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Learning in Knowledge Communities: Managing Technology and Context

MICHAEL BARRETT, *Judge Institute of Management, University of Cambridge*
SAM CAPPLEMAN, *Hewlett Packard Global Alliances*
GAMILA SHOIB, *School of Management, University of Bath*
GEOFF WALSHAM, *Judge Institute of Management, University of Cambridge*

In contemporary organizations, significant emphasis is placed on the processes of knowledge sharing and learning, which are increasingly seen as crucial to organizational success. Information and communication technologies play an important role in these areas, but to many there is a lack of clarity regarding how such technologies can be best deployed. In this article, we provide a wide range of examples of where technology has been used to support learning in knowledge communities, with varying degrees of success. We use this material to develop specific characteristics of effective knowledge communities, and detail ways in which both the context and the technology should be managed. A key message we derive is that the maintenance of a supportive culture and context for learning and knowledge sharing is crucial, and that an integrated approach to technology deployment and use needs to be developed in conjunction with this. We argue that action in this arena is important for all levels and functions of management, not just senior managers or IT staff, since the support of effective learning and knowledge sharing in and between communities involves everyone in the organization in all job roles.

Keywords: Knowledge community, Information and communication technologies, Organizational context, Learning

Introduction

The importance of knowledge in organizations has received much emphasis over the last decade following pioneering work in the early 1990s (e.g. Nonaka, 1994). However, unlike some management initiatives that soon become unfashionable, the knowledge theme has persisted until the present time with no decrease in interest. Indeed, the literature on the topic continues to develop, with increasing recognition of the role of communities in knowledge sharing (Wenger and Snyder, 2000). Empirical evidence shows that these communities are formed within organizations as would be expected, but also between people in different organizations, coming together across boundaries to learn through sharing knowledge on particular topics (Anand *et al.*, 2002), or to collaborate collectively on the development of artefacts such as software (Markus *et al.*, 2000).

An influential body of work focuses on learning and knowledge sharing in communities of practice (Lave and Wenger, 1991; Wenger, 1998). We will, however, use the more general term 'knowledge communities' in this article, since we are concerned with learning in communities which are both voluntary in terms of participation, and those with a more managed membership (Storck and Hill, 2000). We are also concerned with learning through the sharing of knowledge between communities, in what has been called the constellation of communities which exist in organizations (Wenger, 1998; Ward, 2002).

Writers on the subject of knowledge sharing have often noted the importance of a supportive context, for example in terms of a collaborative culture and appropriate incentives for sharing (Davenport *et al.*, 1998). It has also been emphasized that this context cannot be managed in some simple top-down way, but that learning in communities needs to be cultivated through encouragement and facilitation, for example in allowing new ideas to develop and circulate within and between communities (Brown and Duguid, 2000). In addition to context, most writers on knowledge communities see a key role for information and communication technologies (McDermott, 1999; Walsham, 2001). However, this role is normally not spelt out in any detail. In this article, we go into specifics on the role of technology in supporting knowledge communities, and we emphasize the need for the management of both technology *and* context in order to provide effective support for learning and knowledge sharing.

For instance, we may all be aware of technologies such as e-mail, groupware, e-learning systems and teleconferencing, and they clearly have a potentially valuable role in supporting knowledge communities. However, we also know that there are constraints to the usefulness of these technologies. For example, work on virtual teams has shown that periodic face-to-face contact can be necessary to develop and reinforce trust relationships between team members (Maznevski and Chudoba, 2000). The main message of this article is that information and communication technologies (ICT), whilst providing a foundational infrastructure and environment to support learning, may not, by themselves, be sufficient to stimulate effective learning in knowledge communities. Softer issues such as motivation and the learning context are crucial in forming a supportive 'climate' for knowledge sharing. However, if the climate is good, then technology has a central part to play in providing the media and infrastructure for learning in and between knowledge communities.

In what follows, we develop these arguments using examples, firstly, of where ICT have provided highly effective support for learning in knowledge communities. Secondly, we describe examples of where ICT learning support has been less effective. Drawing from both sets of empirical examples,[1] we derive some key characteristics of effective knowledge communities, and then some management lessons as to how to promote, support and manage such communities.

Although a key theme of our article concerns ICT use in knowledge communities, we want to emphasize that our messages are aimed at *all* managers and their staff. The role of ICT in supporting effective learning is not something that can be left to technologists or senior managers, although both these groups have a major part to play. It is something that should concern everyone engaged with organizational life. We are all members of different knowledge communities, and we all need to think carefully about how to make these communities effective, including an analysis of the role of ICT. We aim in what follows to provide some examples and concepts to help managers to think this through in their own contexts.

ICT Support for Learning in Knowledge Communities

We provide five areas in this section of effective ICT support for learning in knowledge communities. For each area, we discuss the ICT application, the focus of the support for learning, important contextual elements that mediate the community interaction, and we provide a case example. Table 1 summarizes the material in this section.

Virtual Interaction Focused on Products or Issues

Hewlett Packard's IT Resource Center (ITRC) (Raths, 2001) brings together engineers, internal IT staff and customers through intranet or extranet-based communities focused on specific products or issues. There are thousands of members in these inter-organizational communities covering topics such as business recovery planning and operating systems software. Community participants can ask questions and receive answers within a short period of time. For example, when systems administrators have problems, they can post symptoms electronically and receive detailed help on how to proceed within minutes.

In order for communities of the above type to flourish, participants must trust the responses they receive and find them effective in practice, or the approach will rapidly fail. Hewlett Packard's approach to this is based on a system of user profiles and ratings. Community members each create a short biography page and rate each other's responses from 1 to 10. The response from a particular person comes, therefore, with some 'credit rating', making it easier for the questioner to assess the likely value of the answer.

Many writers have noted that one of the difficulties of purely virtual interaction is a potential lack of trust (Kirkman *et al.*, 2002). Members of the Hewlett Packard online communities do not normally meet one another face-to-face, but the development of trust is supported by the credit ratings described above, and reinforced if the advice that is received actually works. For example, a systems administration consultant and frequent user of the online community approach said that there were members of his online community whom he would trust on technical matters more than his closest colleagues. Hewlett Pack-