Knowledge management system application in distance education

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Abstract. Society is entering an era the future essentially will be determined by people's ability to wisely use knowledge. This paper presents how knowledge management can be used in distance education.

Keywords: knowledge system, knowledge management, distance education.

Introduction

The knowledge-based economy places great importance on the diffusion use of information and knowledge, as well as its creation. During recent years more and more companies became aware of the fact that knowledge is one of their important assets. Therefore, active management of knowledge is nowadays considered as an important means to achieve an enterprise's effectiveness and competitiveness [7].

Universities traditionally have two main roles: creating knowledge and disseminating knowledge. They must recognize and respond to their changing role in a knowledge-based society and need to be consciously and explicitly managing the processes associated with the creation of their knowledge assets.

Knowledge and knowledge management

What is knowledge? There are many different definitions of knowledge in the literature. It is easier to understand knowledge in terms of what is not by distinguishing data, information and knowledge. In general, data are considered as raw facts, while information is regarded as an organized set of data. Knowledge is perceived as meaningful information; or the understanding, awareness, familiarity acquired through study, investigation, observation or experience over the course of time [8]. It is individual interpretation of information based on personal experiences, skills and competencies (Fig. 1).

Knowledge management relates to the systematic process of finding, selecting, organizing, distilling and presenting information available within an organization.
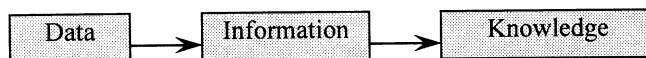

Fig. 1. Data-information-knowledge relationship.

Knowledge management acts something like a library in that it provides a repository for written information on a given subject, but it also tries to make available to the organization as a whole the knowledge that is in people's heads [9]. J. Liebowitz presented nine-step approach to knowledge management [3]:

1) transform information into knowledge;
2) identity and verify knowledge;
3) capture and secure knowledge;
4) organize knowledge;
5) retrieve and apply knowledge;
6) combine knowledge;
7) create knowledge;
8) learn knowledge;
9) distribute/sell knowledge.

One of the most important issues in knowledge management is organization, distribution and refinement of knowledge. Knowledge can be generated by data mining tools, can be acquired third parties or can be refined and refreshed. The collected knowledge can then be organized by indexing the knowledge elements, filtering based on content and establishing linkages and relationships among the elements. Then knowledge is integrated into a knowledge base and distributed to the decision support applications. Knowledge presentation is very important also because of the different presentation styles, organizational members often find it difficult to reconfigure and integrate knowledge from distinct and disparate sources. We always keep in mind that when knowledge within the organization shared it becomes cumulative [4].

Knowledge management system in distance education

Knowledge management systems can be a part of learning solutions. Knowledge management and e-Learning used to be two worlds but they can converge. Knowledge management system can be applied for organizing course's material, creating and expertise, learning, sharing and combination knowledge.

One of knowledge management system is IBM Lotus Discovery System (LDS). It is several leading-edge technologies to systematically create associations between expertise and information resources, personalize and organize knowledge for individuals and communities, and provide a place for teams to work make decisions, and etc. [6]. It also creates a searchable index, computes documents values, and provides a search-and-browse user interface.

The Lotus Discovery server can be a part of Learning Management System (LMS). The LMS is a tool for managing physical classrooms and e-learning resources. In Fig. 2 the infrastructure of virtual university is demonstrated. All users enter the Learning Management System (LMS) through the Learning Manage Module (LMM) server. Once the user is successfully logged in, the LMS Server provides the client browser with an interface, allowing access only to set of features associated with each user's defined permissions. Content files could be stored on several content servers. The Discovery System can help learners to find and get necessary information from different information resources. It is especially helpful and advantageous for distance learners
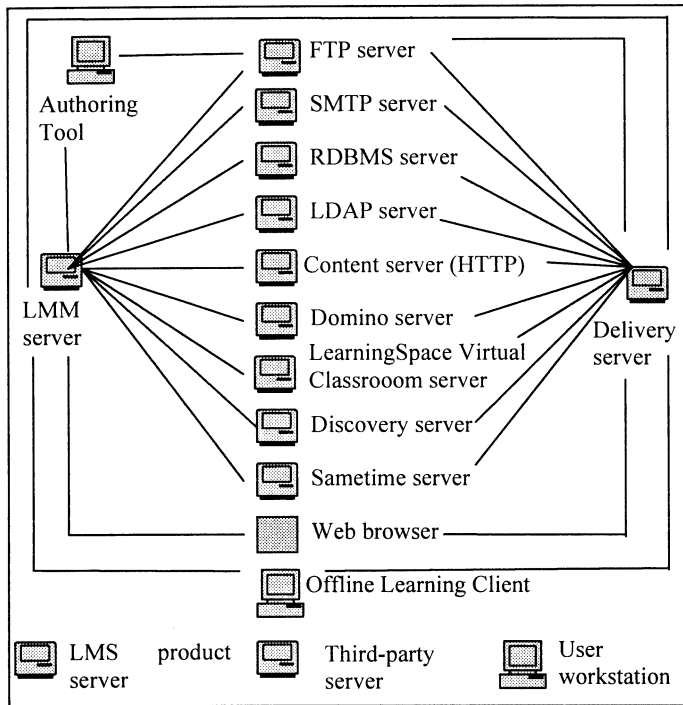
Fig. 2. Architecture of the virtual university.

when direct contact between student and instructor is absent. The Discovery Server provides sophisticated tools that categorize course's material and user information into browsable and searchable form. This technology finds and structures the relevant content and expertise required to achieve specific goals by dynamically analyzing relationships among people, activities, structured content, and unstructured information. The Discovery Server also makes it easier than ever for end users to find everything about the resources they need across various systems and information sources within course's material. Through the combination of automatic processes and administrative tools, the Lotus Discovery Server can perform the following tasks:

- create a unique taxonomy (Knowledge Map or K-map) of your content, experts, and community workspaces;
- generate affinities representing expertise to topical areas;
- mine skills to create complete expertise profiles;
- dynamically calculate and assign document and affinity values;
- group and organize information to category areas;
- search for documents, people, and topics across disparate sources.

The Discovery Server is a back-end server that spiders documents and your organization's directory to create a K-map (or taxonomy) of documents, and identifies

expertise areas of profiled users and places that the end user can browse and search. The Discovery Server has automated tools to help with the creation of the K-map.

Another component of the Discovery Server is metrics. This is a set of computational tasks that collect usage information and calculate document and affinity to content (expertise) ratings. First, it calculates a value for the document based on the words contained in it, and combines that with the value of the document to others as tracked through metrics. Metrics then calculates an affinity between a person and document.

The scheme of Virtual University infrastructure using IBM technologies [10] is founded at the department of Information Technologies in VGTU. The Lotus Discovery server is the part of this system and will be used for knowledge management. This project is being realized and the testing of the different components is being started.

Conclusions

The primary objective of knowledge management in e-learning is to facilitate knowledge-sharing among learners, instructors. Knowledge management helps to ensure that the right learner gets to the right information and helps not to disorient in plenty of information. One of the tools for knowledge managing is IBM Lotus Discovery system. It will be installed and integrated in Virtual University infrastructure.

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REZIUMĖ

I. Belevičiūtė, G. Kulvietis. Žinių valdymo sistemos taikymas distanciniame mokyme

Šiame darbe nagrinėjama mokymo valdymo (Learning Management System) ir žinių valdymo (Discovery server) sistemų ryšys bei sąveika. Žinių paieška, kaupimas bei pristatymas gali būti taikomas kaip vienas iš svarbiausių distancinio mokymo komponenčių.