Integration of Knowledge management and E-learning – common features

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Abstract: *In the paper basic issues related to creation, sharing and use of knowledge resources delivered by e-learning systems are discussed. Relationships between knowledge management processes and learning systems as environment for specific competences delivery not only as learning resources but necessary knowledge and skills that facilitate and stimulate individuals performance as professionals are reviewed. Methods for development and exchange of knowledge resources as units of learning are presented. Influence of knowledge management processes in development of new forms of advance learning is described and advantages of e-learning application in the knowledge management process in an organization or institution in order to facilitate organizational success and growth. In conclusion common features of both fields –e-learning and KM are defined and capabilities for their better integration are proposed and recommendation for future research are outlined.*

Key words: *Knowledge Management (KM), organizational learning, e-learning, Knowledge Management System (KMS), tacit knowledge, explicit knowledge, Content Management System (CMS), collaboration*

INTRODUCTION

Educational needs of modern virtual communities like company teams and student in an educational institution are explored and possible solutions integrating e-learning capabilities and advantages of knowledge management process are presented. Basic knowledge management processes are reviewed and most important functionalities of Knowledge Management Systems (KMS) are discussed. Influence of knowledge management processes in development of new forms of advance learning is described and advantages of electronic learning (e-learning) application in the knowledge management process in an organization or institution in order to facilitate organizational success and growth. On the other hand evolution of e-learning and its enhanced capabilities stimulate important changes in the Knowledge Management (KM) processes in organizations and institutions. At the end of research common features of both filed are defined. Future research efforts will be dedicated on better and more effective integration of knowledge management capabilities in e-learning delivery and powerful use of learning materials and activities in the process of knowledge manipulation and exchange in organizations and institution in order to provide organizational success and prosperity.

KM, E-learning, and society needs relationship

KM and e-learning evolution influence each other and their development according to information society needs and requirement for knowledge acquirement, exchange and delivery are defined. Needs of organizations and institutions of new methods and approaches of knowledge exchange foster development of KM and e-learning. Specialists in both fields create and implement new advanced tools and techniques for creation, sharing, exchange and delivery of knowledge and learning resources. Innovations proposed by them provoke modifications in both domains .On the other hand enhanced capabilities of KM and e-learning allow community requirements – organizations and learners needs to grow. This way new cycle of development starts in order to satisfy new requirements. Therefore it is very important advantages of knowledge management to be integrated in education and this way knowledge and skills to be learned and practiced as competencies that could be applied in learners' professional duties. This way learners can be part of organizational success and growth with their new skills and competencies. For this reason each other influence of KM and e-learning are explored as common features are defined in the paper and advantages of their integration are stated.

Knowledge

Many definitions and concepts of exact definition of "knowledge" term exist and here it is used definition of knowledge proposed by Wikipedia [1]: "The term knowledge is also used to mean the confident understanding of a subject, potentially with the ability to use it for a specific purpose." Knowledge is critical for individual success in our information society. Therefore processes related to its acquisition and manipulation are very important to the specialists in the filed of learning and training.

KM processes

A definition of Knowledge Management (KM) concept proposed by Mertins, Heisig, and Vorbek [2] is following : "The systematic process of finding, selecting, organizing, distilling, and presenting information in a way that improves an employee's comprehension in a specific area of interest." .

The most common used process of knowledge manipulation are capturing, storage and distribution of knowledge. This sequence is part of the training in each successful organization or institution. People use different types of repositories and specialists implement different technologies for organization of knowledge collecting, storage and delivery on demand. Purpose of the process is to improve qualification of team members and this way achievement of better results. Basic knowledge processes defined by Nonaka and Takeuchi [3] are socialization, externalization, internalization and combination and their implementation in the transfer of tacit knowledge to explicit one and backward is shown on Fig. 1.

	Tacit knowledge To	Explicit knowledge
Tacit knowledge	(Socialization) Sympathized knowledge	(Externalization) Conceptual knowledge
From Explicit knowledge	(Internalization) Operational knowledge	(Combination) Systematic knowledge

Figure 1 KM processes Source Nonaka and Takeuchi 1995

Another classification of KM processes is defined by Frappaolo and Toms [6]:
- Socialization: Transfer tacit knowledge from one person to another person
- Externalization: Translate tacit knowledge into explicit knowledge in a repository
- Combination: Combine different bodies of explicit knowledge to create new explicit knowledge
- Internalization: Extract the explicit knowledge from a repository that is relevant to a particular person's need and deliver it to that person where it is translated into tacit knowledge
- Cognition: Apply tacit knowledge to a business problem

The previous classification is extended with one more process by Woelk and Agarwal [5]. They define another six phase of KM processes related to e-learning - feedback:
- Socialization: Competency and skills measurements help identify the people with specific interests, skills and knowledge in the organization.
- Externalization: Knowledge is captured by the system with the intent of teaching that knowledge to other people. This improves the knowledge capture process.
- Combination: Knowledge about products and processes of the business is organized to make learning the knowledge more effective and efficient.
- Internalization: Competency and skills measurements help identify which people

□ lack the knowledge to do their job effectively and provide them with online training.

□ Cognition: People can be provided with on demand performance support by getting just the training that they need at the time that they need it to complete a business task.

□ Feedback: Assessments provide feedback concerning how well a person has learned and how well they have applied what they learned to a business problem.

Next very important question is the issue of repository and system that implements described processes.

KMS functionalities

Purpose of KMS is to organize keeping and manipulation of knowledge. Its basic functionalities are to generate, store, distribute and apply (Fig. 2) [2].
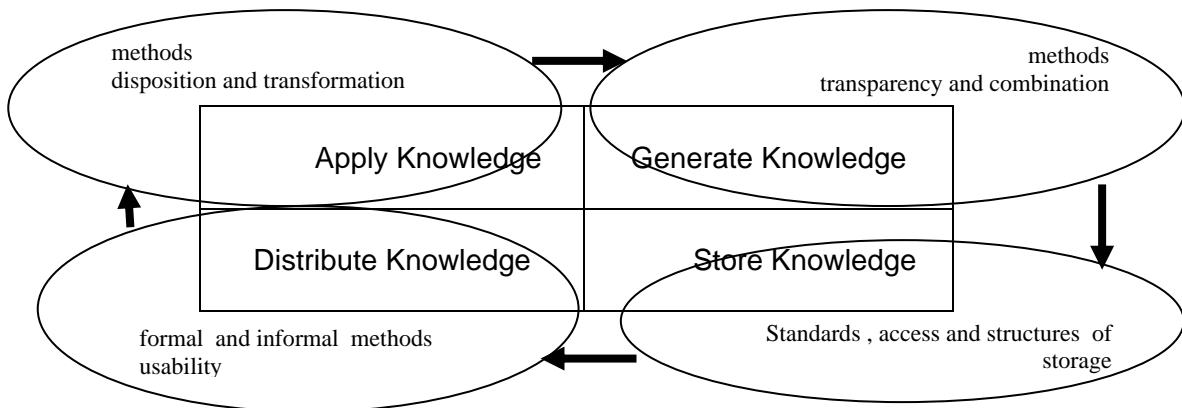
Figure 2 KMS functionalities Source Mertins, K., Heisig, P., Vorbek, J

Processes of application, generation, storage and distribution of knowledge supported by KMS are critical for effective exchange of competences and experience among team members. This type of systems allows different activities related to work duties to be recorded and stored as well as professional decisions of different existing problems to be kept in the KMS as knowledge repository. Next time the problems appears a ready and tested solution can be implemented. This way high level of efficiency is achieved. Time for a problem decision and professional execution of work duties are critical factors for organizational success. Summarizing competencies and experience by collecting information for previous problem solving situations is very useful process for specialists in different field because this way there qualification raises and improves and they become esteemed and successful members of their team and organizations.

Knowledge management and e-learning

KM influence over e-learning

Simple development and delivery of learning resources can not satisfy requirements of information society of professionals skills achievement, knowledge sharing and exchange and gaining competencies in specific domains of science and real life necessary for individuals and organizational success and prosperity. That is way education has to be a process of sharing and acquirement of knowledge, skills and competencies. Advantages of KM are very useful for that process. Knowledge management is indivisible part of teams training so capturing of knowledge process is very similar to the processes related to selection of most appropriate learning content in e-learning. Outcome of effective learning process should be not only knowing facts for a separate subject but having practical skills and developing competency in the given domain so acquiring knowledge is more precise

definition of the learning outcomes instead of learning facts for different related to domain topics. Therefore KM processes should be more deeply and successfully integrated in learning content delivery and learning activities support.

E-learning influence over KM processes

At high level of understanding the desired outcome of learning should be knowledge acquisition and in combination with some practical skills gained in the process of education they have to present some type of competence. This competence learner should be able to apply in his professional duties and to execute the task correctly. So education seems to be very important part of development of successful team. Learning on demand or just –in-time training is very appropriate forms of education at work. Activities involved in standard education have to be implemented in different types of trainings delivered at organizations and institutions. This way communication and collaborative will be improved and free exchange of competencies will be provided. External lectures can heighten level of expertise in a team and practical exercises involved in trainings can give workers more experience and skills in execution of their professional duties.

Knowledge management and e-learning – common characteristics

Following common features are defined in the process of KM and E-learning characteristics research - project development, collaboration, Help desk, Learning Objects (LOs) use for presentation of learning content and knowledge, and Content Management systems (CMS).

Project development tools and capabilities of corporate (organizational) system is critical for execution of different team and individual tasks and delivery of necessary information, data and document in time. Use of project management tools is very useful in the process of education. It allows projects developed by students to be scheduled and implemented on time. Another advantage of their integration in education is students get used to work with the tools and they know which are strong point and drawback of project management tolls implementation in their work and how to manage existing problems related to their use.

Collaboration is very critical process for each of both activities. Means for communication and collaborations are one of the most important characteristics of successful education and team work. They could include synchronous and asynchronous communication and different tools related to work in groups or different types of virtual communities. In education students and teachers have to exchange information related to learning activities or specific topics of the proposed learning content. Participant in education involved in different types of groups have to exchange knowledge, skills and competences. Team members in an organization or institution have to send and receive important information or data related to their duties. Free exchange of knowledge and data and capabilities for collaborative editing of documents become even more critical when different members of the team are at distance (different offices, cities or countries).

Possibility of help desk support and delivery of information on demand is very powerful feature of each supporting system. It allows different types of problems to be decides professionally and as soon as it is possible. That eliminates pressure and confusion of users and workers and decrease time necessary for a problem solution n and task execution.

LOs seem to be very appropriate technology for development and exchange of different types of information. They are small independent unit of information and they could be combined in different contexts and delivered even on mobile devices. This way delivery of most appropriate information on demand whenever and wherever it is necessary becomes easy task. That raises the quality and effectiveness of education and

work.

Content independently if it is learning resources or some types of knowledge resource has to be managed and stored. Therefore CMS is a required component of each system that supports learning resources or knowledge delivery.

On the base of vision of e-learning proposed by Nichani [4] and the concept of KM defined by Nonaka and Takeuchi [3] common characteristics of both fields are described as it is shown on Fig. 3.
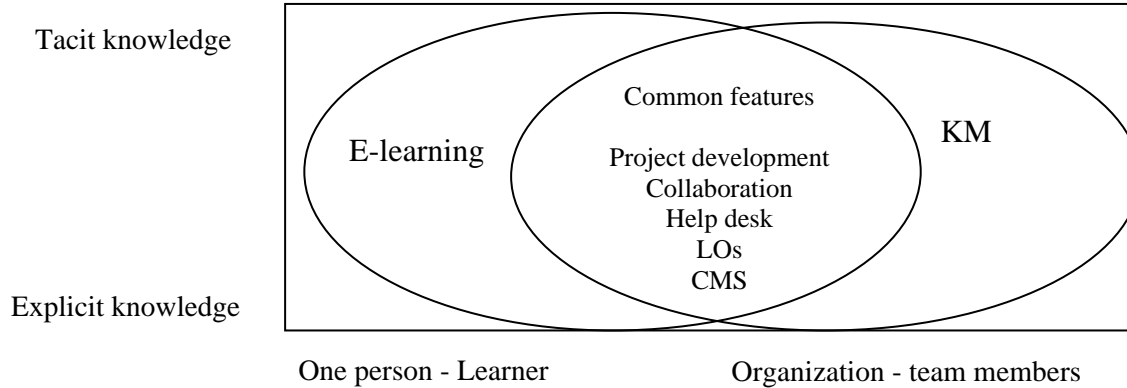
Figure 3: KM and e-learning common features in context of explicit and tacit knowledge exchange (adapted by Mertins, K., Heisig, P., Vorbek, J)

On the base of KMTools defined by Mertins, Heisig, and Vorbek and Learning Content Management System (LCMS) definition provided by Nichani common features of both fields are defined.

Obviously there is a strong relation among KMS, CMS and LMS. On the other hand these systems are environments where Virtual Communities (VC) like learners or team members collaborate and communicate. They use tools and functionalities of the systems to exchange ideas, skills, knowledge and competences and receive learning resources and other helpful tools and services. Needs of virtual communities of knowledge and learning content exchange foster development of enhanced features of the systems and new technologies integrated in systems allow new types of communication and collaboration in the communities. This way changed in systems and virtual communities are connected and influence each other.

Basic characteristics of virtual communities proposed by Wesley [7] and described in [8] can be defined as a compelling, clear business value proposition, a dedicated skilled leader, a coherent, comprehensive knowledge map for the core content, an outlined, easy-to-follow knowledge sharing process, an appropriate technology medium that facilitates knowledge exchange, retrieval and collaboration, communication and training plans for those outside of the VC, an updated, dynamic roster of VC members, several key metrics of success to show business results, a recognition plan for participants, and an agenda of topics to cover for the first months of existence.

Described common feature are critical for satisfying needs of VC and they are strongly related to their implementation in educational and knowledge exchange processes (Fig. 4).
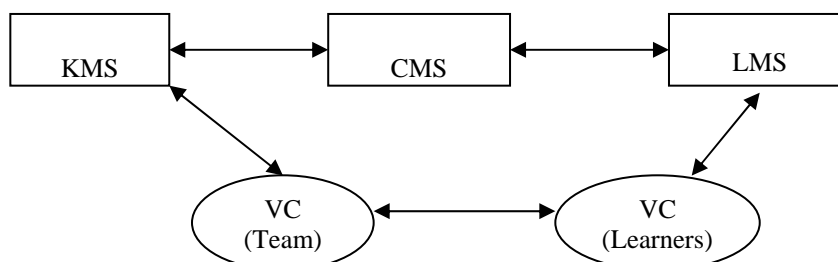
Figure 4: Relationship among LMS, CMS, KMS and team members and learners like VC

CONCLUSIONS AND FUTURE WORK

Paper focuses on basic characteristics of e-learning and knowledge management and main task of the research is to find common features of both domains. Combination of advantages of both domains facilitates delivery of high quality education for satisfying specific educational needs of team members . This process is critical for organizational success. On the other hand KM is very important part of each e-learning system so both domains of science influence each other very intensively. Basic processes and e-learning components are discussed and their common features are investigated. Transfer between tatic and explicite knowledge in both directions and its support by KMS and e-learning is described. Common characteristics of KM and e-learning are defined on the base of conducted review. At the end of the paper relationship among different types of systems like KMS, CMS and LMS and organizational teams and learners as virtual communities is presented.

Future research efforts will be dedicated on exploration of how both fields – e-learning and KM influence each other and how changes in one field can foster changes in the other one and how this process improve overall performance of the e-learning and KM processes.

ACKNOWLEDGEMENTS

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