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## Learning Management System: A Tool for Effective Teaching Process

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### **Abstract:**

*In the early days of digital learning, any knowledge that was acquired via computers, or any content that was transferred with the assistance of computers, was viewed as e-learning or computer assisted learning. Learning Management system (LMS) is an alternative term for computer assisted learning, and works as a pedagogy for student-centered and collaborative learning. Several issues are associated with the traditional learning system, notably students not being able to attend lectures stated for a particular time due to reasons or non-availability of classes when a particular lecture is due. The focus of this research is centered on developing a LMS that will mitigate these challenges. The method used in implementing the LMS incorporated the use of Moodle, an open source software for creating an effective environment to allow for student and lecturer interaction in the learning process, Php for managing the server-side, J-query, Html, CSS and JavaScript for developing the user interface. MYSQL was the database management system chosen to store the requisite information. The result obtained was the development of a LMS that served as an improvement over the traditional management system. In conclusion, it has been shown that the use of a LMS will serve as a much more effective and efficient means of learning in the institution.*

**Keywords:** Learning management system, Moodle, learner, traditional learning system, collaborative learning

### **1. Introduction**

With the advancement of information technology conventional learning has been extended to embrace the virtual learning system for Nigeria polytechnic system which has created opportunities for students, instructors and the society at large to access information to study and to learn in both formal and informal setting.

Web-based applications such as Learning Management Systems (LMS) enable teachers and learners to engage interactively in study materials and instructions are generally not imparted but information co-shared, assignments submitted online using "an integrated set of web-based tools for learning and course management" (Malikowski, Thompson, and Theis, 2007).

Learning Management System or LMS is a software application designed to facilitate virtual education and learning by helping in tasks like documentation, distribution of materials, tracking, reporting and delivery of projects. Basically, it simplifies the administrative roles and also provides transparency to learners regarding their progress in the course. Also, variously termed as Course Management System (CMS), it creates an interactive platform for users to coordinate in completion of learning assignments.

Although LMS are increasingly seen "as mission-critical applications for teaching and learning" (Salaway, Caruso, and Nelson, 2008), its contribution to amount or extent of student learning remains yet to be researched. (Koszalka and Ganesan, 2004). Most LMSs are "used for the distribution, management, and retrieval of course materials" (Hanson and Robson, 2004), the systems can be modified and custom-designed to support student-teacher interactions and group learning through discussion boards and sessions. (West, Waddoups, and Graham, 2007), it also remodels the education system with technological improvements and develops the global quality of learning (Dutton, Cheong, and Park, 2003).

With widening scope of education, even rare subjects attract the interest of learners; student often choose to study some course unavailable in general universities; even teachers and workers are often willing to work on innovative materials, these days. However, communication doesn't "happen" automatically in LMS portals but require a strong intention and motive from teachers and students (Liaw and Huang, 2000). This paper focuses on enhancing effective teaching-learning processes using Learning Management System as a tool.

### **2. Literature Review**

#### *2.1. Electronic Learning*

The letter "E" has been used to talk about all the activities related to computer science in the last years, with the appearance of new information technologies. Learning is a core constant of human behaviour. Learning is defined "as any relatively permanent change in behavior that occurs as a result of practice and experience". It was first used in the mid 1990's as a shortened form of "Electronic learning" (OED, 2007). E-learning according to Markus (2008) can be defined as

knowledge acquired from reading digital content that is supplied by an electronic device. E-learning is an auto-assisted learning system. The student will be able to assimilate knowledge, which "is dictated" by a program, by means of a smart device. Examples include portals, repositories, digital libraries, learning-management systems, search engines, and e-Portfolios.

Learning Management Systems (LMS) play a major role in the virtual learning world. It facilitates distance education by accommodating information and acquirers on the same platform (Abbas and Baharuddin 2013). LMS is a general term for a wide range of services which organize and connect enthusiastic students, teachers and administrators by giving them access to usage of web-based technologies (Awodele et al 2014).

## *2.2. Types of Learning Management System*

LMSs are of various types and comes with different names: Course Management System (CMS), Learning Content Management System (LCMS), Virtual Learning Environment (VLE), and Virtual Learning System (VLS) (Wright et al, 2014). An LMS is defined as a software used to design, develop, implement and assess e-learning. An LMS simplifies administrative tasks of distributing study materials to students, monitoring their progress and assessing their assignments with shared transparency which will be convincing even for learners. It has features to conduct face to face web discussions and also share reviews and opinions via discussion boards/forums and group conferences.

### 2.2.1. Course Management System (CMS)

CMS is a collection of software tools intended for course interactions on a virtual learning platform. It is a system used to manage the content and contain the most basic functionality. It makes teaching and course management easy by providing a framework and set of tools for instructor and as well monitors student performance. It is used in creation of documents, lesson and other content. A course management system empowers teachers and students by helping them manage course materials, tests, quizzes, home assignments and grades in an accessible online environment. Students can log in and work anytime, anywhere. Ullman and Rabinowitz (2004) more succinctly define course management systems as "Internet- based software that manages student enrollment, tracks student performance, and creates and distributes course content." CMS is a repository for content where the content could be textual data, documents, pictures etc (Michael Simonson 2007).

### 2.2.2. Learning Content Management System (LCMS)

LCMS is produced from the integration of LMS and CMS Learning Content Management System (LCMS) represents "a multi-user environment where learning developers can create, store, reuse, manage and deliver digital learning content from a central object repository" (Tachi Jurubesco, 2008).

### 2.2.3. Virtual Learning Environment (VLE)

A virtual learning environment is an abstract atmosphere created with tools and technologies which improve a student's learning experience and also qualifies instructors' administrative management by involving computer and internet in the learning process. It is a virtual classroom that allows students and teachers to communicate with each other online. A book or a written black-board is not a learning environment; they are merely materials for learning. However, reading a book at a conference, seminar- or book-reading session, sharing and receiving opinion from listeners, discussing the content of the book with instructors and putting forward your own understanding do constitute for a learning-environment. Similarly, browsing through web pages doesn't essentially mean, you are in a learning environment. It requires other activities which include synchronous (e.g. chat, MUDs...) versus asynchronous (e.g. electronic mail, forums,) communication, one-to-one versus one-to-many or many-to-many conversations. The discussions and interactions can be text based or audio-video based. This may also include indirect communication such as sharing objects. In Web-based environments, learning can be through questionnaires, multiple choice quiz sessions, problem-solving or simply through responding over a post. Simulations are also part of virtual learning environment. While originally restricted to physical models, they cover now a broad spectrum of domains such as economics, politics, biology... Rather than being subject specific, virtual environment comprises of a set of common activities of interaction and sharing between instructors and learners on a common platform.

## *2.3. Related Works*

A wide set of LMSs have been developed and used to support the e-learning process. In the field of LMSs a lot of studies have been done that focused on LMS as a tool and technology to manage and share knowledge in educational organizations (Abu Shawar, 2009). Comber et al. (2010) examined if the choice of LMS as a tool affects the learning process. The investigated e-learning platforms provided sufficient functionality to accomplish many of the basic tasks in the daily course routine more or less effectively. The research concluded that a successful implementation of a blended learning scenario was found to be dependent on the choice of an appropriate e-learning solution (Comber et al, 2010). Du et.al, (2013) developed an interactive and collaborative platform e-learning system. His approach combines the advantages of learning management system and social programs.

## **3. Methodology**

The system is quite interactive that it allows the users to understand its operations and finds it very easy to work with. It was designed to allow interested user to request for study materials on-line and also make their contributions on

line. The operations of the administrator are of high standard which makes the system more interesting for people to get into and be served. The web-based solution is developed with PHP, HTML, CSS, JAVASCRIPT, J-QUERRY and MYSQL database management system.

### 3.1. System Design

The system comprises of five (5) components which are;

#### 3.1.1. User Interface

The system has three interfaces: one for the students, one for the admin and the other for lecturer. All users access the system via the standard Internet browser such as Safari, Internet Explorer, Google Chrome and others for the actual interactions with the system. The User Interface (UI) was designed using Hypertext Markup Language (HTML), Cascading Style Sheet (CSS) was used to style the webpage and as well for the description of the written document in markup language, JavaScript and J-Querry was used to make the webpages interactive and also to transverse and manipulate the created webpages

#### 3.1.2. The Web Server

The web server is an internet server that delivers content to users and allows the sharing of information with the users on the Internet. Apache which is an open source and most widely used web server software is the web server that was used for the system

#### 3.1.3. Server-Side Programming

Server-side programming is a technique used in web development which involves putting scripts on a web server and producing a response on each user's request to the website; the same also used in describing the codes or scripts that are executed by the system web server. PHP (Hypertext preprocessor) is a server-side scripting language designed for web development, especially for backend implementations. PHP was adopted because it is cross platform and its codes can easily be reused.

#### 3.1.4. Database

An open source relational database management system MySQL (My Structured Query Language) was used to design the database. WAMP server, a cross-platform, Apache, PHP was used for the database server.

#### 3.1.5. Data Access Layer

This layer was implemented with object-oriented PHP. It uses classes, in-built methods and user-defined methods. The classes are used to create connection between webpages and the database and also provides major functionalities to the webpages.

## 4. Results and Discussion

The Learning management system works in a school environment where internet is accessible at any point in time. The new system was implemented using Php programming language. During the implementation of the system each module was tested separately to uncover errors within its boundaries. User interface was used as a guide in the process. All the information collected were gathered and was successfully used in creating a graphical user interface in the form of a website. They are displayed after some certain commands or input are typed in. They are listed and explained below;

- Welcome page (Homepage): This displays the first page of the website and list of menus available.
- Notification: This displays the available or the immediate notification the student or lecturer has.
- Messages: Displays the message the student has. The message might be from the teacher or student to student.
- Add downloadable: This appears on the teacher's page, it is the page where the lecturer adds downloadable materials for students
- Add announcement: The lecturer adds announcement to students or student on this page.
- Add assignment: The lecturer adds assignment for students on this page.
- Add quiz: this page allows the lecturer to add quiz for student.
- Shared file: this shows the number of shared files the lecturer has shared for student to see.
- Admin: this is where the admin adds students and teachers.

### 4.1. Login Page

This page allows users to input their login details in order to access the other pages of the application



Figure 1: Login Page

4.2. Admin Dashboard

This is the first page that will be shown when the admin logs in

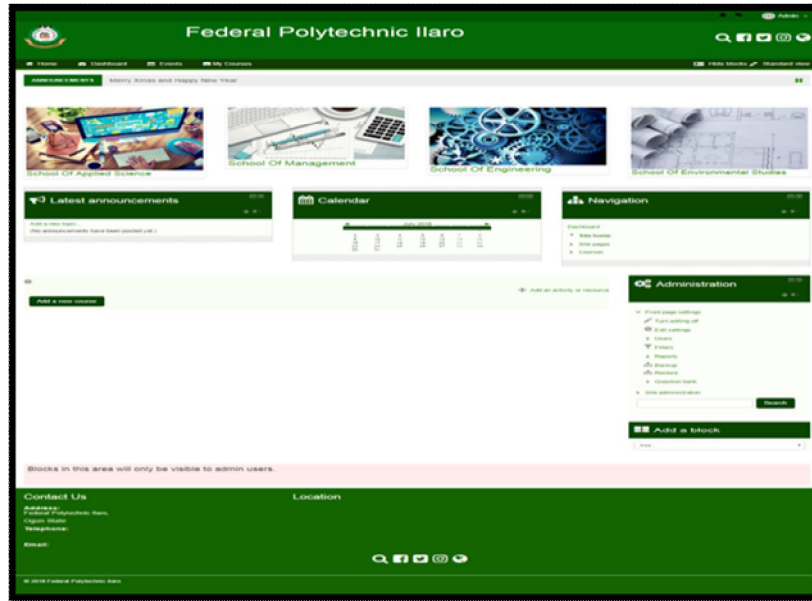


Figure 2: Admin Dashboard

4.3. Registration of New User

This page allows admin to register new user

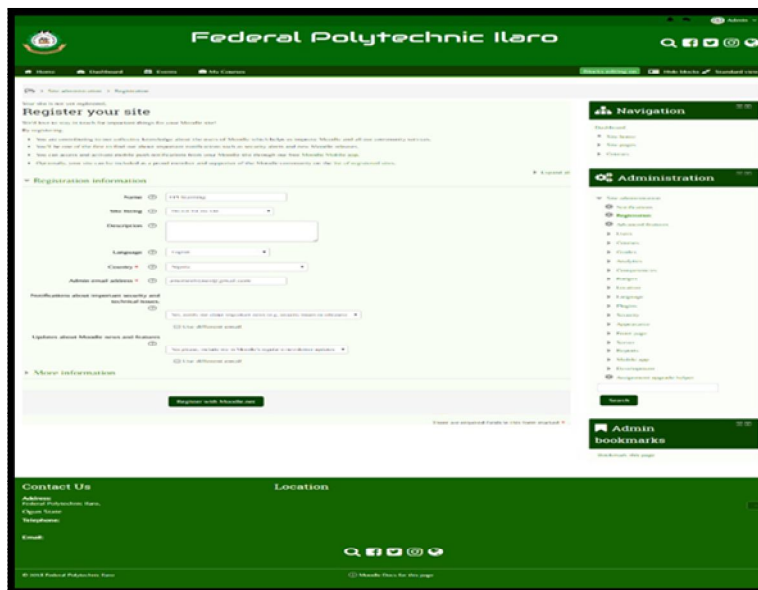


Figure 3: User Registration

#### 4.4. Registration of New Course

This page allows lecturer/admin to register new courses

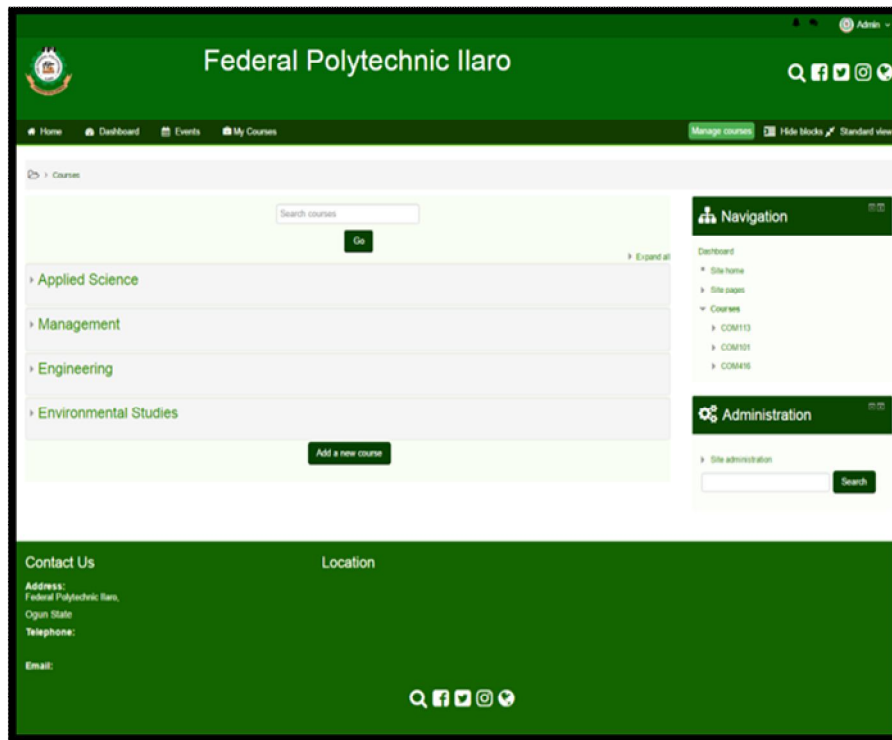


Figure 4: Course Registration Page

#### 4.5. Topics in a Course

This allows users to view the topics in each course

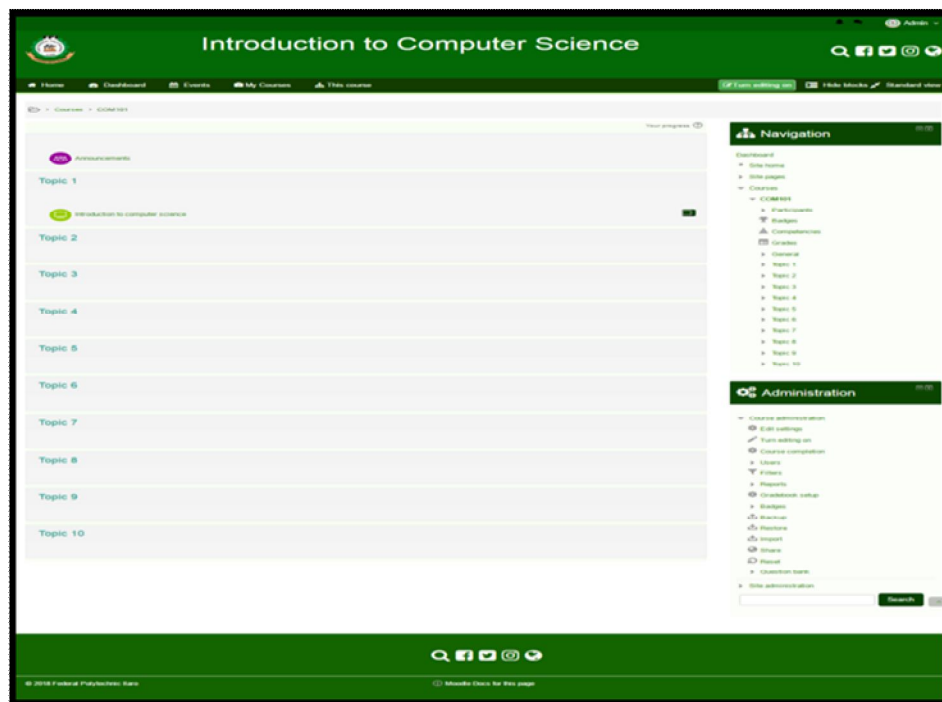


Figure 5: Topics in a Course

#### 4.6. Course Content

This allows user to see the content in a course



Figure 6: Course Content

#### 4.7. Course Overview

This page allows user to view the available courses

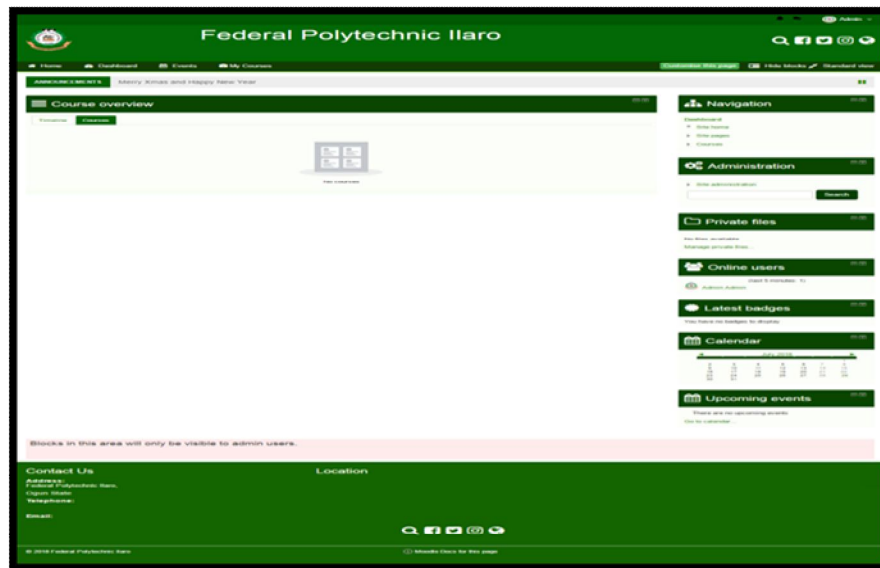


Figure 7: Course Overview

### 5. Conclusion

In this modern world where information is disseminated quickly via the internet, the LMS is an essential tool for higher institution students as not they can keep updated with their coursework, but get instant notifications pertaining to their daily assignments. In turn, lecturers have an easier time reaching out to their students out of class hours and constantly update them over the LMS about issues regarding their coursework.

It has come to complement the present education process, to help teachers offer more complete and verbal knowledge to students. To this point, the new system can be used for enriching the lesson and making it more interesting.

Finally, the swift growth of networks and especially and Internet, have provided the institution and universities with high access spreads and advanced telemetric services.

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