First Workshop on Learner-Oriented Knowledge Management & KM-oriented E-Learning (LOKMOL 2005)

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1 Introduction

The high potential for synergy between Knowledge Management (KM) and e-Learning seems obvious given the many interrelations and dependencies of these two fields. However, the relationship has not yet been fully understood and harnessed. This workshop therefore aims at bringing together researchers and practitioners, who are interested in combining findings from both fields. On the one hand learning is considered to be a fundamental part of Knowledge Management because employees must internalize,or learn, shared knowledge before they can use it to perform specific tasks. Research within KM so far has addressed learning mostly as part of knowledge sharing processes and focuses on specific forms of informal learning (e.g., learning in a community of practice) or on providing access to learning resources or experts. On the other hand, learning might also benefit from KM technologies. Especially those that focus on the support of technical and organizational components can play an important role in relation to the development of professional e-Learning systems.

The LOKMOL workshop placed a great deal of emphasis on the view that KM technologies need to take into account findings from the social sciences such as pedagogics or psychology, to be effective in terms of learning and that learning can profit from KM technologies. There is also a gap between well organized, but monolithic e-Learning material such as courseware on the one hand, and dynamic and flexible knowledge bases that are not able to activate learning processes on the other.

2 Research Questions

The workshop was organized around three central research questions. These aimed to enhance the perceived connections between KM and e-Learning, i.e., methods, standards and technologies, and empirical results. Many papers addressed more than

one question and therefore were classified according to the main research question they addressed.

2.1 Methods

Several methods and approaches have been proposed to facilitate or improve learning with KM systems. Competence management could narrow the gap between learning and KM. For instance, tracking the learners' competencies [6, 7] and incorporating them in a training management life-cycle [5] can be utilized for selecting learning material, modules and learning methods. Pannese et al. [6] presented an approach for developing training paths by means of weighting training methodologies according to their potential application to meet pedagogical and psychological objectives. Ley et al.'s paper [4] describes a framework that establishes a connection between competencies and tasks or performance outcomes. They describe competency development as an individually controlled learning process rather than a centrally-managed development initiative.

Yacci [11] illustrates an approach that creates interactive instruction out of static knowledge components. A *Conversational Diagnostic Agent* (CDA) provides a diagnosis, in terms of skills, that can be used by students or faculty members to access instructional resources. The CDA uses a student model that is based on a learning hierarchy, where skills are decomposed into prerequisite sub-skills and where relationships amongst the skills are specified.

Other approaches aim at extending learning management systems based on KM technologies. In particular, approaches that support social and collaborative learning have been proposed. For instance, Richter et al. [8] show that *Minimal Activity Plans* (MAPs) can foster self-organized learning in organization. Those plans are described by a more heuristic description framework and have to be interpreted by each recipient. MAPs do not describe work procedures in isolation but aim to encode the meaning of the activity within the organization and enables learning by involving individuals in purposive activities.

Schmidt [9] presented results of Learning in Process, a project whose primary goals have been the integration of working and learning on a process level and learning management, knowledge management, human capital management and collaboration solutions on a technical level. By the incorporation of context-awareness of employees into the design of learning solutions, learning in organizations could be improved.

Jantke and Lunzer [3] motivated so called *Subjunctive Interfaces* to be integrated as a variant of knowledge management support into exploratory e-Learning systems. They demonstrated Subjunctive Interfaces in two kinds of domains relevant to e-Learning: dynamic simulation, where a learner may need to explore how a simulation's outcome is affected by various conditions; and information retrieval, including exploratory studies in which a student may systematically gather information from Internet sources.

Heinemann [2] demonstrated how human symbol manipulation and therefore human centred learning can be designed based on the concept of schema and

instances and on the architectural differentiation between object and meta language levels. Hence, teaching-learning situations could be enhanced by *language based architectures* which deal with the task of supporting the schema use, schema mention and schema reflection situations.

2.2 Standards and technologies

Standards play an important role both in learning systems as well as in KM systems, and KM technologies can support the learners' needs and individual learning processes. Several submissions addressed these issues: Benmahamed et al. [1] show that the IMS Learning Design modeling language supports an integration of learning and KM; they use the Knowledge Management Mask methodology for knowledge capitalization to design e-Learning activities by matching Mask models and the concepts of the IMS Learning Design modeling language. Pannese et al. [6] use a software-based Competence Tracking to present an approach to the definition of a Training Schedule. Competencies of people are traced and stored in the same system and the gap of competences is computed starting from "ideal profiles" and from the training objectives. In the contribution of Pfeiffer Fernandes et al. [7], the project Skill-O aiming to improve companies' performance through a competency management solution and methodology and offering functionalities such as analysis of competency gaps and elaboration of personalized development programs is presented. By using ontologies and semantic web technologies, they enable interoperability of Skill-O with other e-Learning tools and platforms.

2.3 Empirical results

Several of the approaches and technologies described above are also underpinned by empirical studies. Several case studies demonstrate that bringing together KM and learning can be beneficial (e.g., [3, 4, 7, 9]). The effects of online collaboration and knowledge transfer were explored in an extensive survey by Schmitz-Justen & Wilhelm [10].

3   Concluding Remarks

The variety of approaches presented in this workshop demonstrates that there is a recognizable trend towards a stronger cooperation between the fields of e-Learning and KM, and that there are ways to narrow the gap between these two related fields. Such integration has the potential to dramatically change today's understanding of education and training towards lifelong learning, particularly when linked to contributions from dynamically changing public and organizational knowledge repositories. The contributions to this workshop showed that the integration of e-Learning and KM is more than just topic-oriented delivery of knowledge chunks by following non-adaptive processes that are prescribed by a centrally managed learning

initiatives. In particular, the contributions from the workshop point to the following considerations, which in turn have implications for future research in the area:

- Pedagogical and psychological aspects as well as the adherence of the current context are considered when learning methodologies and learning content is chosen to meet certain learning objectives;
- Learning objectives are more related to the development of competencies, which are connected to task outcomes, instead of learning specific topics; learning hierarchies (e.g., skill decomposition methods) are applied to support the connection between e-Learning and KM;
- Solutions that are developed focus more and more on facilitating self-directed and self-organized learning instead of prescribed instructions provided by the system;
- Some of the presented approaches are more flexible in the way that they are based on heuristics instead of descriptive frameworks and the adaptation of instruction during run-time seems to be a promising approach;
- Finally, learning is not just enabled by providing content and using the right methods but also by enabling learning through the involvement of individuals in purposive activities and real working tasks.

As is perhaps always the case in research of this kind, more empirical research is necessary to validate the latest developments in the field of integrated e-Learning and KM. Further workshops like LOKMOL are essential to keep the community informed about recent developments in this research field and to keep the integration process ongoing.

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