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INTRODUCTION

Two earlier work and learning conferences (Leeds 1999; Calgary 2001) and the proliferation of organizational learning studies (Crossan et al. 1999; Robey et al. 2000; Virkkunen and Kuutti 2000) demonstrate the importance of professionals' knowledge creation. Jarvenpaa and Staples (2000) motivate the reader by writing: "Organizational knowledge assets will only grow at the rate at which the individuals are willing to share their experiences, insights, and wisdom with others in their work group, organization, and across organizations". In this paper we are interested in both the knowledge creation process of the individual and knowledge sharing processes at the group and organizational levels.

Both knowledge creation and knowledge sharing processes of the individual studies are motivated by the problems in their work. The subjects or the students in this study are preparing their doctoral dissertation on the themes or problems met in their work. The doctoral seminar where the students and I (i.e. the author of this paper) meet once per month is tried to be organized in such a way that it as much as possible supports knowledge creation. To this end three new articles are read between the two consecutive seminar meetings.

The ideas behind of the article reading are described in my article (Järvinen 1998). But I do not know whether the article reading has desired effects or not, or does it create any knowledge or not. I am therefore interested in knowledge processes started by reading the articles. By referring to Jarvenpaa and Staples above I am also interested in knowledge sharing processes at the group and organizational levels.

THE SEMINAR ENVIRONMENT

Most of our doctoral students are working in private and public enterprises and hence studying only part-time. They finished their graduate studies about 10 years ago. This means that they have more relevant practical experiences but fewer contacts with scientific literature than full-time doctoral students.

Our seminar has half-day meeting once per month. The 3-4 articles distributed at the end of the last meeting (one month ago) are then summarized and evaluated. I as a teacher have also prepared a 3-8 pages long review on each article. All reviews concerning a certain article are in the meeting distributed among participants and then discussed. One of student reviewers is then selected to polish her review for publication. The polished reviews are yearly published as a report called IS Reviews (IS = Information Systems). A student will get credits firstly by preparing her review and then also by polishing the final version.

METHOD AND DATA GATHERING TECHNIQUE

I do not assume that a human being is a machine nor an organism but merely a self-steering system (cf. Aulin 1989). I do not know any theory on learning with assumption of self-steering system. This means that I cannot apply the theory-testing approach to this topic, e.g. the controlled experiment, but I must use some theory-creating method. I can call my method the multiple case studies where each responding doctoral student is one case.

I could use interviewing as data gathering technique, but when my students are living in geographically different places, I chose an electronic questionnaire with open questions as the technique to be used in my cases. The interviewees responded by using electronic mail.

I gave students freedom to choose which article they describe. I asked them to inform the title of that article and to describe their own knowledge processes started by reading the article. I also asked them to consider both seminar meetings as a group and one or more groups in their company where they told about their reading experience. Which kind processes related to knowledge do they identify or remember at the group level? At the organizational level I asked them to pay attention to transferring "good knowledge" with you into your organization.

MULTIPLE CASES – THE ARTICLES READ AND THE STUDENTS' RESPONSES

The students did not read one and the same article, but many different ones. To inform the readers of this text I describe the main points of the articles considered before presenting the responses given by the subjects. In the material there are two pairs who summarized the same

article. After the article I describe the responding person and her responses at the 1. individual , 2. group, and 3. organizational levels. All the names of the students are disguised.

Gilmore and Pine (1997) wrote in their article as follows: "Companies throughout the world have embraced mass customization in an attempt to avoid those pitfalls and provide unique value to their customers in an efficient manner. Readily available information technology and flexible work processes permit them to customize goods and services for individual customers in high volumes and at a relatively low cost. … We have identified four distinct approaches to customization, which we call collaborative, adaptive, cosmetic, and transparent."

Helen is working as a chief development officer in a small software house. She is responsible for products and the sales processes in her firm.
1. The individual level: "I felt the article by Gilmore and Pine (1997) very timely, because its message is familiar to me in product marketing to buyers, but its utilization in practical software business is not yet thought. This article triggers my willingness to know more these matters in order to pick up some connections with my own research domain. The article also increases such a feeling that there are many interesting topics I wanted to follow but I do not have time. I again find myself in the basic question whether I must now restrict my interest area. Obviously I am in my learning in such a stage that I can now more realistically estimate my own potentialities, and the solution will be my attempt to follow either many topics superficially or few ones more deeply."
2. The group level: "In the long-lasting seminar meeting this article by Gilmore and Pine was discussed as the last one, and the conversation itself was tame. In general, the conversations in the seminar vary, because the backgrounds and interest areas vary."
3. The organizational level: "I in our firm discussed about the ideas emerged because of this article, namely the implication of the article on our research and development policy. We might learn about this article, lessons learned in history that the results of the buyer marketing can in some areas try to apply to our current situation in different branch. The article gave new kind of basis for discussions about the transparent customization and its potentialities in our mobile products. Some practitioners are strongly prejudiced against academics, and transmitting 'good knowledge' will then have problems. I should translate academic terms into practical language. Thereafter discussions in our firm could succeed."

Schultze and Orlikowski (2001) explore the contemporary discourse associated with the new phenomenon of virtual organizing, and identify a number of metaphors used in this discourse to characterize various aspects of virtuality. … To understand the kind of reality being imagined and incited, we examine the various metaphors being proposed in the practitioner-directed literature on virtual organizing. We find that this discourse contains a multiplicity of different metaphors, each highlighting and hiding distinct aspects of virtual organizing. We identify five overarching metaphors in this discourse.

Peter teaches mathematics in a certain institute at the secondary level. He started his studies in information systems only after graduating in mathematics.

1. The individual level: "This article (Schultze and Orlikowski 2001) shed light also to theoretical side of the term 'metaphor'. I really got a new knowledge from this article. I immediately found that I had been able to apply the metaphor concept to my research material concerning purchasing home computers. I mean that my interviewees used everyday language when they described their purchasing processes, and I must interpret their phrases and figures of speech when I analyzed my raw data."

2. The group level: "In our seminar meeting I learned a lot how differently other participants read the same article. The need for criticism even more importantly aroused when researchers are informing their results by using metaphors."

3. The organizational level: "It is not easy to transmit 'good knowledge' into our school or institute, because there are many ossified attitudes and practices. In our school there are a huge number of different methods to teach difficult things, but those methods are not shared."

Orlikowski (2002) identified two distinct perspectives on organizational knowledge. One proposes that organizations have different types (e.g. tacit and explicit) of knowledge. Another perspective argues that tacit knowledge is the necessary component of all knowledge. Orlikowski adopts such a perspective that tacit knowledge is a form of "knowing", and thus is inseparable from action because it is constituted through such action. In interpreting the findings of an empirical study conducted in a geographically dispersed high-tech organization, she suggests that the competence to do global product development is both collective and distributed, grounded in the everyday practices of organizational members.

Mary works as a director for software production in a software specialist team. Her team is developing business solutions for her customers in communication, co-operation and work group area.

1. The individual level: "I all the time compared the situations and events described in the article with the same things in my company, because we are also working at many geographically different places. I found many similarities. I also refresh my memory concerning Orlikowski's studies on utilization of groupware systems."

2. The group level: "I do not understand the seminar as a group, but in my company we have many groups and the similar processes like product development as Orlikowski described in her article. – I really agree with Orlikowski that increasing knowledge at the group level is difficult. The members have both explicit and tacit knowledge but it is difficult share both types of knowledge in reality."

3. The organizational level: "I did not yet give the summary of the article but I am going to transmit it to some selected persons. I have earlier discussed about many other issues raised in the seminar with my colleagues in our organization."

Stenmark (2001) presents that although tacit knowledge constitutes the major part of what we know, it is difficult for organizations to fully benefit from this valuable asset. This is because tacit knowledge is inherently elusive, and in order to capture, store, and disseminate it, it is argued that it first has to be made explicit. During an empirical study of recommender system usage, it was noticed how such technology could be used to circumvent these problems, and make tacit knowledge, in form of our professional interests, available to the organization as a whole. Using Polanyi's theories it will be showed how intranet documents can be used to make tacit knowledge tangible without becoming explicit.

Edward is a lecturer of ICT on the polytechnic level. He teaches on various ICT courses, guides and supervises thesis works at the business oriented ICT curriculum.

1. The individual level: "I was earlier thinking that an individual owns the tacit knowledge, and externalization in the sense of Nonaka and Takeuchi (1995) can support converting tacit knowledge to explicit one. Stenmark tries to utilize tacit knowledge without converting it into explicit one. The similar is taking place in Orlikowski's (2002) article, when tacit knowledge is integrated with knowing." – "Later I have thought that my students in polytechnics should more use explicit knowledge in their exercises, but they seem to prefer doing in practice. Maybe their willingness can be understood from the perspective of tacit knowledge."

2. The group level: "In the doctoral seminar I was a little bit astonished how tacit knowledge can be joined in the intranet document in an explicit form."

3. The organizational level: "Knowing the notion 'tacit knowledge' has encouraged me more actively than before defend professional and practical point of views concerning the development of general instructions of the thesis work guidance at the polytechnics."

Michael is currently a project manager at the university in two mobile learning research projects. Michael and his colleagues work also with evaluation, usability and user interface design.

1. The individual level: "The Stenmark's article first time triggered me to call my view on knowledge management as document management into question. Another trigger was Brown et al. (1989), where the authors questioned whether we could differentiate knowledge from its context. Currently I seriously doubt whether 'knowledge transfer' or 'knowledge storing' really is possible in the context of learning material or documents. This also re-organized relationships between knowledge management and learning in my thinking."

2. The group level: In the seminar meeting for doctoral students I was listening other participants' comments, and I later read the reviews of Stenmark's article made by my colleagues. I then recognized that we are rather curious about mutual starting points. We, the participants of our seminar, form a community of practice. Surprisingly many hints and ideas are shared among us. This is unexpected, because our community consists of different members, from executive directors to researchers, from engineers to teachers."

3. The organizational level: "I transmitted 'good knowledge' into my organization. We are planning the strategy of knowledge management and intranet. Within this strategy I now put more effort on ad hoc interaction and brainstorming meetings. In our unit the organizational structure and organizing as such are informal, and we appreciate that everybody expresses herself and shares information."

Deetz (1996) considered that the most problematic legacy of Burrell and Morgan's (1979) analysis (functionalist, interpretive, radical structuralist, radical humanist) is the perpetuation of subjective-objective controversy. Deetz sees three most evident limitations. Deetz proposes two dimensions to contrast Burrell and Morgan's dimensions. The first new dimension (local/emergent vs. elite/ a priori) focuses on the origin of concepts and problem statement as part of the constitutive process in research. The second "consensus-dissensus"

dimension draws attention to the relation of research to existing social orders. This dimension is similar to Burrell and Morgan's use of the traditional sociological distinctions between an interest in "radical change" or "regulation", but enables some advantages.

Chris is the director of the customer relationships management (CRM) solutions division in his software and service company. His research interest is to investigate factors potentially affecting the success of relationship marketing systems

1. The individual level: "I located my study into one of the four discourses proposed by Deetz and I picked up some describing features of that discourse, for example, firm culture."

2. The group level: "Many participants in the local doctoral seminar and in the provincial doctoral seminar compared four discourses by Deetz with four paradigms by Burrell and Morgan."

3. The organizational level: "I did not yet take 'good knowledge' with me into my organization."

John works as a lecturer in the department of computer science. His work is primarily focused on teaching.

1. The individual level: "During my reading of the article by Deetz I asked myself which knowledge is long-lasting and which one is expiring quickly. With the article by Deetz and many other articles I thought its truthfulness, believability and usefulness. I try to find the truthful articles touching my interest areas without looking at scientific approach used in the article. I believe that I have learned to better estimate the truthfulness of the references."

2. The group level: "I have not discussed about my studies and my reading experiences in other groups than in the seminar group. During the seminar meeting it was rewarding to listen the colleagues with the similar issues. I am not the only one who has encountered difficulties in proceeding with one's PhD research, nor in understanding of the fundamental thoughts of the author(s) articles read in seminars.

To me it was interesting that during the discussion of the article all the participants relate what they read to their earlier knowledge and experiences. The text of the article is then analyzed by the community, and the contribution of the article was then much richer than in the case reading it alone."

3. The organizational level: "I initiated discussion about the journals subscribed to our department and to our university. Are we subscribing the best possible journals? This article

by Deetz is very useful on many different disciplines – not only organization science nor social sciences."

IMPORTANT FINDINGS

The individual level: The responses can be mainly grouped into two classes. First, three subjects (Helen, Mary and Edward) relate the results of their article to their own work, company or activity. Secondly, three subjects (Helen, Peter and Chris) either reflect their capabilities as a researcher, or their own earlier or recent experiences in research work. Michael describes his personal development, and John is developing his own knowledge management.

The group level: Opinions whether the seminar is a group vary much. According to Michael and supporting by John the participants of our seminar, form a community of practice. Peter learned a lot how differently other participants read the same article, and Chris found that the structure by Deetz was shared among the participants of the seminar. Three subjects (Helen, Mary and Edward) did not actually see the seminar as a group. Mary told that she in her company had many groups and the similar processes like product development as Orlikowski described in her article. The responses tell that the participants in the seminar related their views to different views presented by the authors of the articles and by the other participants.

The organizational level: Three subjects (Helen, Mary and Michael) from seven reported that they transmitted the main message of the article into their enterprise and discussed about the ideas emerged because of the article.

DISCUSSION

Our findings show that about half of our subjects related the knowledge in the article with their work and shared it with their colleagues in the working organization. This means that from the utilization at work point of view the scientific articles can give something useful and practical to part-time doctoral students coming from practice. This result is parallel with the view that the professional has three types of knowledge work tasks: job-specific, knowledge-building and maintenance, and work management (Davis 2002), and the reading articles positively supports knowledge-building and maintenance. But because of the main purpose of

my doctoral seminar is to support the doctoral dissertation process, this objective is seen in responses. Many respondents emphasize contribution of the articles to their thesis work.

My criteria to select the articles restrict the opportunities to read and influence on possibilities to find the ideas to be utilized in practice. The articles considered in this study can be put in the order from the practical to the theoretical ones as follows: Gilmore and Pine (1997), Orlikowski (2002), Stenmark (2001), Schultze and Orlikowski (2001) and Deetz (1996). The last one concerns paradigms and matters close to philosophy of science. Schultze and Orlikowski (2001) performed a meta-analysis of the published articles. Three of seven subjects responded on those two very theoretical articles. This may explain my results.

Helen, Mary and Chris are working in industry. Peter, Edward and John are teachers, and Michael works at R&D institute. This partially, but not totally explains my results at the group and organizational levels. The Finnish business organizations are emphasizing team work, but in our polytechnics and universities teachers are working alone. This difference together with the personal attributes seems to show up from the findings.

My research process shows that I can get some knowledge about my students' knowledge processes and knowledge sharing with this kind of approach. But in order to find more detailed knowledge, better and more sensitive instruments are needed. This encourages both to improve research tools and to continue the studies on knowledge processes and knowledge sharing.

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