial components of vocational knowledge, it is important that workplaces are highly invitational. The findings suggest that where support is available, workplaces can facilitate the learning of the hard-to-learn knowledge required for vocational practice. It seems that for workplace learning to proceed effectively, how workers are afforded opportunities to participate and be supported in this endeavor will shape the prospect of rich learning outcomes.

Participation in work and learning

In sum, although the guided learning strategies trialled in the five workplaces demonstrated that when they are used frequently, and in ways supportive of the work tasks individuals are engaged in, that they can develop much of the knowledge required for workplace performance (see Billett 2000). These strategies augment the contributions provided by everyday participation at work. However, underpinning both of these kinds of contributions is co-participation. That is how the workplace affords opportunities for individuals to engage in and be supported in learning in the workplace. Accordingly, to improve workplace learning there will a need for (i) appropriate development and implementation of workplace environments that are invitational; (ii) a tailoring of the workplace learning curriculum to particular enterprise needs, including the readiness of both the learners and the guides; (iii) encouraging participation by both those who are learning and those guiding the learning; and (iv) the appropriate selection and preparation of the learning guides. These kinds of measures seem to offer foundations upon which workplaces can become effective sites for the development of the kinds of knowledge that would benefit both workplaces and the individuals who work in them.

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