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Book Review: Technology-enhanced professional learning: process, practices and tools

Steve Walker
Mathematics, Computing & Technology
The Open University *(April 2014)*
steve.walker@open.ac.uk

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Review

In a widely cited paper 'Learning notes Notes' (1992) Wanda Orlikowski examines the adoption of Lotus Notes in a knowledge intensive consultancy firm. Lotus Notes was an early collaborative tool, combining elements of shared databases, conferencing and email. The information technologists in the organisation used the software extensively and effectively in co-ordinating their work and collaborating to build a shared knowledge base. They succeeded in persuading their senior management to support the roll-out of Notes, in particular to the consultants who comprised the businesses' core knowledge specialists so that they too could share their learning and improve the company's competitiveness. That's not, though, how it turned out in practice. The consultants' use of the technology was desultory, and limited to routine administration. Orlikowski concluded that the difference in attitude between two groups of workers, in the same organisation, could be explained by occupational and organisational cultures. The technologists brought an essentially collaborative approach to their work grounded in values and methods of collaboration widespread in their occupation and which gave rise in other settings to developments like the open source software movement. The consultants, however, operated in a fiercely competitive culture in which developing distinctive individual knowledge that differentiated a worker from his or her colleagues was the key route to career progress; this behaviour was strongly incentivised by the

organisation's 'get on or get out' promotion and retention policies for consultants. There are extensive bodies of research in a similar vein, concerning the interactions of work, learning and workplace technology to be found in fields such as knowledge management, computer-supported co-operative work (CSCW), or organisational studies. A central story which emerges from these wider literatures is a sense of messiness and contention in organisational life which may confound, or at least, confuse, attempts to promote learning and collaborative working.

The editors' objective for this collection is 'to stimulate the development of an integrated domain of technology-enhanced professional learning', or TEPL (Littlejohn & Margaryan, p. 2). TEPL, they suggest, brings together aspects of three existing domains: learning processes, work practices and technologies. In covering this ground, the central problem the editors aim to address is that contemporary workplace issues of 'agile transformation', 'perpetual change', 'loosely connected, transient groups', 'crowd work' and so on are not well served by conventional professional learning. TEPL is of value here, they suggest, because we can draw on the digital learning technologies that are becoming pervasive in schools and higher education to address issues of skill and knowledge in this turbulent work context.

The book is organised in three sections corresponding with the three domains that comprise TEPL. Each section is comprised of three or four chapters addressing a topic within the theme and a further, commentary chapter discussing and drawing together the section's chapters. The book is topped and tailed with an introduction and concluding chapters by the editors.

The first section focusses on work practices; work practices and continuous organisational learning (Clow); distributed work (Bietz); and 'crowd work' (Nickerson). Fiedler's thoughtful commentary chapter highlights the need for a serious domain of TEPL to be grounded in a 'thorough analysis of emerging and contemporary work practices' and concludes that the preceding contributions provide a 'glimpse of the type of analytical effort' that will be required and they do indeed address some aspects of contemporary work. That it's a 'glimpse' implies a well-founded concern about the limitations of the chapters. Taken individually they provide interesting contributions, but collectively they provide a very limited view of the world of work and professional learning. Since TEPL aims to develop an understanding of learning and technology in this setting, this is a significant problem with the collection. It undermines the strength of the foundational argument of the collection in three ways. Firstly the 'professional work' of the collection's title is not defined. This makes it hard to assess the intended scope of TEPL. It is fairly clear that 'professional work' is not restricted to the traditional professions such as law or medicine. The contributors' concerns appear to be primarily with workers in largely digital information-intensive areas. It's not clear whether this is intended to include all 'white-collar' work and whether it is intended to include certain kinds of technology-intensive skilled manual work.

Secondly, the work contexts and practices that are discussed, while interesting and significant, are limited and it would be hazardous to attempt to generalise from these

across a wider range of (professional) workplace learning. Clow's account of the kind of practices in Google's 'community-based Learning and Development' approach, drawing on agile software and project management methods, is stimulating and thought provoking, but Google is a very particular kind of workplace. We might accept that Google is an example of what Clow terms 'grassroots' management, as implied in the chapter, but outside a certain subset of technology companies it is evidently not the norm. This is not to argue that some of the practices described in the chapter might not usefully be applied in other settings - indeed peer learning can be a valuable approach in many contexts - but it is not clear what the limits on such generalisation might be even among high-tech knowledge workers (see, e.g. Gleadle et al, 2012). Similarly, Nickerson's chapter on 'crowd work', an interesting and potentially significant area of work, is not self-evidently widely generalizable. Bietz's chapter on distributed work, which is perhaps the most generalizable of the three issues covered here, highlights important issues for learning that are raised when workers are no longer co-located.

Thirdly, changes in work organisation are usually described in enthusiastic and positive terms. There is almost no mention of other widespread aspects of contemporary work as experienced by many professional (and non-professional) workers. For 'looser organisational ties' (Bietz) we might equally read 'increasingly precarious'; for 'temporary and flexible appointments' (Bietz), casualization; or 'rewarding individuals based on results or impact' (Clow), piecework. Nickerson's chapter can be read as an essay in the use of discipline, control and computerised monitoring of precarious workers as easily as it can the enablement of novel, flexible work forms. This lack of a critical understanding about the world of work raises the question of the kinds of ethical commitments that educators might bring to the field. More pragmatically, it leads to a rather mechanistic view of the learning and technology in the workplace, and why professionals' responses to some learning interventions might prove to be more complex: in some cases they may result in forms of disenchantment, resistance or contention (see, for example, Owenby, 2002).

To this reader, at least, the collection is at its strongest in the second section, focusing on learning processes. Here, the authors of each chapter respond in a distinctive way to the challenge posed by informal workplace learning to conventional approaches to training and education. Three of the chapters focus on the inherently social nature of workplace learning. Billet gives a thoughtful account of the importance of mimetic professional learning, which he argues is the dominant mode of workplace learning. The use of digital technologies are further opportunities for mimetic learning, and Väljataga and Fiedler, in their commentary chapter argue that the technologies offer entirely new models for mimetic learning (for example through the use of instructional video), though this seems to risk losing precisely the context that makes mimetic learning so powerful . Sloep examines professional workers' use of wider peer networks in addressing problems outside the realm of formally programmed learning interventions, and describes tools that aim to support the identification and mobilisation of expertise in peer networks in support of such learning.

Rtiva Engeström draws on expansive learning theory, with its roots in cultural-historical

activity theory, integral to which are the relationships between individual and collection learning, and between learning and work practice. As Väljataga and Fiedler point out in their commentary on the section, Engeström is alone in appearing to suggest that digital technologies and organisation (and wider social) cultures co-evolve; culture influences the design and use of digital technology even as it is influenced by them. This co-evolution of work and technology does not only provide the context for professional learning; perspectives on and approaches both to learning and to technology are themselves dimensions of work and employment cultures.

While informal workplace learning takes place in inherently social or sociotechnical settings and following Lave & Wenger's seminal (1991) work, social learning theories have become dominant over the last two decades revolutionising our understanding of learning. However, cognitive aspects of learning have at times seemed to disappear entirely, but here Boshuizen and van der Wiel take a refreshing (for this reader, at least) cognitivist perspective on the development of workplace expertise reminding us that work learning (as elsewhere) has important cognitive as well as social dimensions. Photocopy engineering isn't just about identity and community; it's also about knowing how to diagnose and fix faulty photocopiers.

In the contributions in the third section on 'Digital technologies' some of the limitations of the first section return. Firstly, drawing on community of practice concepts, Ley et al discuss three approaches to the use of technology to link organisational objectives with individual learning needs, reflecting top-down, bottom-up individual and bottom-up community strategies. In each instance, the technology is described and its intended use illustrated through examples. These seem to be based on persona and scenarios developed by the designers rather than empirical cases, though this is unclear, and so can only provide only weak evidence about how a learning technology would be used 'in the wild'. At the very least, there is little discussion of the organisational contexts and cultures in which the technologies have been shown to be effective. This makes it difficult to evaluate the significance of the technologies presented. Siadaty et al's chapter on social semantic technologies suffers from similar shortcomings. This is not to deny the potential value of the technologies presented in these two chapters (it seems reasonable, for example, to think that social semantic technologies may have considerable impact), but to note that the value has not been demonstrated empirically and there are reasons to think that it may prove more complex than is reflected here.

Berendt et al examine the potential of learning analytics, drawing on a social networking site to encourage collaboration among teachers internationally as a 'proof of concept'. They highlight some of the limitations in their approach, most notably that descriptive statistics don't allow inference of cause and effect, and the difficulty in such cases of understanding how interactions on-site relate to other communications outside any specific service. In formal education, learning analytics is attracting a great deal of attention with its possibilities for improving the effectiveness of the design of learning episodes and personalising learning to the needs of individual students. It does, though raise significant ethical issues (see Slade & Prinsloo, 2013). The authors here note the additional complications of workplace learning, where learning analytics might easily

become simply another technology for surveillance and control, and so potentially a source of conflict and subversion rather than or as well as learning and innovation.

Luckosch et al report on two case studies of gamifcation in professional learning: one in healthcare and the other in policing. Among the potential benefits of such approaches is the potential to link the in-game social structures and conventions to those experienced out-of-game (presumably, for example, through incorporating role-play). They highlight the importance of matching the realism and authenticity of the game to players' intended learning, for example where visual fidelity is important. In his commentary chapter Milligan (p.169) notes that there may be problems in accommodating the sometimes opposed learning needs of organisations and workers. In a small example of this potential, Luckosch et al mention workers playing learning games during their coffee breaks. While this might be reasonable for some workers, particularly taking part in a study, it is easy to see how this might be a source of significant contention in many workplaces, especially where workers have less autonomy in the conduct of their work.

Overall, this collection contains useful and thought-provoking ideas on the relationship between workplace learning and technology. This review has focussed on the apparent understandings of workplaces, which are generally complex sites of frequently divergent interests and processes of negotiation, accommodation and contention among them. In such settings, learning interventions can benefit both employers through increased innovation, creativity and effectiveness, and employees through increased job satisfaction and employability. They might alternatively be associated with disillusion, resentment and even conflict. Workplace cultures can either promote or discourage co-operative working and learning; in some instances the same organisation can do both with different occupational groups. Using the term 'Technology Enhanced Professional Learning' to describe this domain hard wires the assumption that that technology can and does enhance workplace learning, and that 'enhancement' can easily and controversially be identified. I would argue for an approach to the study of technology, learning and the workplace which takes a rather more critical view of its component parts, and which draws more extensively on existing work in closely related fields.

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