ILEARNING MANAGEMENT SYSTEM: AN INNOVATIVE APPROACH TO E-LEARNING

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ABSTRACT

iLearning Management System(iLMS) uses the power of intelligent systems to give the opportunity to students and faculties to achieve the excellence in education. The idea is to have a learning management system that works closely with the learners serving many learners at a time and tailored according to the individual needs. The system will give functionality to design course curriculum by taking care of program learning outcomes (PLO), course learning outcomes (CLO) and mapping of topics to be covered in each course is done accordingly. It provides many features such as online course material, online tests, and feedback to students etc. along with authorization and authentication of different users. The system will generate the course material according to the level of student judged by using the student knowledge exam. The current system is focused on individual learning requirements and takes care of quality of education. System will generate various reports that give feedback to the student about his performance and to faculty for the assessments and course material. The system will increase the capability of distance learning, efficiency in performance, and will let the learner to study without any charge, where the fees can be covered by a charities and a government.

Key words: iLMS, Program Learning Outcomes, Course Learning Outcomes.

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1. INTRODUCTION

The technology plays an important role in our life. Innovations in the field of technology have changed all the sectors from education to construction to hospitals and in fact in every sector. But education sector is still not utilizing the benefits of technology optimally. Either technology is changing so rapidly that we always see it as "new," or we're still struggling to integrate technology effectively and seamlessly into the learning experience. Or maybe it's both. iLearning Management System(iLMS) is a step to include technology to education and learning so that classrooms and learning is no longer confined to buildings and hard books. iLMS used a design based approach integrated to create and support courses using technology. Nowadays, we can see mobile phones and tablets in the hands of every child for playing games etc. This project is an attempt to use and convert this habit of child to learning pathway. Every child will be a learner. iLMS is an attempt for every learner to gain knowledge rather than grades and numbers.

The development of e-learning products and the provision of e-learning opportunities is one of the most rapidly expanding areas of education and training, in both education and industry [1]. Education and training is poised to become one of the largest sectors in the world economy. E-Learning is being recognized as having the power to transform the performance, knowledge and skills landscape [2]. E-Learning is viewed variously as having the potential to: improve the quality of learning; improve access to education and training; reduce the cost of education; and, improve the cost-effectiveness of education [3].

2. METHODOLOGY AND FRAMEWORK

Researchers have conducted small survey to know the intention of people towards e-Learning. The sample size is 200. The researchers used questionnaire which consist of demographic and other questions to know their intention. 95% of respondents are strongly agreed and prefer to have online learning tool like iLMS. Although the sample size is small and but this data is a good motivator for researchers to have e-learning system like iLMS.

iLMS is an e-learning project to provide the unique experience of learning to distant learners through the use of technology to compete with face to face teaching. We know the challenges and benefits of teaching and learning with technology. But we also know there's something special about the learning experiences we share with our students in the face-to-face classroom. The face-to-face learning experience just can't be replicated, yet many of us keep trying to recreate it with technology. But maybe that's the wrong approach. Perhaps we shouldn't try to "replicate" those face-to-face learning experiences. Instead, we should try to find the technological tools that allow us to adapt the strategies we use in our face-to-face classes to engage with and connect to our students in the online environment, just in a different way. At the heart of both blended learning and flipped learning is a learner-centered curriculum that changes the traditional roles of teacher and student [4]. In these instructional approaches, faculty creates active learning opportunities for students to engage with the content on a deeper level. iLMS through its functionality gives opportunities to faculties to apply the creative methodologies in teaching in distant learning environment. One way to address this is to apply the flipped philosophy to the online classroom. The flipped classroom model can help us design more interactive and engaging online learning experiences, and online classes can help us expand on what it means to flip. iLMS focuses on scalability and focus on community and connections. It is equipped with features like online classrooms, self-learning material, e-Mentoring, e-learning, forum and many more features to give unique e-learning experience to the students. It has other features like Open Registration, Open content, Free of charge, Real time interaction, scripted assessments and feedback, Learning community, Self-paced, Start end dates and College credits. It serves the purpose of individual personal classroom for all the students.

The architecture design of iLMS is as follows. As shown in figure 1, iLMS uses knowledge base which consists of facts and rules are defined accordingly. Rules are defined using CLIPs.
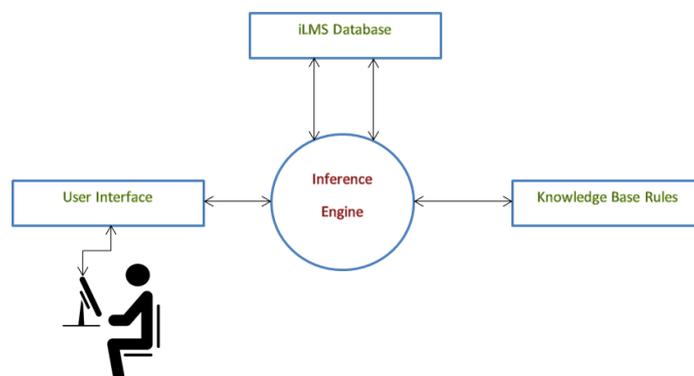

Figure 1 Architecture Design of iLMS

iLearning Management System gives the opportunity to students and faculties to achieve the excellence in education. The idea is to have a learning management system that works closely with the learners serving many learners at a time and tailored according to the individual needs. This project contains the following modules for three main entities namely: Admin, Faculty, and Student. Figure 2 shows the main modules of iLMS and main functionalities of each module which are discussed in other part of paper.
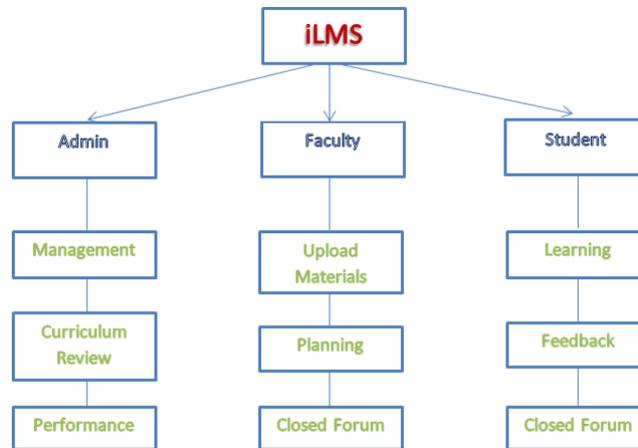

Figure 2 Main Modules of iLMS

2.1. Admin

Admin has the right to enter details of new program and courses. Admin can enter the study plan to be followed by particular student to complete his course. Admin can see the details like number of active students, number of faculties, number of students in each course, number of students pass each course etc. The syllabus is designed to course leaning outcomes (CLOs) based on bloom taxonomy. The course learning outcomes are designed to check the understanding, knowledge, analytical and creative skills of the students. The syllabus is finally approved by admin.

2.2. Faculty's Log In

iLMS introduces a flexible access 24/7 by entering a unique username with related to a robust password. If you are a new user, simply you can create a new account for both as a faculty or as a student. By a faculty logging in, he will be able to see the latest news whether there is a new faculty he was joined to the team or one of the faculty's students was passed the final exam and he is waiting from the faculty to put his digital signature on the achievement certificate. In addition, the faculty is able to communicate through online with any user. Also, he can set an appointment to talk with somebody later, and he can see the calendar whether there are an upcoming events.

2.3. Uploads

The main role of the faculty is to upload the materials for students so, the faculty will upload at any time he wants, these uploads will be stored in the Knowledge-Based System (KBS) that will facilitate the student to be accessed and get what he wants. Each course will have the date of the last uploads that will let the faculty to know when the last time he was uploaded the material.

2.4. The Materials

The materials uploaded are mapped with CLOs of the course. The materials include video links, case studies and other learning resources. To make the learning efficient, we want to divide each course to a several parts which the course will has documents, videos, links (outsourcing tutorials), and an

experimental exams (which help students to practice before accessing to the final). These materials have levels that can be classified to three scales as: beginner, intermediate, and advanced.

Those classifications will improve the student learning by making differences between them, that mean when the student got a low result in his knowledge test so, he will start from the beginning level. This beginner level will has more assistance rather than others which more tutorials links and other practices will be provided to improve the student learning skills. The materials are also divided into lecture sessions divided into specific number of hours depending on the credit hours of the course.

2.5. Student's Journey

By logging in to iLMS, a student is authorized to be a distance learner by following the procedures that began with a Student Knowledge Test as student focus tool, which determine the knowledge level of the student. This test will be generated randomly for each student and each time he login to the system.

The test covers many fields such as: math, physics, humanities sciences and more, to locate the student level. After that, the result will specify the number of activities which the student has to take before access to the required course. Suppose, if the student wants to learn IT Project Management course, he has to go through the student knowledge test about the subject. This test will also determine his knowledge as beginner, intermediate or advance. An Analyzing Tool will analyze the student knowledge on the basis of correctness of the level of the questions. The system will generate the course material according to the level of student judged by using the above exam.

Let's now talk from a technical side, how this test can be distinguished from other tests? The secret is by using an intelligent system, the questions will be provided. It's a procedure of fetching questions from a database that has multiple pre-added questions. After the student did the test, the result will be displayed which shows his knowledge level determined by the system.

The course material will be generated according to the level of the student. So that student will get the detailed knowledge rather than just passing particular course.

This intelligent technique will save time of faculty members to specify the knowledge level of the student which can be done more easily and accurately by an intelligent system. In addition, the results will be displayed on the student interface, and on the faculty's interfaces. The student has an ability to share the result with his colleagues, which can see his rank in an analytically chart.

This Home page that provides much information such as: The new updates, the online users, the events, and his progress (if he was already started studying), and the hyperlinks which can see the latest news on our social websites. If the student wants any help, we are ready to support him in different situations, just click on the iLMS Support hyperlink and everything will be solved. The Student has a several courses that he can choose the required ones as shown in figure 3.

Figure 3 Courses

The student wants to choose a specific course/s so, to know more about the course, he will move to syllabus tab which provides a summarized description of the chosen course/s Also, the user can move to Contents tab which contains the topics that will be provided in the studying sessions. The Outcomes of the course are important to give an insight for the student about what he will gain at the end of the course After the student takes a look about the course from different angels, then he chose specific courses that displayed in a separate tab with providing a date about the last uploads of the materials.

The student can start learning by downloading or viewing the materials online. The iLMS will not allow the student to take final exam before completing each lecture session. The system will also ensure that the student will spent particular hours on particular session.

To ensure the integrity of online final exam, the student has to login to the exam session and he will not be allowed to move to other applications during this session. Remote recording of exam will be done to maintain the integrity of the exam. The session will automatically close after two hours. The system will select the questions randomly by examining the PLOs and CLOs for the course. The system will check the correctness of questions and display the results accordingly. At the end, achievement of CLOs is analyzed by the system. If the student is not able to achieve particular CLO, the system will detect and material related to that topic will be displayed to the students and student is again assessed by the system for the same CLO. Therefore, the current system is focused on individual learning requirements and takes care of quality of education. System will generate various reports that give feedback to the student about his performance and to faculty for the assessments and course material. Lastly, the system will compare graphically the marks of a student with his colleagues to let the learners compete with each other.

The system will increase the capability of distance learning, efficiency in performance, and will let the learner to study without any charge, where the fees can be covered by a charities and a government.

2.6 Open but closed Forum and Chat sessions

This functionality allows students and faculties to participate in open communication. Through this forum, the faculty can participate with students in discussions and present their views openly. Students can discuss the problems and other academic issues to their peers. The faculty can open closed forum for particular course. Current students and students who already passed the particular course can be the part of this forum. This provides a unique opportunity to students to interact with their peers even in online learning environment. The student can do individual chat sessions with faculty and his peers.

2.7 Other Functions

iLMS provides an efficient learning environment to students. Student can access to digital library that linked to a huge database and numerous numbers of latest researches in turns can help students to gain more knowledge. Students can access various e-Books also.

iLMS provides each student with his event manager and calendar. This helps the students to set his targets and learning hours and reminder is sent to the student for the same.

The student can interact with their peers individually and as a group also. They can communicate with the faculty of the course.

2.8 The Last Step

What will happen if the student was passed the final exam?

After the student complete his learning of a specific course and passed the final exam, he will gain an achievement certificate which has a percentage of his exam result. It's a digital certificate where the student pay no fees for getting it, plus, we want to cover it with a sophisticated encrypting algorithm to make it secure from any modifying.

3. USES OF INTELLIGENT SYSTEM (IS)

iLMS using intelligent system in many parts, such as:

1. IS help iLMS help in bringing the questions from the knowledge base.

2. iLMS also uses IS to do the corrections of the assessment and giving appropriate feedback to the students.

3. iLMS also uses IS to determine the level of students.

4. In fetching a specific books from the digital library which can be displayed on the student interface while studying to let him choose a book for reading if he wants.

5. iLMS use IS to fetch the links and additional tutorials that can be provided to the student to get more knowledge about the interested field of studying.

6. iLMS use IS will detect the improper behavioural scenes while the students are talking to each for studying purposes through the video technology.

7. IS provides an analytically tool for statistics purposes. For instance, this tool can be used to know the highest mark of the final exam for students of a specific course.

8. IS will use the application to alert student if there is a new materials that being uploaded, or if the student was set his goal to study every day for one hour so, through an IS the student will be able to be alerted to complete his trip in learning.

4. CONCLUSION AND FUTURE RECOMMENDATION

iLMS have a major role in letting any student over the world to learn through the internet that the learner can study courses like Diploma, Bachelor, Master and other courses also. These studies will be accredited locally and globally to achieve the facilitation in learning at anywhere, and any time. iLMS opens the door for more features that needs to be added. These include speech recognition, system to enable disable learners to learn and mobile application to provide the same functionality to all the students.

5. ACKNOWLEDGEMENT

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