How to integrate the motivation to learn into TEL enhanced organizational knowledge-management models?

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1 Introduction

Learning at the workplace is said to be "the next big thing" [1], and social learning on ICT-enabled work-communities is foreseen to become the dominant source of education in areas where new practical knowledge emerges rapidly and has a short lifetime [2]. Being competent becomes more and more a dynamic and social phenomenon, where individual workers are the managers of their learning paths, and the self-determined enhancement of their work-relevant knowledge is based on a frequent experience exchange with colleagues and peers. But engagement in collaborative learning and knowledge building (LKB) activities is still a big challenge for many workplace learning designers and researchers. First, challenges arise on how to make the individual tacit knowledge of experts explicit and useful for other workers, how to combine it to more complex constructs that embody the organizational goals and visions, and how to shape the action and practice in organization with this accumulated knowledge. Second, especially in highly competitive environments motivation for an increased knowledge sharing is an important challenge, as people might feel reluctant to give away too much of their tacit knowledge [3].
One model that explains organizational knowledge management from individuals' and organizations' perspective is the knowledge conversion model (also called SECI-model) from Nonaka and Takeuchi [4]. This model has been used to explain how to dynamically update organizational knowledge using organization members experiences, but it does not integrate the issues of motivation for learning and knowledge-building (LKB) in the workplace.
In IntelLEO, a research project of the 7th Framework program, we aim to increase motivation for LKB within and across organizational borders through innovative tools and procedures [5]. With this aim, the research team took the approach to adapt the model [4] into the projects' "pedagogic and motivational model".

2 The organizational knowledge conversion model

Nonaka and his co-researchers [4] were one of the pioneers in theorizing about organizational knowledge conversion as the means for achieving adaptive and agile companies. This knowledge management model basically describes a spiral continuum of explicit and tacit knowledge that flows between the individual and the organizational levels. The model covers four (SECI) phases:
- *S*ocialization with colleagues upon implicit knowledge while working is largely supported by physical proximity and represents the origin of trust and commitment between individuals via apprenticeships, shared experiences and informal meetings;

- *E*xternalization of personal implicit work knowledge for organizational purposes is guided by organizational goals and visions and is largely supported by dialog and collective reflection requiring shared concepts, visuals and a symbolic language, as well as translation skills, like metaphors or analogies;
- *C*ombination of explicit knowledge is the integration and synthesis of the useful experiences of different individuals, and serves the purpose of updating organizational visions and goals. By sharing tacit knowledge individuals commit and become part of a group – a process that is largely influenced by the quality of social relations between the group members. They combine existing explicit knowledge with new knowledge, they systemize the new knowledge through editing and processing and they diffuse it within the organization through presentations and meetings.
- *I*nternalization is the process of taking the new knowledge into use in work practices. Individuals use explicit knowledge to broaden, extend, and reframe their tacit knowledge through continuous self-refinement. The new explicit knowledge is embedded in action and practice through the reading of manuals, the participation in trainings or the integration of new processes in one's working practice.

In general the model has not been used as an organizational learning model. But recently, Naeve, Luoma, Kravcik & Lytras [6] have used SECI phases for describing learning process in the workplace, focusing on reflective practices in networking and collaboration.

3 Motivation for LKB in the workplace

The new ways of learning in the workplace require self-motivated, proactive learners, to whom Zimmerman B.J. [7] refers to as self-regulated learners, in this context. Self-regulated learning (SRL) activities are learning activities that are under the learner's own direction, and include additional components such as self-monitoring of effectiveness and self-motivation [8]. Self-regulated learners engage in three processes: 1. self-observation, 2. self-judgment, and 3. self-reactions, which can be ongoing simultaneously. Self-regulated learners are said to have a higher intrinsic motivation for learning, as observing oneself can help learners to monitor their progression toward their goals. There is extensive evidence that encouraging learners to systematically monitor their own performance (either through self-recording or external recoding) positively affects their skill, acquisition, motivation, and self-efficacy [7]. Schunk [9] bring also evidence that a particularly effective strategy for reaching long-term goals is the introduction of intermediate goals that are specific, have a plausible difficulty level and are proximal in time. Taking a closer look at the role of motivation in self-regulation of learning, especially recent studies take into consideration cognitive theories of motivation, highlighting the relevance of achievement goals [10]. The achievement goal theory differentiates between 1) learning oriented individuals, who want to increase their competence and challenges are seen as an opportunity to learn; and 2) mastery oriented individuals, who want to gain favorable judgments of their competence and challenges are seen as a test to measure competence [11]. While the former demand the comparison with other individuals (social reference norm), the latter seek for comparison with one's achievements in a specific situation or with existing standards (individual reference norm) [12]. Empirical research brings evidence that individuals, who are oriented towards the enhancement of competences and the excellence within their tasks, show high intrinsic motivation, high task persistency and high self-efficacy beliefs [11]. Latest research on performance goals brings evidence that performance-oriented goals can have positive influences on intrinsic motivation comparable to learning goals, if they target to attain positive judgments of

one's competences [13]. An important contribution to this multi-goal perspective comes from Wentzel [14] who differentiate between social and academic goals, where the former reflect desires to achieve a particular social outcome. Social goals influence achievement in their own right, as well as together with learning goals. The pursuit of social goals, as being cooperative, compliant, and willing to share, is positively related with successful learning [14]. Thus, research suggests combining orientation towards learning goals and orientation towards social goals to increase learning and performance. The positive influence of being embedded in a learning community on the learners' motivation is also confirmed by other scholars. Their research emphasizes the importance of collaboration for successful learning [15, 16] and suggests that social factors can be as powerfully motivating as intellectual ones in keeping learners on task.

3 Adapting the knowledge conversion model to support motivation for learning and knowledge-building

To integrate motivation for learning and knowledge-building into the SECI model, IntelLEO decided to focus on two aspects, and integrate them in the original SECI phases: 1) Support of self-regulated learners, and 2) Support of collaboration and social and organizational embeddedness.

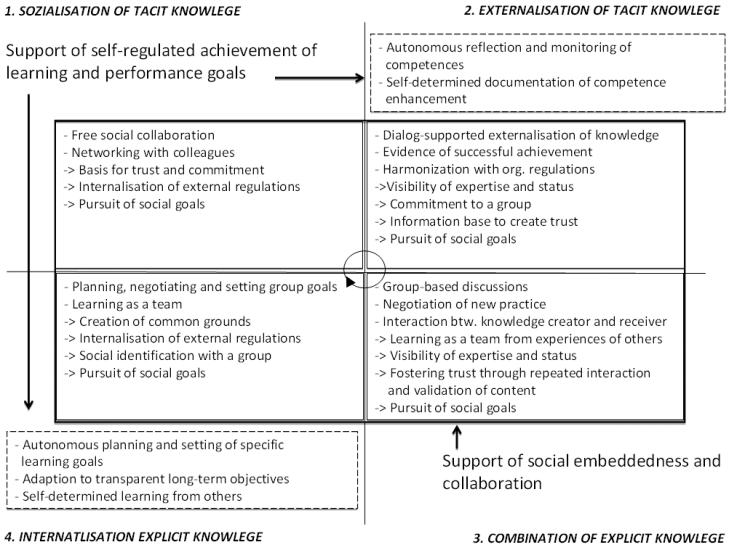

Figure 1. An adapted IntelLEO SECI model for motivational aspects of LKB in organizations

We understand our adapted knowledge conversion model as an approach, which integrates and fosters:

Ad 1) Support of self-regulated achievement of learning and performance goals:
The planning of one's competence development and self-regulated learning from others are activities that are covered in the model's internalization phase [17], while self-regulated reflecting, documenting and bringing evidence of competence development are supported in the externalization phase (see the dotes squares in Figure 1).

Ad2) Support of collaboration and social and organizational embbededdness:
The strengthening of the community as a source of motivation will support learning

and knowledge sharing activities in all SECI-phases. Pro-social goals, feeling of relatedness, collaborative discussion and enhancement of learning objects, support and tutoring for increased self-efficacy are highly relevant factors to motivate people for non-intrinsically motivated tasks. Additional this cluster fosters the social embeddedness of learners into the goals, norms and visions of organizations.

In the *socialization* phase, Nonaka and his colleagues already emphasize the importance of networking and sharing competences with colleagues as the basis of trust and commitment [4, 18]. In the *externalization* phase, Nonaka et al. [4, 18] stress the importance of dialog when externalizing one's tacit experiences. When individual experiences are externalized, learners commit to a group and identify with it. In the *combination* phase, activities are mainly group-based, and collaborative discussion and enhancement of existing knowledge take place. We added the aspect of collaboration and social embeddedness also to the *internalization* phase, where individuals as well as groups identify the knowledge relevant for themselves within the organization, negotiate and set their learning goals, internalize external regulations, monitor progress towards achievement and learn based on the externalized experiences of others.

These two aspects (1) support of self-regulated learners +2) support of collaboration and social/organizational embeddedness) are closely interwoven, as the planning, performance and monitoring processes in self-regulated learning are based on resource, and activities that were constructed and undertaken collaboratively across organizations.

Therefore, for successful knowledge creation to occur, newly developed services and tools have to support activities in all four phases of the adapted IntelLEO SECI model.

4 Outlook

Following this motivational approach IntelLEO is currently developing innovative generic services for managing collaborative learning activities and contents, as well as an ontological framework for learning context representation. Both, the motivational approach and the related services will be evaluated in three heterogeneous business cases to assess their influence on learners' motivation for informal learning at the workplace.

Acknowledgement. This publication was partially supported/co-funded by the European Community/European Union under the Information and Communication Technologies theme of the 7th Framework Program for R&D. This document does not represent the opinion of the European Community, and the European Community is not responsible for any use that might be made of its content.

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