Abstract: The concept of a knowledge economy presupposes that those working within it are able to construct, deconstruct and reconstruct knowledge in order to meet changing conditions of work and global markets. This leads to a fundamental question which needs to be addressed by vocational education and training practitioners and policy makers: How do we best prepare our current and future students to access, maintain and manipulate information within such a climate? This paper reports on some of the tentative findings of a nearly completed PhD research project. Although the research focused on the perceptions of practitioners of how they adapted their current competence when moving across changing or different contexts, there was also an emphasis on the strategies which would enable such knowledge and skill transfer. The paper discusses these emerging strategies and speculates on how learning might be understood and practised.
Learning in a knowledge economy: What strategies are required?

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Introduction

The concept of a knowledge economy, knowledge workers and/or knowledge society is based on the premise that the construction and reconstruction of knowledge is a marketable commodity. This necessitates a change in the way in which we view learning. Learning can no longer be seen to reside in the domain of formal education. Instead it becomes an essential and frequently used part of our everyday work and life activities.

What, then, is the role of educational practitioners with respect to knowledge and learning and how is the shape and nature of learning transformed in its role as a marketable commodity? Certainly the idea of the academy as a group of those whose role is the creation, dissemination, validation and protection of knowledge becomes an outmoded concept. Learning becomes an everyday, universal activity by which information and observation is transformed through reflection and experience across different contexts to a greater or lesser extent to create or reshape knowledge.

Knowledge as a marketable commodity also creates new hierarchies by which knowledge is valued. Knowledge may be created by individuals, by groups, by communities, by societies and by globalised systems. Its value to others will depend on such factors as:

- its degree of specificity or universality with respect to contexts and applications;
- the ability for the knowledge to be generalised;
- its range of applications;
- the parameters which have been built around its dissemination (e.g. copyright); and
- its usefulness to others.
All this means that educational practitioners need to rethink their role with respect to learning; both as facilitators of learning and as learners. Barnett (2002) describes the conditions under which we work and learn as those of supercomplexity. He argues that, in a world characterised by contestability, challengeability, uncertainty and unpredictability, the frameworks we use for comprehending the world, for acting in it and for relating to each other have become problematic. ‘Work has become learning and learning has become work’ (p. 7).

**Learning through work**

Work is not necessarily a site of learning at the individual level. Much work is routine and our absorption in the particular often means that we do not question or reflect on whether the ideological spectacles through which we view our world need adjustment. However, on a societal level, learning is deeply embedded in work. Barnett (2002) argues that there are three dominant factors involved, namely:

- the interconnectedness of economies means that events and actions of those at a distance have effects at a local level
- the rise of the evaluative (or audit) state “spawn(s) more and more complicated internal quality assurance systems which impact on work (at the local level)” (p. 11)
- the information technology revolution, and the forms of communication that the computer makes possible, leads to significant learning within the workplace.

Such embeddedness is structural and manifests itself in the culture, practice and mores of the workplace. Failure to respond to the need for learning to keep pace with change will result in what Barnett calls ‘a self-imposed redundancy’ (2002, p. 12). Work increasingly provides opportunities for personal change and development, that is, learning opportunities.

Lave (1993) argues that, even at the individual level, there is no separation between participation in work and participation in learning through that work. Microgenic development, or moment-by-moment learning, (Rogoff 1990; 1998) occurring through work is shaped by:

- the activities individuals engage in;
- the direct guidance they access; and
- indirect contributions provided by the physical and social environment.

Basically workplace activities act to reinforce, refine and generate new forms of knowledge. This is analogous to what Piaget (1966) referred to as accommodation and assimilation. Consequently, learning through work can be understood in terms of the affordances that support or inhibit individuals’ engagement in learning through work. Such factors include:

- opportunities to participate in work activities
- the contested nature of the workplace environment with respect to participation
- the struggle of contingent workers (part-time and contract) to maintain their skill currency relative to full-time workers (or, in some situations, vice versa)
• the practice of rewarding competence with invitations to further participate widens existing skill imbalances.

For example, Wertsch (1998) argues that the agency of the individual will determine whether the learning is mastery (as in the cheerful enquiries by staff at McDonalds as to whether you would like some fries with your ice-cream sundae) or appropriation (when the rare staff member from the same chain consistently demonstrates through his/her sales patter that for effective on-selling there must be an obvious link between the product the customer has already purchased and the product being suggested). One of the consistent mistakes within the Australian vocational education and training (VET) system has been to see competency-based approaches as mastery rather than as a transformative educational process based on defined outcomes.

The research of Billet et al. (1998) indicates the potential of individual agency to offset some of the limitations of an environment whose affordances are weak; and to determine what enables an individual to participate.

More pertinently, it showed that the readiness and the capability of the individual to participate and to engage in workplace learning is critical.

… the kinds of opportunities provided for learners will be important for the quality of the 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 these actions is not fully understood.

(Billet 2001a, p. 67)

Billet (2001a) identifies three important conceptual implications which arise from this understanding.

1. Rather than being a mere element of social practice (e.g. Hutchins 1991), individual agency within social practices is both interdependent and independent (Engström & Middleton 1996). Individuals’ socially derived personal histories (ontologies), together with their values and ways of knowing, mediate their participation and learning within social settings.

2. Individuals’ participation at work is neither passive nor unquestioned. Billett’s research showed that even when the workplace is highly invitational, individuals may elect not to participate in learning. This suggests that a range of invitational qualities are required to enable all participants to participate in ways that allow them to contest and/or transform existing values and practices and to find meaning in participation.

3. Workplaces can facilitate the hard-to-learn knowledge of vocational practice. It is, therefore, important that individuals’ have the capacities necessary to take advantages of the affordances offered by workplaces in order to achieve rich learning outcomes.
Motivation for learning

However, if learning is structurally embedded in work, work is similarly embedded in learning. Learning presents both personal and intellectual challenges; it takes us out of our zone of comfort and challenges our identity both as a worker and a learner.

It, therefore, follows that there must be a strong motivation for learning. A basic and most effective motivator is the need to do something which is currently outside your capability. Workplace change, both organisational and functional, produces the necessary conditions for learning.

The information technology revolution has demonstrated the quality, and ease, of learning which occurs at the point of need and at the time of need. Most workers have developed their computer skills through a combination of formal learning activities, assistance provided by co-workers in times of need and task-oriented trial-and-error. It is the second strategy which is commonly the most effective as it is immediately followed by the application of what has been demonstrated – often on a repetitive basis.

It can thus be argued that the greater the separation between learning and its application, the more likely that the learning will be superficial and transient. Nor, in the supercomplexity of today’s workplaces can we make learning safe or lower the inherent risks in the learning process. The uncertainty inherent in the process of learning can only be overcome through critical engagement.

We combat multiple and conflicting frameworks not by resisting them of giving in to them in any facile way. Instead, we live dangerously with them by bringing to bear yet further possibilities of thought and action, which we in turn subject to critical scrutiny. 


The nature of learning

Each profession and vocational area has its own mix of factual knowledge, theoretical principles, competencies, understanding of actions, process knowledge, tacit knowledge and communicative competence (Barnett 2002, p.8). Those wishing to participate within a particular profession or vocational area need to engage within the particular community of practice of that area. As Lave and Wenger (1991) argue, participation will initially be peripheral as membership of a community of practice is dependent on learning and perpetuating the explicit and implicit behaviours, understanding and values of that community.
Learning which occurs outside of the context of professional or vocational practice is preparatory learning and is, at the time, peripheral to practice. Such learning provides learners with an image of professional practice and, in many cases, provides the learners with the competence to engage with the practices, culture and mores of the workplace. However, such learning must be enhanced by engagement with the reality if it is not to remain a distorted view of everyday practice within that vocational area. It is the engagement in practice and reflection on the experience of that engagement which adds dimension to the learning and allows the development of the tacit and implicit knowledge which defines and gives shape to professional (or vocational) practice and organisation.

Workplace learning is grounded in the social relationships, proximities and hierarchies of the workplace. It is the understanding of the infrastructure and the ways people work with and within it which defines practice within a particular workplace.

As Billett wrote, ‘we humans are not passive recipients of what we experience. Instead we are active meaning makers’ (2003, p. 227). The outcomes of learning will be shaped by the social circumstances within which the learning occurs but will also be mediated by the learner’s unique set of cognitive experiences. It is this interplay between individual agency and social contribution which provides the reciprocity between the learner and his/her social world.

**Dimensions of learning**

A perusal of the literature about learning and, in particular, workplace learning, reveals a number of dichotomies by which learning is described, such as formal and informal learning; individual and group (or social) learning; and, more recently, bounded and unbounded learning. Of course, these are not really dichotomies but the end points of continuums showing the relativities of the different forms of learning which occur simultaneously in learning situations.

For example, Billett (2001b, p. 21) argues that it is imprecise to refer to workplaces as informal settings for learning as workplace experiences are likely to be structured by the enterprises work practices. He argues that the difference is the degree to which the learning is formalised.

Perhaps the dichotomy which my research has foregrounded is that between bounded and unbounded learning. Engeström (1999) argues that standard theories of learning are based on the proposition that the knowledge or skill to be acquired is itself stable and reasonably well-defined and that there is a competent teacher who knows what is to be learnt. In contrast, learning in the workplace is often concerned with something which is not stable, nor even defined or understood ahead of time. This is the learning involved in personal and organisational transformation and thus, it can be argued, is the learning which forms the basis for a knowledge economy.

If we consider the two apparent paradoxes - formal and informal learning, and bounded and unbounded learning – and use them as vertical and horizontal axes then we develop a concept of learning which might be represented as:
Figure1: Two dimensions of learning

Thinking in terms of this two dimensional representation, then we see that there might be four different categories of learning, that is;

- formal, bounded learning - that is, learning which arises within a curriculum framework in formal teaching and learning situations
- formal unbounded learning – that is, tacit learning which arises from participation in formal teaching and learning situations and which is unplanned and largely unrecognised
- informal unbounded learning – the understanding developed outside of curricular and structured work expectations which is tacit, contextual, personalised and very powerful in informing practice
- informal bounded learning - that is, learning at work and through life which imitates (but not completely replicates) the learning provided by formal teaching and learning situations.

This categorisation could then be extended through a third dimension, that of individual versus group learning then we get eight possible categories:
Figure 2: Three dimensions of learning

Of the eight possible categories that such a representation depicts, only one of these, formal, bounded, individual learning, is the focus of most of the teaching and learning, assessment and recognition within our educational institutions. Whilst there are indications of a greater interest in formal, bounded, group learning and in the recognition of the unbounded and tacit learning which occurs from participation in formal learning situations, this category of learning is still peripheral to the traditional concentration of formal learning of known facts, processes, theories and principles.

Conclusions

Arising from my current PhD research is a sense that if we are to enhance learning so as to develop a sustainable and healthy knowledge economy that we need to rethink our common attitudes to learning and knowledge and, whilst not abandoning formal bounded learning, to recognise and support the far-reaching capabilities which members of communities develop through processes of unbounded and informal learning.

The rapid introduction of new technology and the concomitant information technology revolution have brought with them a state of permanent white water with respect to the stability of knowledge. This means that the traditional approaches to the development and recognition of knowledge are neither sufficient nor necessarily appropriate within such conditions. Rather than seek to support the development of workplace learning within our current approaches, we need to seek new paradigms and to value and recognise the potential of humans to develop their own individual or group understandings and to transform their practice in response to change.

Unless we can find ways to harness, support and recognise the outcomes of our informal and unbounded learning, especially that generated through the effects of change on groups of workers or communities, then the concept of a knowledge economy will, at best, further contribute to a fractured society where the gap between societal participants and those forced onto the sidelines will continually widen.
References


