ELMS: E-Learning Management System

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Abstract— Delivering a quality education to the students is a very important objective of any academic. And it is also important for an institute to examine their students continuously for their development. In this paper, an e-learning management system is developed where a student and teaching staff can register themselves. After successful registration, the student is permitted to again register for new courses available. After course registration, the system allows the student to start his/her learning from the beginning or else the student can start with any module. This course consists of modules, also called lessons. After completing all the modules an overall multiple choice questions test is conducted based on the whole course and the student is awarded a certificate based on the results. Here teaching staff will be able to upload study materials, update the course and questions. The facility to view mark list and the number of qualified and disqualified candidates are also available. Administrator here is responsible for adding and deleting the students, staff, and courses.

Keywords— Discussion Forums, e-Learning, Knowledge Sharing, Learning Management Systems.

I. INTRODUCTION

The tremendous evolution in information technology (IT) and computers have positive effects in many fields, especially business, education, and industry. Knowledge management (KM) in its origin relates to the 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 IT people's point of view, knowledge management means use knowledge by computer; this involves a lot of computer branches as data mining, question answering systems, and natural Ib 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 the IT domain supports KM through increasing storing facilities and updating of the information. This enlarges the need for knowledge management not only in the business domain but to be involved in wide areas such as 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

distance-learning paradigms such as e-learning, blended learning, and open learning. I can view these new trends as a tree, where distance 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 anywhere any time. Although e-E-LMS is used in different types of distance learning it is also used also in regular learning including in-class teaching. Using computers and Internet as knowledge delivery and communication media consequently is known as eLearning 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 its focus on creating virtual learning environment (VLE) or what is also known as learning management system (e-E-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 This dissertation questions the common assumption that e-learning requires a learning management system (E-LMS) such as Moodle or Blackboard. Based on an analysis of the current state of the art in E-LMSs, I come to the conclusion that the functionality of conventional e-learning platforms consists of basic content management and communications facilities (such as forums, chats, wikis, etc.) and functionality for assessment (such as quizzes). HoIver, only assessment

functionality is actually specific to e-learning. Furthermore, the content management and communication functionality in e-learning platforms is typically restricted and often inferior when compared with the more general implementations available in Ib content management systems. Since content management systems (CMS) offer more general and more robust functions for managing content, I argue that e-learning platforms should be based on content management systems. Only assessment functions are actually specific to e-learning and need to be added to a CMS; this requires the architecture of the CMS to be modular. As a proof of concept, I have designed and implemented the eduComponents, a component-based e-learning system architecture, realized as software components extending a general-purpose content management system with facilities for course management and assessment. The eduComponents have been successfully used since several semesters at Otto von Guericke University and other institutions. The experience with the eduComponents gives practical evidence for the theses I have put forward in this dissertation and of the feasibility of the eduComponents approach. The research done for this dissertation has also resulted in practical definitions for e-learning and e-learning platform, terms which are notoriously ill-defined. Based on these definitions, I have developed an innovative way to assess and to visualize the areas of functionality of e-learning environments. The new adventure of the online world has helped to improve many domains and sectors. Knowledge management era which originally related to business sector is now required in industry, health, or any institute that needs to manage its knowledge. Education is no exception! The advancement in computers speed and memory and the growth of Internet usage are behind the inspiration of the e-learning approach. In which the computer is used as a medium to deliver and share educational materials and knowledge instead of face-to-face tutoring. This makes education available to anyone, any place, and any time as learner need. This paper presents the relationship between knowledge management and e-learning management system (e-E-LMS) that is used in e-learning paradigms. A detailed description of the E-LMS used at Arab Open University (AOU) is included in this paper. I claim that the E-LMS used at AOU can be considered as a knowledge management tool.
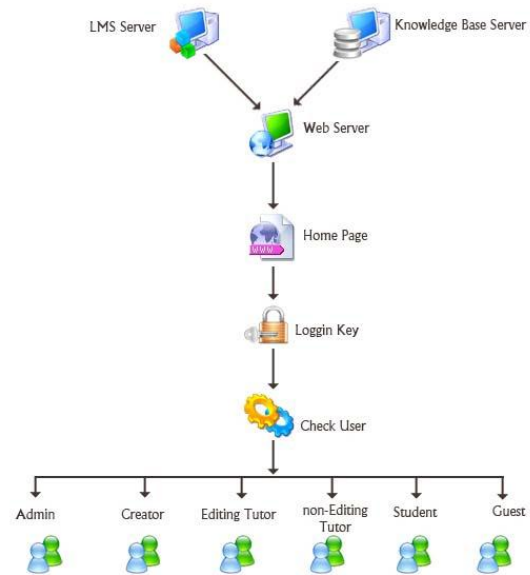

Fig 1: E-Learning Architecture

Overview

Several studies had been conducted by researchers, and although the aim of their research on the use of the Internet may vary, their research shows that the Internet is being used by academics around the world. From a local perspective, a study revealed that students at universities in Malaysia had used the Internet for course-related activities. Students with better basic skills on the Internet perceived the Internet to be supportive of the learning environment by using the Internet for their learning tasks and also generally had better attitudes toward using the Internet to improve their studies. B. Internet Usage by Academicians World-Wide. For the academicians in the University of Delhi, India, the usefulness of the Internet is shown through the frequency of its use. Most of the respondents used the Internet more frequently, with 70 percent of them indicated using it daily, 16 percent of them more than two or three times in an Iek, 12 percent of them once an Iek and 2 percent of them occasionally. Internet presence helps to improve the educational process and address problems related to Iak collaborative partnerships, declining educational standards, rising costs, increasing student numbers and to meet the generally increased demand for higher education. A well managed information flow in an academic institution can lead to the improvement of academic standards and can ensure greater equality. With the introduction of the Internet, information-seeking activities and information access have become much easier, faster, and more cost-effective for the intellectual community, as should in the research done at the Rajshahi University in Bangladesh . In addition, internet access in the University of Ibadan, Nigeria, is primarily expected to help students and staff to access literature and to engage in academic communication. A study in 2003 evaluated the level of utilization of the

Internet for academic research at the Obafemi Awolowo University, Ile-Ife, Nigeria. The results from the analysis of the responses showed that the respondents ranked the use of research materials on the Internet fourth (17 percent). HoIver, respondents who used the internet ranked research materials second (53 percent) to e-mail (70 percent). The study concluded that the use of the Internet for academic research would significantly improve through the provision of more access points at departmental and faculty levels. The Internet made it possible for users to have access to large volumes of information on many disciplines, irrespective of the user's geographic allocation [7]. In general, I can deduce that academicians use the Internet as a tool to search for more information for academic purposes.

Rest of the paper is organized as follows, Section I contains the introduction and overview of the Knowledge Management Tool, Section II contain the related work of E-Learning, Section III contains the proposed work and advantages of developing E-Learning Management System, section IV explains the methodology with flow chart, Section V describes results and discussion and Section VI concludes research work with future directions.

II. RELATED WORK

"I shall reconsider human knowledge by starting from the fact that I can know more than I can tell". [8] According to this, knowledge is defined as what I know; this involves the mental processes of "comprehension, understanding and learning that go on in the mind and only in the mind, however much they involve interaction with the world outside the mind, and interaction with others" [9]. Lee [10] views knowledge as "information combined with the user's ability and experience that is used to solve a problem or to create new knowledge". Earlier in the 1950s Polanyi introduced two forms of knowledge: explicit and tacit knowledge. Duffy [11] presents explicit knowledge as "knowledge that is documented and the public, structured, fixed-content, externalized, and conscious". Tacit knowledge is hard to be formalized or represented; it involves "intangible factors embedded in personal beliefs, experiences, and values" [12]. Polanyi argues that tacit knowledge is derived from experience, inherited practice and implies values and beliefs. According to Nonaka [13], the key to knowledge creation lies in the mobilization and conversion of tacit knowledge developed his famous model that converts tacit knowledge into explicit one, where individuals can create new knowledge by combining their tacit knowledge with the knowledge of others. This is generated through reading documents from many sources which enable individuals to know what others previously learned; and also through discussing meetings, conversation, and storytelling. All of this enables the individual to exchange their knowledge, and get benefits from others experience, and then reformulate all these activities into an

explicit knowledge. From an academic perspective, explicit knowledge is the knowledge that the user is aware of and can be formalized and delivered such as textbooks, lecture notes, and videotapes. While tacit knowledge is hard to be formalized or represented, it is something stored in peoples' mind such as skills developed in the classroom, in an e-learning environment, and the experience and enhancement professors have added to curriculum [4]. Because knowledge management is still a new era, there are different definitions by different writers from different perspectives. KM is a system and managerial approach to collecting, processing and organizing enterprise- specific knowledge assets [14]. Management implies all processes related to knowledge creation, identification, and sharing [15]. KM process is composed of six phases: acquire, create, synthesize, share, use to achieve organizational goals, and establish an environment conducive to knowledge sharing. Ernst and Young address the four phases KM approach: knowledge generation, knowledge representation, knowledge codification, and knowledge application. This overlaps with many IT disciplines require the IT interference. IT people are needed to: write code or modify an existent one to satisfy new demands; support system operations; create metadata to organize knowledge; interact with the public to help them using knowledge, and to coordinate and guide the assessment of KM activities. E-learning is the use of network technology to design, deliver, select, administer and extend learning[17]. The Wikipedia presents that there is a life cycle for knowledge "starting with capture or creation, moving on to use and reuse with the ultimate goal of enriching an organization's capability"[18]. Based on these facts IT intrusion is necessary to manage and use knowledge effectively.

III. PROPOSED WORK

Many universities and colleges follow Class Room Based Teaching which has many advantages and some disadvantages too. In Class Room Based Teaching, if once the student misses a class, he/she miss a significant amount of work and important thing taught in that session. The process of assessing learners' progress in the classroom consumes huge time and manpower. Online e-Learn is an Online Education package for all the learning of the students aspiring to be high class professional. Constants personalization of candidate learning process and frequently interacting with the online expert give Online e-Learn subscriber an edged over other students. Online e-Learn worked on two modes: Online and Offline. In online mode, used for the first time should be connected to the internet and if they had valid username and password they are able to download study material, concern tests containing a different pattern of questions and Online e-Learn tools get stored at local hard disk make utilized of the package. Report of his test conduct is get updated to learn server directly. If the user

is offline mode (had already material downloaded) read material and conduct test, result get stored at the local hard disc. When again user get to connect to the Internet then that stored data get uploaded to Portal server. In turn, the Online portal server gets generate reports based on his information stored at Expert System, part from this portal server have updated study material, question banks.

In this system, our main aim is to reduce the user interaction with different applications. The main goals are as follows:

- Providing an online education Website for students
- Providing learning of courses through online.
- Providing writing exams online
- Provide appropriate messages indicating errors or instructions
- Basic operations are available like adding, modifying etc
- Navigation simple
- A similar pattern of design in all screens
- Accept various parameters in case of reports
- Presentable format
- No complexities.
- 24/7 accessibility to the resource materials.

The course consists of modules regarding a particular subject or technology, and each module consists of some chapters. After each module, the student should take the test and should pass the test to proceed to the second module. In case of student failure, the system generates a report review to the student and gives permission for the student to repeat the test in second chance. If the student passes the test conducted in second chance, then he can operate the second module, else the system repeats lesson with new different modes of learning like video lectures, audio, and reference links. After completion of all modules in a particular subject or technology, based on his performance, results will be produced, and e-Certificate will be provided to the student. The proposed product has two components: Online e-Learn Server: This is a central repository where deployment of software and course portal study data is done. All clients present in the intranet contact the server to download the latest updates in software and study material etc. Client: Client consists of a front-end to enable students to study and test themselves on various topics.

Advantages

I propose a bi-criteria heuristic algorithm to optimize make span and total completion time simultaneously. Propose slot configuration algorithms for make span and total completion time. I also show that there is a proportional feature for them, which is very important and can be used to address the time efficiency problem of proposed enumeration algorithms for a large size of total slots.

IV. METHODOLOGY

ADMINISTRATOR MODULE

This project will mainly be under the control of the administrator. He plays the role of a protégé and even as an organizer.

ADMINISTRATOR ROLES

- Maintains entire website
- Adds new courses, enables and disable courses
- View all courses with their contents
- View and delete staff
- View and delete the student.

STUDENT MODULE

The student is the main participant in this system. The student can learn the course online, then take a test and get their certificate based on their results.

STUDENT ROLES

- Joins on Self Interest directly
- View Courses Available
- Selection of Courses
- Learn Course
- Write Exam
- Get a certificate.

STAFF MODULE

Staff is mainly responsible for managing the course. Staff can add questions to the course and check the progress of each student under a particular course.

STAFF ROLES

- Joins on Self Interest directly
- Uploads notes,
- Set examinations papers by adding questions
- Conducts Examinations
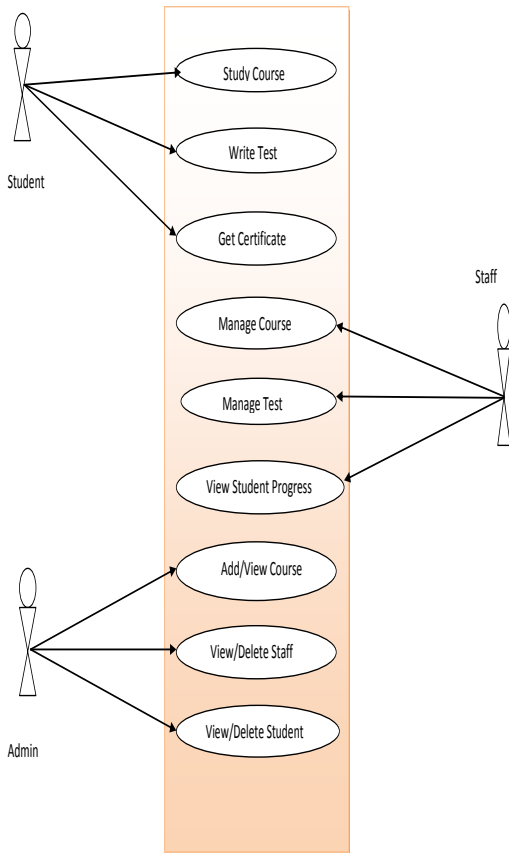- View Student's Progress

Fig 2: Use Case Diagram

V.   RESULTS AND DISCUSSION

Results of the E-Learning Management System are shown using the following figures.

- New Student and Staff should register themselves first.
- Administrator, Staff, and Student can log in by identifying themselves. Fig[3]

Fig 3: ELMS Main Page

- The administrator can perform the functionalities like add/view course, view/delete student and staff. Fig[4]

Fig 4: Admin Home Page

- Staff can perform functionalities like Edit Course, Add Document, Add Questions, and View Students. Fig[5]
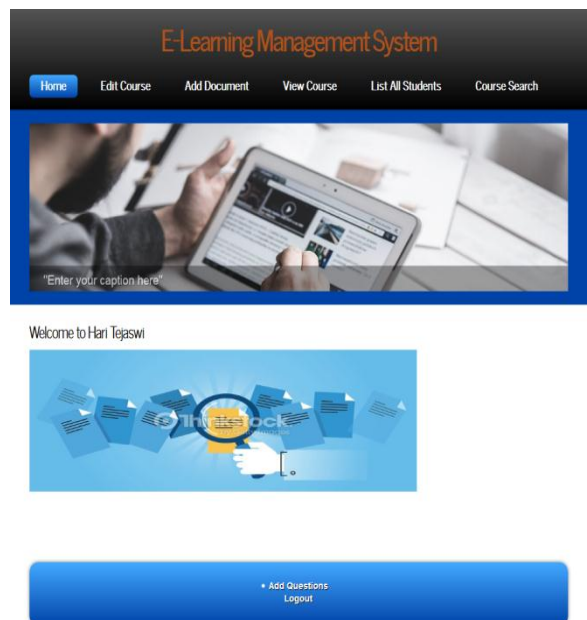
Fig 5: Staff Home Page
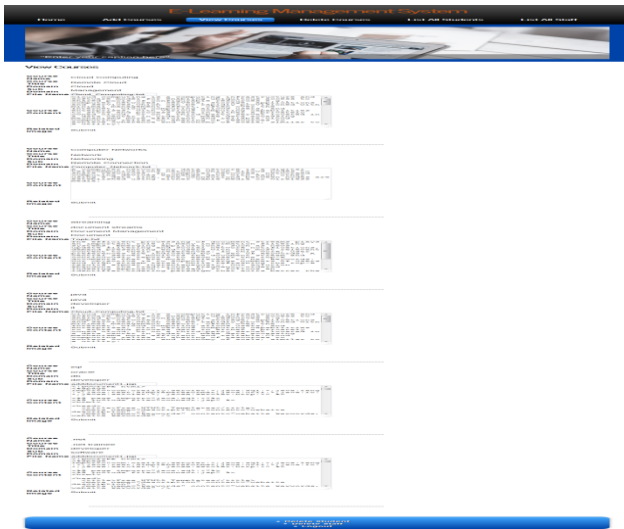
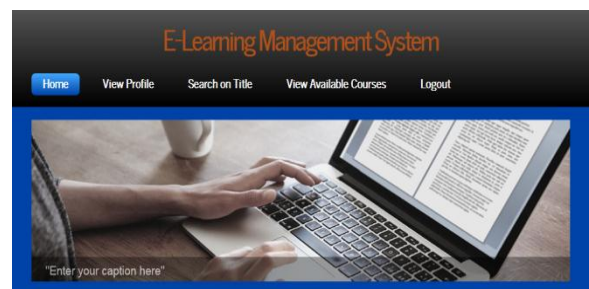Fig[6]: View All Courses
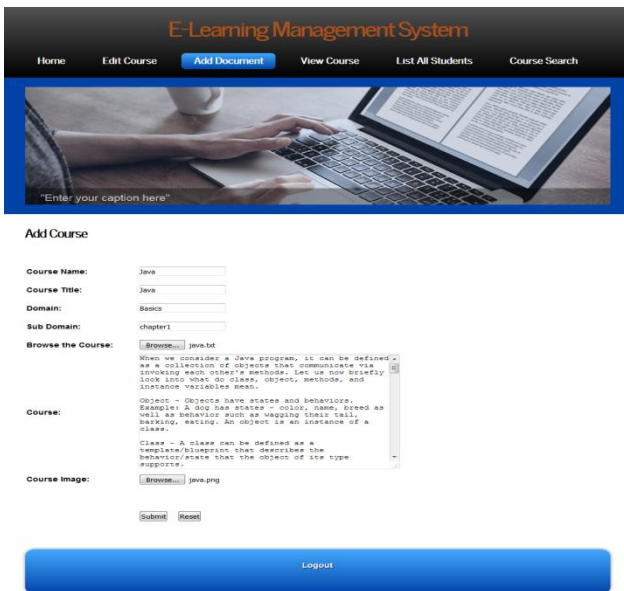
Fig[7]: Add Course
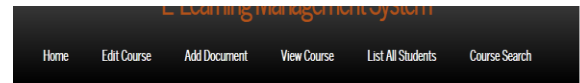
Fig[8] : Add Questions

- The student can View their Own Profile, Study the Course, take Test and finally after successful completion gets the certificate. Fig[9]

Fig[9]: Student Home Page

Fig[10]: View Course By Student

Fig[11]: Exam

Fig[12] : Certificate

- Certificate of Completion will be generated only for the students who got qualified in the exam.

VI.   CONCLUSION AND FUTURE SCOPE

Recently, there has been a huge interest in different industries in the new era of knowledge management which becomes a crucial demand in different sectors. The growing demand on the information technology made huge attention to related domains including knowledge management. On the other side, there was also a huge adventure in the educational domain which has its own revolution from the online industry. The new trend in educational institutes moves towards e-learning. This paper presented the knowledge management from computer industry perspective. Full descriptions of the learning management systems have been also presented including the experience of the Arab Open University using different E-LMS. I focused on the role of E-LMS in general and its capabilities in the area of knowledge management. I hope that this paper contributed new information to fill the gap between the knowledge management and e-learning, specifically the role of the learning management systems as a knowledge management

tool. I hereby conclude our project with the following discussion: It elucidates with a primary objective of preparing an online education package for all the learning of the students aspiring to be a high class professional. The site encompasses, the software that is used with the knowledge of technology, the most popular designing language JSP, and the backend I used here is the MySql. Coming to the hardware side, I used Windows 2000 operating system with 512 MB RAM. The modules have been divided into three, it includes, Student, Admin, Staff. The e-learn site in its present state can add many more provisions for future enhancements.

Future Scope
The E-Learning Management System site in its present state has many more provisions for further enhancements. The various service pages such as Latest News, Current Jobs, and even more Expert Systems can take place, and these pages have to be further developed to meet their purposes. The site also has Database to store new applications. Thus the following service pages have to be further developed.

- Audio
- Video
- Media
- Current Affairs
- Expert Systems

All the above pages require a database and appropriate server-side coding.

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