ONLINE TOOLS OF KNOWLEDGE MANAGEMENT IN HUNGARIAN HIGHER EDUCATION

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1. SUMMARY

The paper aims at showing the means and methods how higher education institutions should utilize knowledge management tools during their everyday activities thus enhancing student experience and supporting administrative work.

Keywords: Knowledge Management, higher education, e-learning

2. BUILDING BLOCKS OF KNOWLEDGE MANAGEMENT

There are several approaches of knowledge management in literature. Polányi (Polányi, 1966), the Hungarian-born philosopher gave a definition of tacit and explicit knowledge which later became the main source for further research. The difference between the two kinds of knowledge is the possibility to transfer them between individuals. Tacit knowledge is difficult to transfer and requires trust and personal contact. Further literature mostly focuses on how this tacit knowledge may be transferred.

Knowledge Manangement (KM) as a discipline appeared in the 90s. Several definitions were born to describe it. Drucker who later introduced the idea of knowledge worker later defined knowledge as the strategic resource which serves as a serious competitive advantage. Later most literature refer to this aspect. In Wiig's approach knowledge management is such a framework which includes all activities in order to overview, manage and utilize organizational knowledge assets and the conditions to create them.

Nonaka and Takeuchi (1995) put the emphasis on knowledge transfer. One of the basic issues of KM nowadays is the institutionalization of personal knowledge transfer. Sveiby (1996) applies two approaches: personality and technology centered. Based on this methodology Hansen, Nohria és Tierney (1999) identifies personalisation and codification knowledge management strategy. In personalization strategy knowledge is linked to people, knowledge transfer happens in person, while codification strategy is assisted by information technology tools. A successful strategy as always is a mixture of the two attitudes.

According to Stankosky's (2005) approach there are four pillars of knowledge management: leadership, organization, technology and learning. The unity of these factors ensures the success of knowledge management within the organization. This methodology is similar to Sveiby's personality and technology centered approach, but personalization gets a strong emphasis here, as only one pillar corresponds with technology. As a matter of fact it matches with Sveiby's opinion who considered human factor key in his later works.

I would like to examine the model of Probst, Romhardt and Raub (Probst et al., 2000). The so called building blocks of knowledge management are on the following (Figure 1.).

As we could see the different actions connect to, are built on and influence each other. These activities appear in all organizations which apply knowledge management (KM) approaches on purpose or only in some aspects. According to my hypothesis higher education institutions (HEIs) behave as any other organizations, so they apply KM tools, too. Nevertheless we have to keep in mind that higher education institutions have a twofold purpose: they not only apply the means of KM but they also produce knowledge thus giving a special aspect to the process.

3. ORGANIZATIONAL EFFECTIVENESS IN EDUCATION

The goal of Knowledge Management is to improve organizational effectiveness by implementing such tools which enhance the ability to share what the participants already know. Organizational effectiveness has a specific meaning in education. I will examine Baráth's (Baráth, 2004) view on this question which focuses especially on Hungarian features.

To study the effects on KM on the organizational effectiveness of educational institutions basic concepts needs to be defined.
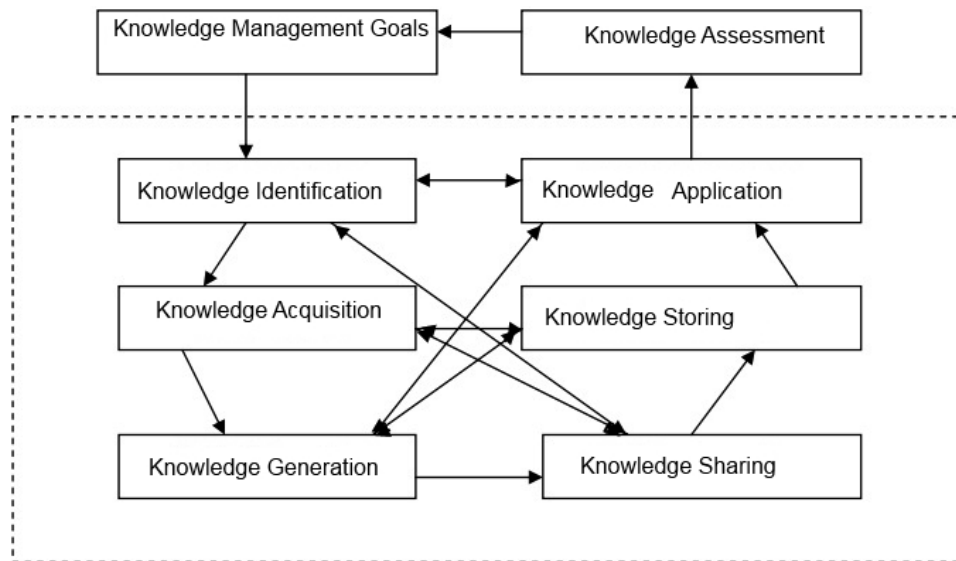
Figure 1.
Building Blocks of Knowledge Management Adapted from Probst, Romhardt and Raub

Effectiveness: reaching specific goals and its measures. The result itself is the change within the institution. It may be described by an indicator system, e.g. learning results, the behavior of students, etc.

Efficiency: The correlation between the results and the resources, e.g. whether the results were reached by using the smallest amount of resources, or producing the best results with the given resources.

Consumer satisfaction: are the needs and expectations of the institution partners fulfilled? How are complaints handled? This is one of the possible definitions of quality within the institution.

The activities of school leaders mostly have an influence on the effectiveness of the organization. The institutions' principals control the financial resources of the organization thus having an effect on the institution's efficiency.

4. KNOWLEDGE APPLICATION IN HEIS – USE OF E-LEARNING AND BLENDED LEARNING TOOLS

From the elements above I would like to focus on knowledge application as the most important factor of knowledge management. Institutions should store information in user friendly, searchable systems so that stakeholders (students, teachers, administrators) have easy access to it.

Traditionally knowledge transfer towards students is realized in person by the teacher or by books, notes. In the past 10 years HEIs gradually introduced different online media to utilize various possibilities of the internet. These tools cover two main fields: administration management and content management. These systems are used by all stakeholders on an everyday basis within the universities and colleges.

5. EDUCATION ADMINISTRATION SYSTEMS

There are two main electronic education administration systems in Hungary: Neptun and ETR. Hungarian HEIs are obliged to use either of them by law. These systems take over the traditionally offline student administration thus students may manage their own activities online (e.g. applying for exams, being informed about their grades, etc.). The administration is not 100% automatic though, there are still administrators still manage most of the student activities, but it is more transparent for both them and the students to have a searchable and accessible online overview of student matters. Neptun and ETR fulfill the requirements of an electronic knowledge management system described by Maier: "a KMS is a technological part of a KM initiative that also comprises person-oriented and organizational instruments targeted at improving the productivity of knowledge work." (Maier, 2005). As mentioned above all Hungarian HEIs use these systems, thus we can say that there is a KM system in all Hungarian university and college.

6. LEARNING CONTENT MANAGEMENT SYSTEMS

According to the definition of OECD Learning Content management Systems are "… software designed to provide a range of administrative and pedagogic services (related to formal education settings (e.g. enrolment data, access to electronic course materials, faculty/student interaction, assessment, etc.)". (OECD, 2005)

In the past years it has been proven that the so called blended learning is the most suitable for student needs. Students consult the teacher during lectures and seminars and they receive learning material online. they also keep contact with each other and the teachers on online forums. The effectiveness of this new type of communication is ensured by quality management procedures and documentation. The blending of online and offline elements depends on the type of education. In full time education the LMS offers background services while part time or distance education is organically built on the services of LMS.

Mostly open source LMSs like Moodle and ILIAS are spread in Hungary in higher education for obvious financial reasons.

7. ILIAS AT DENNIS GABOR COLLEGE

ILIAS is an open source web-based learning management system (LMS). It supports learning content management (including SCORM 2004 compliance) and tools for collaboration, communication, evaluation and assessment. The software is published under the GNU General Public License and can be run on any server that supports PHP and MySQL.

The first prototype of ILIAS LMS has been developed since end of 1997 within the VIRTUS project at University of Cologne. In 1998 version 1 of the learning management system ILIAS was published and offered for learning at the Cologne faculty of business administration, economics and social sciences. Due to increasing interest of other universities, the project team decided to publish ILIAS as open source software under the GPL in 2000. Between 2002 and 2004, a new ILIAS version was developed from scratch and called "ILIAS 3". In 2004, it became the first open source LMS that reached full SCORM 1.2 compliance.

Dennis Gabor College builds on two main features of the system. First it utilizes the Repository which can be tailored to be used in different majors with different semesters. Second it contains an active forum system where asynchronous communication flourishes.

This turned out to be one of the most important surprises and challenges of the installation. After reaching full use in 2007, teachers and system administrators were astonished how intensively student use the forums, and demand answers to their questions, which lead to a fundamental change in the College. All teachers have been "forced" to use the system on a daily basis and answer student questions within one working day. Quality management processes and documentations ensured the effectiveness and realization of the communication.

For distance learning students tutoring and mentoring is ensured within the framework of web based distance learning. Student study with ILIAS and the "book package" (the hard copy of all their textbooks and practice books), while they fulfill their IT exercises during contact hours.

7.1 Moodle

Moodle is an LMS based on constructivist pedagogy. It is built on a forum system which allows all members of the educational process to be active players, so that students may construct and form their knowledge. The original goal of its development was to serve as a tool in pedagogical research, but now its development has reached the level to be used solely for educational purposes. Moodle is suitable for distance learning, blended learning or the support of real time learning courses as well. It is under continuous development.

Some of its services include:

1) The management and categorization of unlimited courses

2) Different ways of categorization

3) Chat

4) Forums

5) Queries

6) Quizzes

7) Journals

8) Learning modules

9) Automatic e-mail notifications

10) Student statistics, logs

11) Multilanguage interface

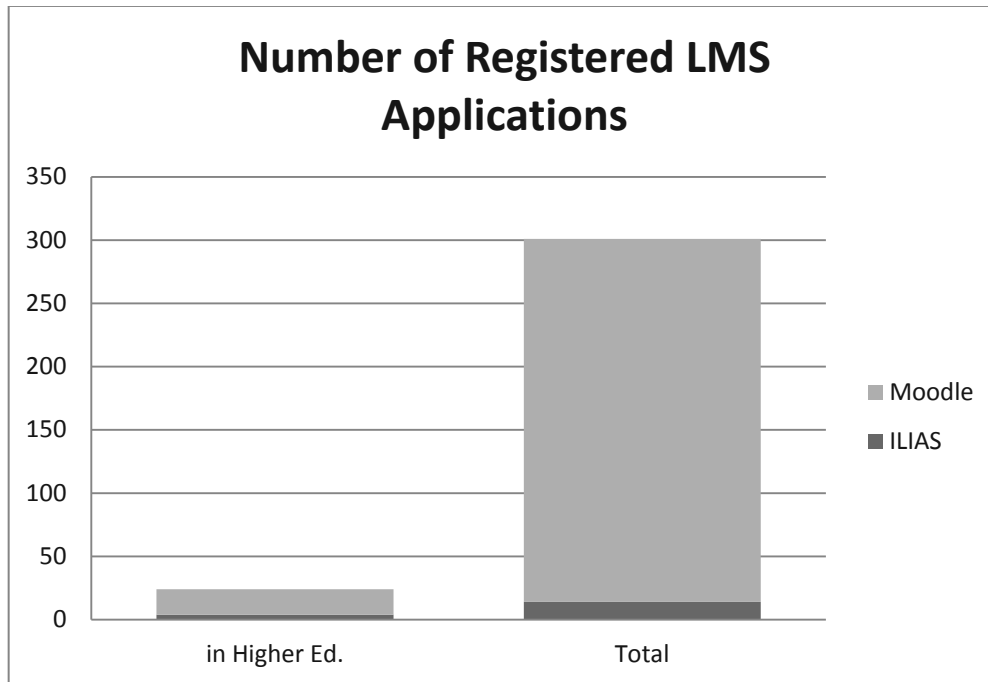**Number of Registered LMS Applications**

Figure 2.
The LMSs Moodle and ILIAS in Hungary. Approximate numbers

8. STATISTICS ON THE USE OF BOTH SYSTEMS

There is no exact statistical overview yet on how many institutions use an LMS, but we could retrieve information from the Hungarian ILIAS and Moodle community pages.

There are 287 Hungarian Moodle reference pages listed out of which are approximately 20 is some kind of higher education institution. The data is not unequivocal though as the same institution is listed with several departments or institutions, in these cases I counted it as 1.

On the ILIAS community pages there are 14 reference places listed, out of which there are 4 higher education institutions. Possibly there are more organizations in Hungary using either of these systems, but they are not listed as references.

Therefore we can say that the use of LMSs is beginning to spread among the Hungarian HEIs.

8.1 Libraries

Libraries, especially university and college libraries have enormous opportunities to provide different assistance for student and teachers. In the 21st century libraries serve as knowledge centers. The traditional functions of a library are to collect, handle, distribute, store and utilize documents. In the 21st century in the knowledge economy era the library becomes a store of human knowledge focusing on new media besides the traditional paper based publications. A good example to that is the newly established Dél-Dunántúli Regionális Könyvtár és Tudásközpont (Southern Trans-Danubian Regional Library and Knowledge Center) in Pécs, the Beehive (Kaptár).

The Beehive serves the information need of the region but it is also suitable as a venue for community, cultural and leisure programs. There are two lecture halls and one conference hall in the building to be used by the university and the university library. Knowledge center functions are enhanced by several research rooms and internet workstations. There is also a bookstore, an exhibition area and a cafe.
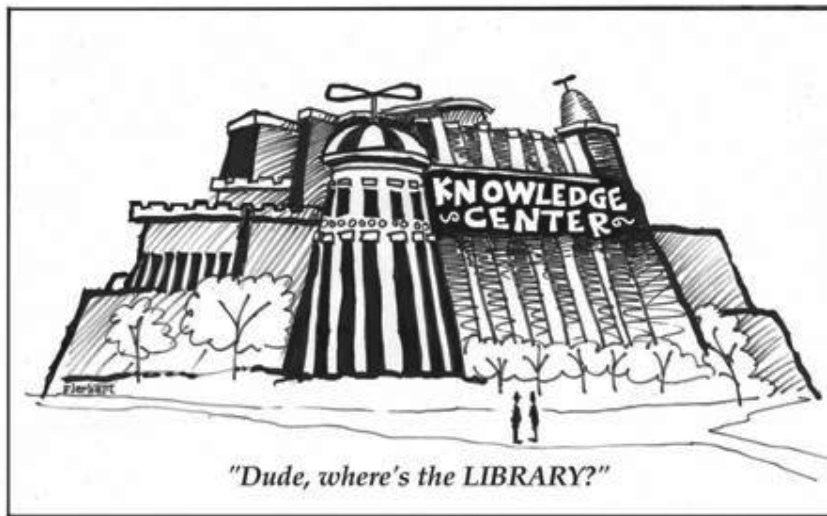
Figure 3.
Cartoon from the campus newspaper, the Nevada Sagebrush, 2004

9. POSSIBLE PROBLEMS AND SOLUTIONS

As institutions usually apply other information systems like Enterprise Resource Planning Systems (ERPs), Management Information Systems (MISs) or an Intranet portal with Web 2.0 functions the question arises whether there is a risk of redundancy and defragmentation of knowledge. Why is it necessary to use all these kinds of systems? The answer lies in different functionality.

The LMS offers educational content, the Education Administration System assists administration (timetable, exams, etc.). the different types of systems complement each other and are retrieving data from the same databases, e.g. curricula, student personal data. Using a single sign on (SSO) authentication would ensure a more user friendly approach and interface. The use of SSO is not wide spread yet though in tertiary education. There is a possibility though of building connections between the different systems. System administrators and developers work as a team continuously searching for better solutions thus assuring a synergy.

The rapid proliferation of mobile tools and the use of Web 2.0 possibilities like Facebook, Twitter, Flickr, wikis, webinars, etc. also offers tremendous opportunities integrated into and outside the LMSs.

10. CONCLUSIONS

The main goal of knowledge management is enhancing organizational effectiveness. Though higher education institutions and companies differ in most aspects, in this case they would like to reach this same objective. Similar situations occur in both types of organizations e.g. employees leave due to changing their workplace or superannuation. In these cases it is imperative to store and transfer the employee's knowledge so that it would not be lost for the organization.

Universities and colleges are in a unique situation: they not only manage but also create knowledge. All participants of the knowledge creation and transfer (students, teachers, administrators) benefit from the use of KM systems described above.

Students use Web 2.0 features of the new media to individually managing their studies, communicating with their peers and teachers online, accessing knowledge whenever and wherever they need. Thus they gain new competencies like the ability to study individually, better self-management capabilities, more self confidence.

Teachers need to further develop their IT skills to keep pace with their generation Y, or Z students who are born into the digital world. Also LMSs offer the possibility to record and store their knowledge online e.g. as Frequently Asked Questions on an online forums, as a consequence there is no need to answer each student

question one by one. So the use of online media ensures more teacher time and energy.

Administrators can track and trace back student issues easily with the help of Education Administration Systems.

In this procedure e-learning and blended learning is not a panacea but an opportunity to ensure effectiveness.

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