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Support systems for knowledge sharing within a social learning context: a research proposal

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Abstract. Many organizations have developed digital libraries resources, containing the collected wisdom of the organization, that may be used by its members when they find themselves in unknown or problematic situations. However, most of the knowledge sharing and learning processes, within organizations, are social processes, anchored in the daily work practice with its specific problems and are motivated by the engagement and participation of the individuals in the practice. Previous efforts to build knowledge base systems have here neglected such issues as that interpretations of knowledge derived from experiences generated through previous problem solving are socially constructed and directly related to the problem situations at hand. The proposed research aims to explore how support systems for knowledge base may be designed, in terms of functionality and structures, in order to support a social learning model to better reflect the processes of learning and knowledge sharing within organizations.

Introduction

This paper presents the current research field of knowledge management and specifically support systems for knowledge distribution. The field is defined as the management of processes and practices for creating, acquiring, capturing, sharing, and using knowledge, wherever it resides, to enhance learning and performance in organizations, as well as the development of support systems for these activities.

The problem the current research investigates concerns the usage and development of support systems for knowledge bases, such as best-practice systems and similar, to enhance and support learning and knowledge sharing within organizations. Many off the efforts for building knowledge bases for the sharing of knowledge in support of problem solving and better decision-making have been directed towards an individual learning level. Organizations have constructed digital libraries resources that may be used by individuals when they find themselves in problematic situations that require that draw upon the collected wisdom of the organization.

However, most of the knowledge sharing and learning processes, within organizations, are social processes, anchored in the daily work practice and its specific problems, made up of informal and interactive contacts between colleagues. Social processes of learning and knowledge sharing are motivated by the engagement and participation of the individuals in the practice. The previous efforts to build knowledge base systems have here neglected issues such as that interpretations of knowledge derived from experiences generated through previous problem solving are socially constructed and directly related to the problem situations at hand.

That many of the investments efforts made have focused on individual level learning is mostly due to the fact that these are much easier to manage and incorporate into the formalized organizational structure as compared to informal knowledge sharing processes within a social setting.

The proposed research aims to examine what is required, in terms of functionality, of support systems for knowledge bases, such as best-practice databases and similar, in order to encompass a social model for knowledge sharing. The question raised is how support systems should be designed in order to more accurately reflect processes of knowledge sharing within a social context. The proposed research strives to address this question by investigating processes of social knowledge sharing and their conditions.

The paper will first give the background to the research and discuss the problems. Then the paper continues with the actual research proposal, stating the research question that is addressed, describing the method of research and pointing upon the results that the study will yield.
Research background

During the lifetime of an organization a lot of experiences are gathered regarding how to go about in solving different problems and tasks that its members encounters in their strife to meet organizational (as well as personal) goals. The members themselves or the organization as a whole may collect these experiences either consciously or not. When an individual member finds himself in a problematic situation where he lacks experiences or knowledge of how to go about an solve the situation at hand he may ask himself whether this type of situation has been encountered before and if so, how was it handled. What the individual is doing is looking goods example or solutions that have been successfully applied before, thereby, so to speak, avoiding the re-invention of the wheel. An engineer that thinks that a colleague may have sometime encountered a similar problem stops by his office. A security specialist, working at a division in another region, encounters interesting data related on traffic accidents related to weather hazards contacts a colleague, with the same job responsibilities, at another division to get his advice or opinion. Just as in these situations most of the knowledge sharing within organization takes place within informal networks of peers, outside the formal organizational structures for communication and information exchange. However, relying to heavily on informal communication networks for sharing knowledge has the disadvantage that one does not always know whom to talk to or if the knowledge resides within the organization.

By consciously putting down efforts in creating and maintaining knowledge bases, i.e. collections of experiences related to different problems encountered in the practice and their solutions, and making these bases available to the members of the organization it is possible to support good traditions and effective problem solving. When individuals encounters problematic situations in which they have never been before they may turn to an experience base. Such bases of experiences may be an important part within an organizational memory, i.e. the formal archives and knowing which the members of the organization posses and which explain and describe all previously made transactions and decisions and why they were made. They may help the organization in preserving traditions, its history and uphold continuity in ongoing activities. In many cases knowledge bases are vital to organizations as newly employed may draw upon the collected wisdom and learn.

Many of the efforts made in developing support systems for knowledge sharing have focused on an individual level and taken the form of digital libraries with collections of well organized and cataloged problems and their solutions. Here the individuals may, just like a library, search through catalogs for similar problems in order to find knowledge leading to their resolutions. The problem, however, with digital libraries are that they usually hold standardized and generalized wisdom. The information retrieved must be reinterpreted and made meaningful to his unique problem situation and practice. Here differences regarding cultural and linguistic aspects may prove to be large obstacles to overcome (Goodman and Darr 1996).

Another problem with digital libraries and similar systems is that their content runs the risk of becoming outdated over time (Stein and Zwass 1995). In an environment characterized by a high degree of dynamic old truths may become inadequate as the conditions for different problem situations changes or new ones emerges. This puts high demands on organizations to devote much energy for maintaining the material in the digital libraries in keeping them up to date. Even content related errors may hang around for a long time before they become corrected, thus affecting the their usefulness when drawn upon.

All these kinds of problems or drawbacks, related to usage of traditional digital libraries for sharing knowledge, may greatly affect the users’ perceptions of their usability and effectiveness in problem solving situations as the effort spent may not stand in proportion to the gains made.

What is forgotten in many previous development efforts of support systems for knowledge sharing is that most of the knowledge or experiences generated are tightly coupled to the practice and the problems and tasks at hand. An example of this is the case of repair technicians at Xerox (Burk 2000). Here, scientists observed a group of repair technicians that gathered round the office coffee machine to exchange tips about repairs and swap war stories about experiences at customer sites. The technicians seldom consulted repair manuals or training materials, relying instead on their informal network to transfer knowledge and solve problems. Interaction with the group, which had no official recognition from the company, was also the way that new technicians learned the tricks of the trade. Such communities of practitioners, as the above described, have here came to play an essential role in transferring good practices, solving problems quickly and efficiently, and developing professional skills. From this example it is clearly shown that learning and knowledge sharing processes are fundamentally social processes, motivated by the engagement and participation of the individuals in the practice. This may seem surprising considering the romantic notion of the lone thinker contemplating the mysteries of the universe or the solitary scholar deeply buried deep beneath tomes of arcane knowledge. However, it is, according to Wenger and Snyder (2000), this social model that most clearly describes the way organizations solve problems, distribute knowledge and develop professional skills.
When considering support systems for knowledge sharing there seems to exist a clear need to focus on a social level and how knowledge created and shared within such a context instead of focusing solely on an individual level learning (Huysman, De Wit, and Andriessen 1999). This becomes obvious when one considers that existing support systems for knowledge sharing seems to offer too poor functionality for social processes of learning and knowledge sharing. One issue that seem to have been sadly neglected is that interpretations of knowledge derived from experiences generated through previous problem solving are socially constructed and directly related to the problem situation at hand. From an individual level perspective it is usually demanded, both of physical as well as electronic information resources, fix roles of responsibilities (Marshall, Shipman, and McCall 1995). These may be publicists, librarians, authors and readers. However, from a social level perspective on learning these roles blend together and are more fluent. The individuals are not only consumers of knowledge but participate actively in its creation and interpretation through social interactions. Here an individual may be seen as being author and reader as well as interpreter of the information/knowledge.

**Research proposal**

**Research question**

Given that learning and knowledge sharing within organizations are socially motivated processes, anchored in the daily practice with its specific problems and informal interactive contacts between peers or colleagues, other requirements, in terms of functionality and structures, are needed than those used for traditional knowledge sharing systems. In order to elicit these specific requirements a means for analyzing and describing a social learning and knowledge sharing setting such as e.g. communities of practice is needed. One such means is the social learning model proposed by Wenger (2000). The model describes the constitutives of a social learning system and the activities that its participants engage in. Using this model as the basis for the research the following question is raised.

*What functionality and structure (relating to content and representation of knowledge) of a support system for knowledge sharing, such as e.g. best-practice system, in order to support a social learning model such as the one described by Wenger (2000)?*

**Method of research**

The proposed research will be take as its basis a theoretical, empirical and explorative research strategy. Based upon theoretical and empirical findings an explorative study will be conducted in order to address the issue of what functionality and behavior, i.e. processes and structures, that should be supported in order for a system to be an effective support tool in sharing knowledge in order to enhance problem solving.

The research is taking the following course of action. First, a development of a preliminary hypothesis concerning required functionality of sought support system. This will make up an initial model of how the knowledge should be organized, and what structures and procedures should be part of the support system. Here the model of Wenger (2000) will serve as a guideline.

In order to actualize support through information system, for the sharing of knowledge within a social setting such as e.g. a community of practice, an understanding of how such a setting generate and share knowledge and learning is necessary. Here, a theoretical examination will be conducted based on the rich flora of contributions from such authors as e.g. Brown and Duguid (1991), Ciborra and Lanzara (1994), Weick and Roberts (1993), and Adler (1990). These authors have all have given light to different aspects of shared learning and generation of knowledge within 'communities of practice'. In this respect, the work of Nonaka and Takeuchi (1995) on organizational knowledge creation is also important. A theoretical examination is chosen here because many authors have contributed in this area and exploring their work and findings should be sufficient.

Goodman and Darr (1996) points out that any support system designed to facilitate the transfer or sharing knowledge needs to offer more than communication facilities. It needs to implement the functionality of an organizational memory, an essential requirement for making knowledge available to other within the organization. In this respect, we will here also conduct a theoretical examination of the design and actualization of organizational memory through the usage of information systems, supporting organizational learning. Here, the theoretical examination will be based on the work of such authors as e.g. Walsh and Ungson (1991), Stein and Zwass (1995), and Wijnhoven (1998) on organizational memory, and Senge (1990), Huber (1991), Argyris (1993), and Argyris and Schön (1978) on organizational learning.
Then, a theoretical study aiming to shed light on and describe other models for knowledge organization and activities that are founded in similar systems and point upon and discuss their strength and weaknesses. Candidate systems are here for example FAQ-systems, such as 'Answering Garden' (Ackerman and Malone 1990), best-practice systems, News-systems, conference systems, expert systems, and hypertext systems, such as gIBIS (Conklin and Begeman 1988), amongst others.

Further an empirical investigation, using the social learning model of Wenger (2000), will be conducted in order to derive rich case descriptions from a particular social setting. These, when analyzed, together with the results from theoretical examinations will yield a set of implications or specification for the design of functionality and structure required to support activities of knowledge sharing and learning within a social setting. These specifications will be used further on in our study when designing a prototype support system.

In parallel a support system will be developed exploring the issues that have been uncovered from the other examinations. It is then followed by an empirical study in order to gain an evaluation and validation of both the hypothesis concerning the functionality of the support system and of the support system as such.

The support system will in itself generate further issues for exploration and thus contribute to definition and extension of current theories concerning what such a system should support regarding processes and structures, i.e. functionality and behavior, in order to contribute to the sharing of experiential knowledge organization-wide.

**Research results**

The results from the study will be, besides the specification support system as such, the physical artifact, design implications for and a conceptualization of the support system, i.e. the hypothesis regarding what functionality, structures and model of knowledge organization that is required. Then, the evaluation of the support system through an empirical study, i.e. the test of the hypothesis, weather it is positive or negative. Should the evaluation yield negative results, these will constitute the basis for further studies and an improved hypothesis regarding the design of the support system.

The results will have industrial as well as academic relevance since the conceptualization of such a system, together with the derived design implications, will have direct impact on how organizations design any support system for the exchange or sharing of experiential knowledge, in promoting organizational learning. Industrial values of the results lies in the specification of an instrument for a more effective knowledge sharing and problem solving within social settings. Academic values of the results lies in the theoretical model/specification of functionality and structures for support systems in social knowledge sharing a settings that my serve as the foundation for further research and theory construction.

**References**


