Motivation in collaborative workplace learning: Can participatory methods increase motivations for learning?

Teresa Holocher, Claudia Magdalena Fabian

Centre for Social Innovation/Technology & Knowledge, Vienna, Austria

{holocher, fabian}@zsi.at

Abstract: Motivational aspects are core to successful knowledge sharing and collaborative learning experiences. However, it still remains one of the great challenges to overcome motivational barriers when it comes to introducing information systems for collaborative learning at workplace. In the context of an international research project we have taken motivational aspects into account during the design phase and started a participatory process amongst researchers, end-users, managers, designers and developers. For the MATEL '10 workshop we want to introduce our participatory design approach, the challenges we faced during it's implementation and initial findings, which indicate that the continuous involvement especially of end-users contributes to creating a sense of ownership amongst them and becomes a motivational driver for the future use of the system.

Index Terms: participatory design, motivation, collaborative learning, organizational learning.

I. INTRODUCTION

Involving individuals at workplace in collaborative learning and knowledge sharing activities is still a major challenge for educational experts. According to M. Knowles (1984), who is well known for his theoretical work on andragogy, motivation is one of the key success factors for adult engagement in learning and knowledge sharing activities. Knowles stressed the importance of involving adults in the planning and evaluation phase of learning activities in order to enhance motivation. Heutagogy, an advanced theory of Knowles' andragogical concept, puts an even stronger focus on self-determined learning and the importance of creating ownership for the adult learner (Hase & Kenyon, 2000). A lot of research has been done on motivational aspects in organizational learning that focus on intrinsic and extrinsic motivations for learning and how these can be affected by external factors like organizational reward, management influence or social relationships. The approach that we have chosen relates to the hypothesis that by involving the different stakeholders from the very beginning in the design process the motivation to use a specific software system will increase. Following a participatory approach that involves the stakeholders at all stages of design, development and evaluation in changing degrees of intensity and applying a variety of methods while at the same time emerging ourselves as researchers into the organizational context we hope to overcome certain motivational barriers.

To test this hypothesis we are studying a business case, which is based within a large multinational enterprise in the automotive sector. Together with a small business unit of this enterprise we intent to design and implement new learning services based on Web2.0 principles that support cross-organizational collaborative workplace learning. The current wiki system, which had been implemented mainly for knowledge sharing purposes, has shown little success so far. Thus, we started investigating the motivations and barriers for collaborative learning and develop concepts that not only include new technological services, but also consider the departments learning culture and working context. Discovering motivational drivers and overcoming barriers of collaborative learning and technology acceptance will be key to success.

II. PARTICIPATORY DESIGN

As previously stated, our hypothesis in this work is that by making the design of the extended learning environment a joint effort between users, designers and researchers we create a sense of ownership and thus decrease motivational barriers for learning. We have chosen a participatory design approach where we involve the individual actors of our learning scenarios in the learning landscape design process.

Participatory design started in Scandinavia through a partnership between academics and trade unions in the 1970s and 1980s. The participatory design approach integrates those people who are designated to *use* a new computer system or workplace environment in order to play a critical role in *designing* it. It assumes that the workers themselves are in the best position to determine how to improve their work and their work life. In doing so, it turns the traditional designer-user relationship upside down, viewing the user as the expert and the designer as a technical consultant (Schuler & Namioka, 1993). The focus of this research method is not on the explicit, quantifiable and reproductive knowledge of the users but on the tacit aspects of human activity, as Spinuzzi says, it is "what people know without being able to articulate" (Spinuzzi, 2005, p. 165). Participatory design assumes that these tacit aspects can be productively and ethically examined through design partnerships in which researcher-designers and participants cooperatively elaborate artifacts, workflows, and work environments. The researchers' role is to make the tacit knowledge explicit, providing stakeholders with a more accurate understanding of how processes and systems work and how they can be improved. According to Kensing and Munk-Madsen (1993) researchers have to apply tools and techniques that allow the participants not only to provide relevant descriptions of the current working processes, but also to collect concrete experiences with the future system. Abstract descriptions about working procedures and future workplace visions must therefore be supplemented by techniques giving concrete experiences that help to understand the abstract knowledge, like mock-ups or prototypes. The participatory design approach is conducted iteratively so that researcher-designers and participants can develop and refine their understanding of the activity.

Participatory design is largely influenced by the organizational context and requires considerable flexibility in the selection and adaption of tools and technologies for knowledge creation. In addition, participatory research has faced criticism for not providing an explicit methodology for other scholars to follow. To cope with this problem we elaborated the design conversion model – a framework that helps practitioners and researcher to structure their design activities around the four SECI-phases of the organizational knowledge creation theory from Nonaka & Takeuchi [1995]. This proposal introduces the taken approach in the context of an international research project and some of the main findings of first user interactions.

A. IntelLEO Design Conversion Model

As described by Kieslinger et al [2009] the four phases of Nonaka & Takeuchi's SECI model, namely socialization, externalization, combination and internalization are all addressed in the design conversion model (see Fig.1) and are executed in a joint effort between researchers, end-users, educational experts, system developers and managers. By covering the different stages in the design process we establish an iterative process of contextual investigation, idea generation, prototyping and evaluation.
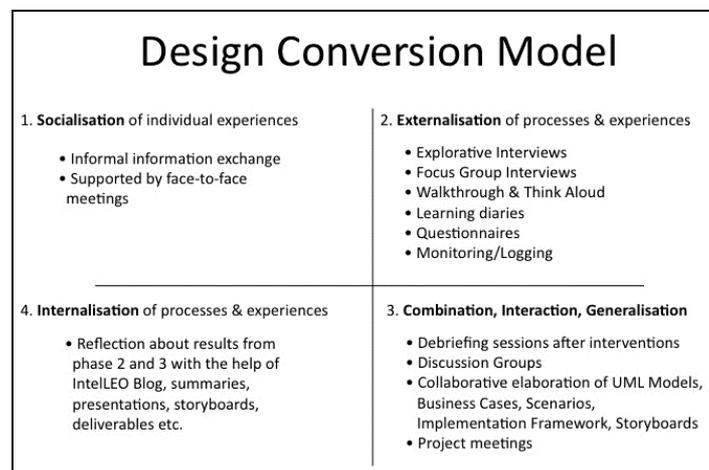

Figure 1: Design Conversion Model

During the socialization phase little intervention is done from the research perspective. Information exchange takes place mainly in an informal way and face-to-face meetings of some of the participants.

The externalization phase is very important from the researcher's perspective. Here a lot valuable data collection may be done. Together with the different stakeholders interviews and focus groups are conducted. Depending on the stage of the technological development walkthrough and think aloud protocols may be performed as well as learning diaries and the collection of questionnaires. Once a full prototype is up and running this phase will give valuable insights via monitoring and logging data.

In a third phase the collected knowledge needs to be combined, analyzed, transferred and generalized to a certain extent. Debriefing sessions and additional group discussions are planned for this stage as well as collaborative development of scenarios, storyboards, technical specifications, etc.

During the fourth phase, the internalization of processes and experiences, it is important to jointly reflect on phase two and three and feed all the results and insights back to the original authors. Blogs, summaries, presentations, storyboards and project reports are useful instruments during this phase.

The important innovation in this approach, which is a continuous and iterative process, is the fact that the employees/users are involved in the different stages and are thus designers of their learning activities, the involved processes and the technological support system. The researchers and developers play an important role in this interaction as they provide some norms and guidelines to the different stakeholders. They are mediators of a conversational translation from tacit knowledge to explicit context knowledge to some more formalized use case descriptions, requirements definition and system design. The cyclic movement between an individualistic view and a collective view during the design, development and evaluation phase shapes the implementation framework as well as the design process itself.

III. THE BUSINESS CASE

The business case that we are currently studying is based within a large multinational enterprise in the automotive sector. Within this organization a small business unit wants to implement an innovative approach to collaborative learning and knowledge building supported by collaborating learning services. The process should be implemented within the small unit, across various units in the organization and extended to specific external cooperation partners.

Different instances have been defined covering core activities of workers in this unit that shall be supported by the new system and the corresponding andragogical model. These business case instances cover aspects such as the introduction of a newcomer to the internal working processes of the unit or a problem-based learning situation caused by unexpected changes in the work assignment of an experienced worker.

The main challenge for the implementation of an innovation process is related to motivational aspects. The current wiki system, which has been set up for the purpose of knowledge sharing, is not widely used. Since the staff members of the specific business unit are under continuous time pressure and work in a highly competitive situation they are reluctant to share knowledge and to document or externalize their expertise. Thus top management support for the change project is of high relevance.

A. Implementation

Participatory design approach involves two groups of end-users. The first group consists of employees who are part of the core research project team and will be referred to as "facilitators" in this document. The second group is composed of employees who are not part of the core project team and are involved selectively in the design process. We will refer to them as "end-users".

The first phase of requirement elicitation started with an initial description of the business case by the facilitators, which was followed by explorative interviews with a group of end-uses covering existing working processes, current learning activities, the personal career development and organizational objectives. In addition employees came up with first ideas on how to improve current working practices and collaborative learning.

In a second step the individual interviews were summarized, analyzed in terms of commonalities and differences, and presented to the interviewees during a focus group. Together the participants reflected on the outcomes of the interviews, extended this knowledge base with more detailed information, and investigated more deeply on barriers and motivational drivers to use the collaborative wiki for knowledge sharing. The reference to the collaborative learning system in use helped to better explain what hindered employees to actually share and seek for knowledge.

To establish a continual discussion flow with end-users a blog was set up that is regularly updated with the outcomes from the participatory design interventions. In addition the results of the first interviews were presented to the middle management in order to discuss identified areas of actions that could be pursued by the management. The involved employees and their direct superiors assisted during this presentation. Thus the employees' contribution during the participatory design process was given high visibility in front of the management, which in return motivated the employees additionally to stay involved.

While the work with end-users still focused on the contextual inquiry about current knowledge sharing practices, the facilitators were taken a step further. They were introduced to the andragogical concept of the project and developed first scenarios how to implement the concept in their business case. In addition, facilitators, designers and technical engineers assessed first paper prototypes of future learning services in the framework of a pluralistic walkthrough.

As a next step, the outcome of this workshop will be integrated in the next version of paper prototypes, which will then be presented to a group of end-users. In addition, a larger community of end-users will be invited to participate in the assessment of results from the initial interviews and focus group.

IV. CONTRIBUTION AT MATEL '10 WORKSHOP

The first interventions revealed important aspects on current working processes, as well as motivations and barriers for collaborative workplace learning in such a large organization. It helped to better understand the context and culture of the involved employees and their initial requirements for collaborative learning. So far we have gained very important input from the involved users that helped to shape the first prototype even if only on paper form. We realized the importance of motivational aspects and that participatory design can be of value here. It is very important to adapt the methodology to the context and be very sensitive about when to involve whom. As some critics of participatory design have rightly pointed out [Wagner & Piccoli 2007] motivation might also decrease if people are involved too much or at the wrong stage of the design process.

At the MATEL '10 Workshop we want to present our participatory design approach and the initial findings on motivational drivers and barriers that we collected through the interventions with end-users and facilitators. We also want to point out the main challenges and outcomes of the participatory design approach and share our experiences with other researchers working in the area of TEL.

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