



# Implementation of e-Learning through Open Source Software

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**Abstract—** *Using the Internet to enhance e-learning has become a trend in modern higher education institutes. E-learning platforms are increasingly becoming a significant part of the strategy for delivering online and flexible learning. The advantage of e-learning is the opportunity for students to interact electronically with each other and their teachers during forums, on discussion boards, by e-mail and in chat rooms. In addition, it increases the feeling amongst students that they have equal access to opportunities in the educational process, reduces the barriers of fear and anxiety, and enables them to express their ideas and to search for facts, making the information more pertinent than is usually possible in traditional classrooms. This system will propose a new approach, developing a new activity for e-learning systems, that of exercise activities of exams. This exercise service is to be used as a means of assessing a student's recently acquired knowledge, and the implementation of such exercises online will become a vital aspect in the education process. The main aim of this system is to provide the exercises online for students, in order that they feel more confident before an exam. Also the system can become a useful tool for the institutes to ease the difficulties they found in maintaining paper work.*

**Keywords—** *E-Learning, Flexible learning, Forums.*

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## I. INTRODUCTION

Using the Internet to support learning has become a trend in modern higher educational institutes. E-learning systems are increasingly becoming a significant part of the strategy for delivering online and flexible learning [14]. At present, an explosion is occurring in the demand for e-learning all over the world. The next generation of e-learning needs to provide greater dynamism, adaptability and flexibility to support today's increasingly pressurized e-learning requirements. E-learning systems are a group effort, where educators, trainers, instructional designers, database administrators, multimedia technicians, and users from a variety of other areas of expertise come together in order to serve a community of learners [5]. E-learning offers institutes a number of benefits, such as access anytime and anywhere, better integration of application technology tools, opportunities for independent learning, improved motivation and access to novel learning styles.

Currently, there is an increasing demand for methodologies and technologies, especially for e-learning. E-learning is defined as interactive learning in which the learning content is available online and provides automatic feedback to the student's learning activities [6].

In order for current and future generations of personalized e-learning to improve educational effectiveness and efficiency, there are fundamental requirements that must be realized. The term of e-learning is used to refer to online interactions of various kinds, which takes place between students and

instructors. E-learning particularly refers to the components through which students and teachers interact for online learning purposes [1].

With traditional learning, accessing information and following up all new developments is becoming increasingly hard and expensive. In contrast, e-learning provides these facilities to the learners or researchers whenever and wherever they are by simply accessing the Internet. E-learning is based on two main elements. The first one is providing up-to-date information to the learner and the second is providing this new information easily and quickly [11].

E-learning is increasingly seen as an important tool by higher education institutions. The benefit of e-learning is that it provides an opportunity for students to interact electronically with each other and their teachers during forums, on discussion boards, by e-mail and in chat rooms. In addition, it gives students the feeling of equality in the opportunities provided by the educational process, reduces any fears and anxieties they may have and enables them to express their ideas and search for facts and information more effectively than is possible in traditional classrooms. It also leads to a culture of learning and self-training at university, which improves and develops the capacity of students at a low cost and with minimal effort [4].

There is no consistent stranded architecture for e-learning systems. All the available architectures depend on the kinds of e-learning products than an institute requires. As most of the

educational institutes have similar goals, there are no significant differences between the e-learning architectures and every product or system has similar structures and activities. The differences lie in the institute's requirements, and some universities integrate e-learning products together. E-learning also acts as a gateway to online Curriculum Mapping, Assessment, Communication, Delivery, Tutor Support and Tracking facilities [1].

The main reason that e-learning has become so popular and embedded in many institutions is that there are real benefits to be gained from the use of the technology. Ever increasing student numbers is one obvious aspect of higher education where e-learning can help. They can maintain good communication links and there are opportunities for automated assessment. In terms of widening participation, e-learning can provide resources to students who cannot travel to the institute all of the time [9].

There are many advantages of using e-learning for the learner, and indeed for the institution. Educators can manage courses such as tracking student progress, making announcements to classes, issuing timetable information, setting, receiving and marking assignments, creating multiple choice tests and so on. It is also a huge advantage to the institutions and university staff, as it allows them to upload files onto the system for people to access; this saves them having to attach documents to an e-mail and then sending them to the class. Both the educator and the student can enjoy the privacy of their home environment. The Internet provides cheap and easy access to information sources of huge diversity. Interactivity is offered on a large scale and variety, this technology provides drills and exercises for basic skills. E-learning facilitates interaction between students and instructors, almost free of time and location constraints. Moreover, it enables the benefits of integration, for individual and group learning facilities. It also enhances the learning and teaching experience by supporting learning at flexible time and locations. E-learning enables easy online delivery of materials for both students and lecturers with wider student access, on and off campus, to learning materials and resources. In addition, it offers a flexible support for educators who do not need to be in a fixed time or place to support and communicate with students [10].

Although e-learning offers many advantages for teachers, student and institutes, it also has some limitations, which are that both teachers and learners need training in order to be able to use e-learning; with every new technology it takes some time to learn usage and gain confidence. Also, e-learning can be a dumping ground for material not designed for delivery online. Furthermore, the copyright, disability legislation and accessibility of online materials need to be considered. Off-campus access to hardware and networks can be problematic for both learners and teachers, increasing issues of equality and also access can be slow and expensive. Online support must be planned carefully and learning material can become outdated. Therefore, we can expect e-learning to become more sophisticated and this requires more tutor administration.

## II. Literature Review and Related Work

### A. Moodle

Moodle is an open source virtual learning environment (VLE) designed to support e-learning. It provides a range of facilities for developing and maintaining e-learning courses such as assignments, chat rooms, forums, glossaries, quizzes and claims to be distinctive because of its basis in sound pedagogical principles. Moodle comes from a background of social constructionist pedagogy; however, it can be used to support any style of teaching and learning.

Moodle, in the context of e-learning, is a fine software example of how and why OSS works. OSS is rapidly developing, and new alternatives for non-profit organizations are emerging and maturing. Also, OSS is becoming widely adopted by university and educational institutions. Managing an LMS can be a complex task. Moodle does not hide this complexity and its detailed online help, examples and sensible defaults assist users in installing, administering and using the LMS [10].

### B. Learning Paradigms

Following are some learning paradigms and its technological perspective that needs to be considered:

- Constructivist Learning
- Behaviorist Learning
- Situated Learning
- Social Learning
- Collaborative Learning
- Technological Perspective

#### 1. Constructivist Learning

Constructivist's central idea is that human learning is constructed rather than received, that learners build new knowledge upon the foundation of previous learning. In order to transform learners from passive recipients of information to active constructors of knowledge instructors must give learners an environment in which to participate in the learning process, and the appropriate tools to work with that knowledge [8].

#### 2. Behaviourist Learning

In this paradigm, learning is thought to be best facilitated through the reinforcement of an association between a particular stimulus and a response. E-learning can enhance the behaviourist learning process by stimulating students with the presentation of engaging teaching materials and tasks, obtaining responses from learners, and providing appropriate feedback[8].

#### 3. Situated Learning

The situated learning paradigm emphasizes the idea of cognitive apprenticeship where teachers (the experts) work alongside students (the apprentices) to create situations where the students can begin to work on problems even before they fully understand them. To this end, one important aspect in online learning systems is to provide learners with awareness,

that is, knowledge about what other participants are doing at present and what they did in the past. Situated learning requires knowledge to be presented in authentic contexts (settings and applications that would normally involve that knowledge) and learners to participate within a community of practice. Mobile devices, such as PDA and smart phones, can support students in different learning contexts as well as reinforce the learning personalization and adaptation by the natural alliance between learning as a contextual activity and personal mobile technologies [8].

#### 4. Social learning

The socio-cultural theory of learning views that learning takes place in a social context, and the forming and reforming of concepts need not necessarily take place only at the level of the individual, but that collaborative group work and sharing with peers (and others) can be a powerful way of confronting one's own conceptions, contributing to the need to restructure one's cognitive schemas. Even though computers traditionally have been used as individual tools in collaborative applications, mobile devices, thanks to its mobile property, can provide the necessary support so that those collaborators can socially interact with freedom. Indeed, mobile technology can offer very important aspects to achieve a natural social interaction among collaborators [8].

#### 5. Collaborative learning

An important issue raised in collaborative learning is the change from divergence to shared understanding and to possible construction of knowledge. The point is to understand how collaborative interactions develop over time, whether students shared knowledge building becomes richer over time, and subsequent evidence that students are able to construct their own understanding based on their interactions with others. However, current interaction among students by using home computers as mediating collaboration means, demands the implicated actors to be rather statically behind a desk. Mobile technologies can remedy this situation by leading to a gain of mobility of the collaborators, which enhance their social interactions and provide the needed awareness with the learning context and location [8].

#### 6. Technological Perspective

Technology is getting smaller, more personal, ubiquitous, pervasive, and powerful. Mobile devices range from the use of Personal Digital Assistants and tablet computers to context-aware devices. This way, mobile technologies provide flexibility and ubiquity by accessing learning materials anytime, anywhere and adapt them to learners' personal features, preferences and interests, as well as pervasiveness by means of the latest wearable devices for learning across contexts.

Current college student's' culture is indistinctively wireless and mobile connected. By means of a great variety of mobile and wearable devices, such as PDA, smart phones, and laptops, tablets, handheld or palmtop computers, portable media players (e.g., iPods), and so on, they are not isolate

from classmates, friends and family, but incredibly flexible, fluid, communicative, and collaborative, more than ever when it comes to their social connections in their virtual life. In addition to the extremely popular social networking applications and other social tools, such as blogs, wikis, discussion boards, and so on, they are permanently connected wirelessly in any situation and for any reason. More broadly, mobile and wireless computing has altered the rhythms of social time and has changed uses of social space.

This technological revolution is however followed by strict accessibility, availability, security, performance that existing infrastructures can address only in small-scale and quite often not sufficiently or resulting in high costs.

#### C. Related Work

The UNITE Dissertation (Unified e-Learning environment for the school) [2] set out from a state-of-the-art analysis of the existing educational platforms, mobile learning and e-Learning pedagogical frameworks with the view to structuring an e-Learning environment capable to meet the learning needs of the schools it addressed. The main output of the Dissertation was the UNITE e-Learning environment, as well as a series of e-Learning scenarios covering a great range of thematic axes, which could be customized to the needs of each learning audience.

The EXPLOAR [7] Dissertation demonstrates an innovative approach that involves visitors of science museums and science centres in extended episodes of playful learning. The EXPLOAR approach considers informal education as opportunity to transcend from traditional museum visits to a "feel and interact" user experience, allowing for learning "anytime, anywhere", open to societal changes and at the same time feeling culturally conscious. A set of demonstrator learning scenarios are being implemented employing advanced and highly interactive visualization technologies in personalized ubiquitous learning paradigms.

The Engage [13] proposal is designed to build on existing partnerships in order to evaluate and extend the use of mobile technologies to make information accessible to both teachers and learners at the right time, at the right place, and in the right form. This cross regional proposal involves a number of commonly used learning environments including Domino, Moodle and uPortal and takes a standards based approach in providing a new open, flexible, and personalized learning experience delivered through mobile and wireless technology.

### III. IMPLEMENTATION DETAILS

Implementation encompasses all the forms involved in getting new software or hardware operating properly in its environment, including installation, configuration, and running, testing, and making necessary changes. As such, implementation is the action that must follow any preliminary thinking in order for something to actually happen. Actual implementation is divided into two modules:

- Site administration
- Course administration

### A. Site Administration:

The site administration menu links are located in the Settings block. A combination of site policies, user authentication and front page settings determine who can get to the front page. And once they get there what they can see and what they can do. Site administration is completely the part of administrator. The main steps of site administration includes

- Creating Course Categories
- Creating Courses
- Registering a new user
- Creating cohorts
- Adding users into the cohorts
- Enrolling students into a course
- Enrolling teachers into a course

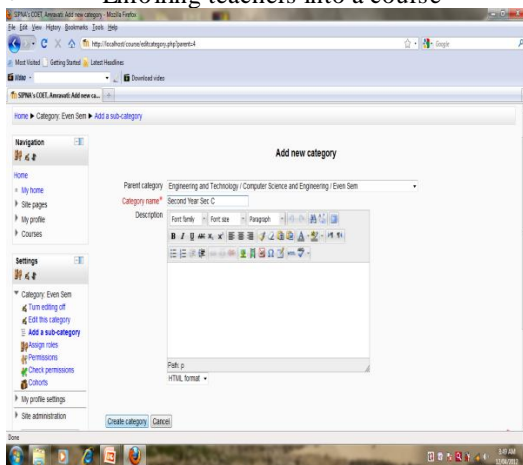


Fig 1. Creating Course Categories

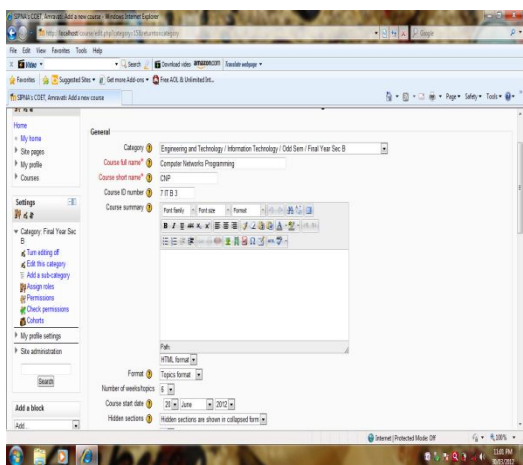


Fig 2. Adding a course

### B. Course Administration

The courses can be created by administrator as a part of site administration. Once the course is created, teachers, students can be enrolled to that course either manually or by using self enrolment (if allowed) and they are assigned different roles. After teachers and students are assigned to the

particular courses the role of teachers came into act. All the enrolled users can have access to the activities and resources added to that course.

Teacher can add different activities such as assignment, attendance, quiz, chat, etc. to the course. Along with these activities, resources including files, folders, labels and pages can also be added to a course.

Course administration is again divided into two parts:

- Resource Management
- Activities Management

#### 1. Resource Management:

Resource management involves adding course contents in the form of labels, doc files, pdf files, ppts, videos, audios, pages, etc. After the resources are added by the teacher to the course, the students enrolled to that course can view all of them and also can download them on their local system

#### 2. Activities Management:

Teacher can manage different activities such as assignments, attendance, quiz, questionnaire, choices, etc. to the course.

## IV. CONCLUSIONS

This system is an absolute solution for the problems of students and teachers discussed in problem definition. It encompasses a wide range of functionalities not only for the students but also for the teachers. Student has to log-in to the system to access the courses according to their convenience. They can also post their queries online and can view their attendance reports of each subject along with other tasks like submitting assignments online. At the same time this system performs most of the task on behalf of teachers such as managing attendance & quiz. It is the complete frame work for the today's educational system for making it online.

This system will help students to learn the things electronically sitting anywhere anytime enjoying the privacy of their home environment. It also allows students to participate in various activities like feedback, quiz, and assignments online. Also the system is oriented towards institutes to help simplify their work.

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