Presenting the LMS as Knowledge Management Base to Extract Information

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ABSTRACT

This paper focuses on the Learning Management System (LMS) from the point of present it as Knowledge Management (KM) base. There is huge information that can be extracted from any LMS that can be useful for many investigators. This information is not necessary to be only concentrating on the content of the LMS but it will cover also all parameters that are related to content, context, activities, and deferent types of users of the LMS. The extracted information will be presented in different format such as text data, tables, charts, and figures. Also this information is going to be useful for different information seekers from deferent specialties including higher management, financial department, quality assurance agency, registration, local accreditation, academic supervisors, and external examiners. A case study on using the LMS at the Arab Open University (AOU) will be presented including many samples of extracted information and its usability. In summary, this paper introduces how efficient the extracted information of the LMS as a Knowledge management base for different key players.

1. INTRODUCTION

The rapid evolution of Information and Communications technology (ICT) has positive effects in many areas, especially business, industry, social life, and education. Information and communication technologies which include newer electronic technologies such as computers and the Internet are considered potentially powerful enabling tools for educational change toward e-learning. Different ICTs help expand access to education, strengthen the relevance of education to the increasingly using of computing and online facilities [21].

The Internet has provided many more opportunities for education which leads us to the concept of e-learning. e-Learning has emerged as a tool for personal and business development, e-learning is the delivery of a learning and training by electronic means, e-learning involves the use of a computer and/or electronic device (e.g. a mobile phone) in some way to provide learning content and educational tools; activities.[22]

Knowledge Management; KM; focuses on knowledge acquisition, storage, retrieval and maintenance. KM in its origin relates to business sector, and represents the “set of systematic disciplined actions that an organization can take to obtain the greatest value from the knowledge available to it” [1].

From an IT point of view, knowledge management means use knowledge offered by information technology and computing; this involves a lot of computer branches as: data mining, question answering systems, and natural web interfaces. Townley [2] points out that KM is “an emerging area of IT practice that developed from the disciplines of computer science, library information science, organizational psychology, and management”. KM concerns with collecting, organizing and distributing information in such forms that it can be practically used [3]. Ion [4] assures that the development in IT domain supports KM through increasing storing facilities and updating of the information.

This enlarges the need of KM not only in educational domain but to be involved in wide areas such as: business, cognitive sciences, organization sciences, information sciences, document management, and decision support systems.

At the same time of supporting KM, information technology widespread, the growth of Internet speed, and usage of the internet move learning away from strict formal learning types towards more informal and collaborative learning and sharing [5]. This open horizon to adopt new learning paradigms such as: distance learning, e-learning, blended learning, and open learning. We can view these new trends as a tree, where open learning is the root, and other paradigms are the disciplines. Each of which differs in its roles and target users but all have a common goal that is to enable learning any where any time. Although LMS is used in different types of open learning but it is also used in regular learning including: class teaching; blended teaching.

Using computers and Internet as knowledge delivery and communication media consequently is known as e-learning approach. In this context, knowledge management is defined as "enabling organizational learning and it supports activities including knowledge
acquisition, generation, sharing and use” [6]. In order to share knowledge and make it available, the educational institutes use different technologies in which most of it focuses on creation Virtual Learning Environment (VLE) or what is also known as learning management system (LMS). VLEs are computer-based environments that are relatively open systems, allowing interactions and knowledge sharing with other participants and instructors and provide access to a wide range of resources hosted on the system [7].

In this paper, we present the learning management system as a knowledge management base to extract various types of information in different forms. This information is very important for many key players in different specialties. We also present a case study on using the AOU-LMS as a KM base at the Arab Open University; AOU. In addition to the introduction, the definition of learning managements system and the terminology of knowledge management in the literature will be presented in section 2. A discussion on the capabilities of LMS content, tools, structure, and activities which information can be extracted from will be presented in section 3. After that, a case study on the LMS used at AOU as a KM base will be displayed in section 4. Finally, section 5 will conclude this paper.

2. LMS AND KM: A LITERATURE OVERVIEW

E-learning can be defined “as the use of ICT in higher education, which aims mainly the independent use of technology by students” [10]. The main elements in an e-learning process are: lecturer, content, student, place, time and interactivity [11]. e-Learning can be a very effective tool for educational institutes as well other organizations that need to improve students and staff development or provide training in new processes. It can also be of great assistance in compliance training; making sure that student/staff have the knowledge and skills they need to comply with relevant learning outcomes and regulations. [22]. Although there is a terminological difference between e-learning and LMS, but we will deal with them in this paper as one concept against the KM.

Plato argues that “knowledge is the food of the soul” [13]. Moreover, the [14] defines knowledge as a result or product of knowing; information or understanding acquired through experience; practical ability or skill; cognition [15].

Researchers distinguish two main categories of knowledge: explicit and tacit knowledge. Polanyi in, [18] points out that explicit knowledge can be articulated in formal language: documents, databases, webs, emails, charts, etc.[17]. Accenture [23] views knowledge management functions as a six-step process:

(1) Acquire,
(2) Create,
(3) Synthesize,
(4) Share,
(5) Use to achieve organizational goals, and
(6) Establish an environment conducive to knowledge sharing.

Ernst and Young promote a 4-phase KM approach:

(1) Knowledge generation,
(2) Knowledge representation,
(3) Knowledge codification, and
(4) Knowledge application.

KM and e-learning evolution influence each other. Their development is according to information needs and requirement for knowledge acquisition, exchange and delivery. Specialists in both fields create and implement new advanced tools and techniques for creation, sharing, exchange and delivery of knowledge and learning resources. On the other hand enhanced capabilities of KM and e-learning allow educational institutes requirements and learners need to grow. Therefore it is important for knowledge management to be integrated with e-learning to allow knowledge and skills to be learned and practiced as competencies that could be applied in learners’ professional duties[8].

3- THE RELATIONSHIP BETWEEN KM AND LMS

To be able to offer an online course, you need to have an e-learning platform or Learning Management System (LMS) to use, then create or upload learning contents for the course into the LMS, and finally, conduct learning activities by using the tools provided by the LMS. However, there are two more unique features that online can do much better than its physical counterpart which are learning community and knowledge management.

e-Learning activities, collaborative learning, peer learning and active social learning can be easily realized by running a successful e-learning platform. The challenge is how to run a successful learning community in an online learning environment; most teachers are still lacking skills and experiences and many issues are explored in [9]. An online course is delivered in the form of online content within LMS each in different format, every piece of online material can be archived and every activity can be tracked and logged. Therefore, it is very important to incorporate knowledge management in with LMS, such that online materials created at a specific semester can be accumulated from semester to semester for beneficial students. Teachers can document complete online teaching portfolios for better reuse of their online courses to enhance teaching efficiency and performance.

The evolution of LMS engages two different concepts [13]:

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1. Learning KM Systems: LMS evolution due to social interaction, which entails into Personal Learning Environments and Social Software.

2. Learning Oriented KM Systems: LMS evolution at an instructional level.

The adaptation between knowledge management and e-learning process is the key point of ‘how can the organization learn faster’. Subsequently, “e-learning and KM are symptoms of new management style” [16]. The main focus on e-learning and knowledge management is how to allow organizations and people to optimize the knowledge acquisition process. KM and learning management are two complementary disciplines that are continuously growing closer and support an innovative and agile enterprise [19].

E-learning delivers processed knowledge—it takes subject matter expertise, puts it through an instructional design process and presents the result in an obvious framework, KM delivers this processed knowledge in different forms including text, tables, charts, etc.

Knowledge management and e-learning are integral and closely associated parts within a single framework. Knowledge management allows effective control and management of the e-learning; the knowledge that is within the LMS.

LMS and KM have as primary goals the production of knowledge extracted from learning resources, how to connect people to quality knowledge found in LMS. Furthermore, LMS and KM share common processes, activities, tools, concepts, components and terminologies.

Similar to the knowledge creation process, learning is an action-oriented process and a social activity. To conclude this section, Chatti supported our vision of this relationship between KM and LMS by stating that LMS and KM have become essentially two sides of the same coin as the two fields are increasingly similar in terms of input, outcome, processes, activities, components, tools, concepts and terminologies [21]

4. Case Study: Extracted KM from AOU-LMS AOU

As we mentioned before, Knowledge management is “about creation, retention, and transfer of knowledge within the organization” [24]. LMS platform used at AOU allows us to present different knowledge obtained according to these three tasks.

4.1. Creation

There are many tasks that can be created within the AOU LMS, Online quizzes for example can be created, where random questions could be generated, and students can participate in the exam for different sections at different times. In almost all universities the mandatory modules are required by all university new students regardless of their majors. In such cases, the best solution is to create online exams. A data bank questions is built, where certain number of questions are generated randomly at different times. This policy is applied in even regular universities.

AOU LMS is user friendly and easy to be used by tutors to create their own online exams, see Figure 1.

![Figure 1: Creation of an online quiz](image-url)
4.2. Retention

There is a lot of KM information that can be obtained from the LMS which is useful to quality assurance department. Statistics about how tutor did in the course in terms of students' point of view, charts show who login to system, and how often they do so in terms of students and tutors. At AOU all tutors should login to system frequently to reply to students requests if found, so the administrator who is in charge of monitoring this issue, can view such charts which help him to improve the work. The LMS can produce a detailed activity report for any user of the system, figure 2 show number of students who visited different activities and resources of a specific course.

![Activities and Recourses](image)

**Figure 2: Number of students who visited certain activities and resources**

4.3. Transfer knowledge within the organization

AOU LMS has been integrated with other computerized system such as Student Information System, Human Recourses, Quality Assurance, Financial System, etc. One example is the student information system which is an Oracle based system that provides the necessary information such as students' information, courses registered, faculties, grades, etc. LMS integration with SIS (or LMS-SIS) is a system used inside the university to reducing efforts and produce automatically generating accounts, minimizing faults and errors to null, obtaining availability of requirements and simplifying registering, entering and generate many related reports.

All students' grades in TMAs, quizzes can be viewed in different forms: XML format and Excel sheet format, where a tutor could view the excel sheet for all the sections she/he is teaching or he could view each section separately. The Excel sheet has the first name, sir name, student ID, student department, student email, then the module TMAs and quizzes and shown in figure.3. The same data is transferred to SIS which saves time and effort in re-filling these grades again. The student information system is another computerized system. LMS-SIS integration added a lot of facilities which reduce time and cost in the following ways:

- Automatic structure enrollment: each student is provided with a username and password which enable students to register automatically.
- Automatic course enrollment: students are automatically enrolled into LMS courses they have been registered.
- Automatic group enrollment: students are automatically enrolled into LMS courses group, as they registered this group in the university.
- Automatically withdraw students from courses where students want to drop or have some financial problems.
- Student semester grades: students are enabled to see their grades through the LMS rather than bringing it from registrar.
- Students registered courses: where students could see the registered courses information such as their groups, time, course names and short names.
- Student's financial issues: where students could see their financial status and payment schedule.
Finally, the following are some but not all the KM information that can be extracted from the AOU-LMS:

1. A report about a specific user activities on a specific course or on the system as a whole with the optionally of selecting specific period of time
2. A report on the student grades in a course with different sorting and classifications.
3. A report on users’ participations on a specified activity such as forum or dialog session.
4. A report on students results of a certain online exam such as placement test.
5. A report on student passing statistics on a certain exam according to different classifications such as there majors, gender, etc.
6. An analytical report on the factors of hardness, coefficient factor, and deficiency for every question on a certain online exam
7. An analytical report on users’ questionnaires filled online for different purposes
8. A report on the accessibility and usage of e-library from users on different categories such as major, student level, etc

5- CONCLUSION

We have introduced in this paper the Learning Management System (LMS) as Knowledge Management (KM) base. There is huge information that can be extracted from LMS in different format such as text data, tables, charts, and figures. These information is very critical for many key players in different specialties in order to do there work in more proper way. We have presented many cases of this information by presenting a case study at AOU LMS and its relationships with many bodies within AOU and also outside AOU. A literature overview on the relationship between KM and LMS and their integrity has been introduced also in this paper to conclude that there are enormous similarities between LMS and KM concepts

REFERENCES


