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Learning Management System for Improved Service Delivery in Tertiary Institution

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Abstract

Learning Management System (LMS) provides educators, administrators and learners with a single robust, secure and integrated system to create personalized learning environments. This paper was motivated by the lag in technological evolution and traditional learning system in the Educational system in most of the Universities. Hence, a call for a change in the way service is delivered in our tertiary institutions. The work proposed the use of Moodle Learning Management System (LMS) as a tool to improve service delivery in tertiary institution. The methodology used was SSADM while the programming used was PHP, HTML, CSS and Ajax. MySQL was for the database design. The expected result was an e-learning site for Computer Science Imo State University Owerri, a platform that increases the possibility of interaction between students and lecturers.

Keywords

Service Delivery, E-Learning, Distance Education, Moodle, Technology

1. Introduction

Over the ages, there has been a call for change in the way institutions of learning manage teaching and learning. Scholars at both local and international level have called for a more accountable, intellectual and learner-centered application in tertiary institutions. One way of doing this, is embracing Learning Management System (LMS) software.

Learning Management System LMSs are web-based applications, running on a server and it is accessible with a web browser from any location once a user has an Internet connection. It is also referred to as Virtual Learning Environments,

Course Management Systems or Electronic Learning Environments. LMS presents educators with the following functionalities: tools for the administrative support of learning processes, manage materials distribution, assignments, help in communications and other aspects of instructions for their courses. [1] noted that LMSs have become an integral component of the educational systems in most universities and interest is increasing in hybrid approaches, that is, combining classroom learning with online activities while [2] stated that a LMS is not intended to replace the traditional classroom setting, but its main role is to supplement the traditional lecture with course content that can be accessed from campus or the Internet. There are many platforms and vendors of Learning Management Systems. They include: Moodle LMSs, Sakai, A tutor, CouresSite and Blackboard.

Moodle means Modular Object Oriented term Developmental Learning Environment and is a Course Management System (CMS) through the Internet, also is known as LMS or a Virtual Learning Environment (VLE). It is a learning platform originally designed by Martin Dougiamas. The first version of Moodle was released on 20 August 2002. Moodle is a robust open-source e-learning platform, and it was used and developed in the years following its release by a global collaborative effort of the international community. Moodle is designed and continually improves to provide educators, administrators and learners with a single robust, secure and integrated system to create personalized learning environments.

The Moodle e-learning platform was installed within Luoyang Institute of Science and Technology and it definitely contributes to making the teaching and learning process between students and teachers more resourceful and successful.

However, its use has not become compulsory so far and it is used as a learning resource, as a means of teaching-learning that supplements conventional lectures.

Because of its flexibility and simplicity for navigation and creation of course material, a growing number of students have shown interest in e-learning.

Service is an action rendered by one person or party to the other. The sole characteristics distinguishing services from goods are as follows: service is intangible, not perishable, and variability. These are self-explanatory largely as services are not as touchable or tangible as goods. After being rendered, a service vanishes.

Service is generated at a particular time, rendered and consumed and can never be exactly repeated as it was at that point in time or location, for circumstances, conditions, current configuration and assigned resources are always different for the next delivery (Sweaningen, 2002).

[3] defined Service delivery as a component of business that defines the interaction between providers and clients. The provider can offer a service that may be information or a task; the client either finds value or loses value as a result of the service rendered.

2. Literature Review

A lot of studies have been done which focused on LMS as a tool and technology

to manage and share knowledge in educational institution.

Pishva *et al.* (2010) studied the present usage of Blackboard learning management system and the way that it helps various educational institutions around the world. Their study included 19 universities and they concluded that Blackboard is certainly assisting educational institutions around the world in many diverse ways, including in face-to-face, blended and online learning. They also noted that Blackboard will continue to lead LMS market in addition to other open source LMS like Moodle.

[4] in their work: Learning Management System (LMS) among university Students: Does It Work? Investigated the reaction of students toward LMS. They noted some issues which includes; instructors restrict themselves to uploading course materials to the course web site and never use the interactive features such as chat, discussion forum, email, messages. They also stated that there is a gap between the reality and the many advanced teaching tools that are provided in LMS, such as multimedia materials, which were considered as possible means for enhancing teaching, but are not utilized. They finally concluded that these are all part and parcel of learning and using a whole new system altogether.

[5] in their work: an improved E-learning system proposed a system for university and other learning institutions that will improve on visual, audio and text files. The system as well improved interaction between the lecturers and students. Their work ensured that sessions are effectively undertaken by the users.

According to Bello and Abubakar, the following are lists of Nigeria universities using Moodle LMS as a tool for their e-learning

1) University of Nigeria Nsukka moodle.unn.edu.ng
2) Ahmadu Bello University Zaria moodle.abu.edu.ng
3) AmbrossAlli university secondary school
4) University of Dutse
5) Federal University Oye-Ekiti E-Learning Portal
6) FUTA E-Learning
7) Evengel University moodle
8) University of Ibadan
9) University of Jos
10) University of Lagos
11) University of Nigeria Enugu campus
12) University of Abuja center for distance learning & continuing education
13) Supreme Online Education
14) The Federal Polytechnic Ado-Ekiti E-Learning Portal
15) The Nikels Organization E-Learning Portal
16) Tutoring Classroom
17) Ritman college E-Learning platform
18) Rhema Nigeria moodle
19) National Open University of Nigeria
20) Kwara State University
21) Landmark University E-Learning

22) Lead British International school
23) Covent University
24) Df School of Health Technology Kaduna
25) Dept of Business Education RSU
26) www.ghi.sch.ng
27) www.seedvineng.com

According to [6], publication December 17, 2017 here is the list of the first 20 universities and their ranks in Nigeria.

1) Amadu Bello University Zaria
2) University of Lagos,Lagos
3) Obafemi Awolowo Univisersity Ile-Ife
4) University of Ibadan
5) University of Ilorin
6) Covenant University Ota
7) University of Nigeria Nsukka
8) University of Benin Ugbowo
9) University of Abuja, Abuja
10) University of PortHarcout, PortHarcout
11) Federal University of Technology, Minna
12) Federal University of Technology, Owerri
13) University of Agriculture, Abotekuta
14) Federal University,Oye-Ekiti Oye
15) UsmanuDanfodio University Sokoto
16) Lagos State University Ojo
17) Federal University of Technology Akure
18) Babcock University Ilishan-Remo
19) Bayero University of Nigeria
20) American University of Nigeria, Yola

2.1. Learning Management System

LMS stands for Learning Management System. It is a term specially developed for managing online courses, distributing course materials and allowing collaboration between students and teachers. A LMS will allow you to manage every aspect of a course, from the registration of students to the storing of test results, as well as allowing you to accept assignments digitally and keep in touch with your students. Basically, Learning Management System is the pillar of most e-learning activities.

An LMS is the engine that powers e-learning and it comprises of two separate parts:

- A server component that performs the core functionality of creating, managing and delivering courses, authenticating users, serving data and notifications.
- A user interface that runs inside your browser as a web such as Gmail, Facebook which is used by the administrators, instructors and students.

LMSs are built on several platforms, usually PHP,.Net or Java and they will hook up to a database such as PostgreSQL, MySQL or SQL Server. There are many LMSs in use, some commercial and others open source.

In a corporate environment such a system can be used to monitor staff, and keep records of appraisals and training. Whether your course is run for a few learners over a long period of time, or for many over a shorter period, a Learning Management System makes your life easier and helps your course run smoothly. A good LMS will also have a reporting system so you can access information yourself.

2.2. Types of Learning Management Systems

There are many LMSs available depending on your needs and resources. There are free and open source software and commercial LMS software.

The following are examples of open source LMS

- Moodle is Free and open source application.
- Sakai is also free, open source and Java base application.
- Coursesites is a free version of Blackboard Learn. It is Web-based.
- ILIAS is free, open source and Web-based, developed at the University of Cologne.
- ATutor is an Open source and free application,
- Canvas is an Open source and free.
- ELMS Learning Network (ELMSLN) is Free and open source.
- Kornukopia is Free, Web-based Education Management System (EMS)
- Open edX LMS is a well-known free and open source platform for creating MOOCs.
- Chamilo LMS is Open source and free that is developed in Spain by the Chamilo Association.
- Claroline Connect is Free and open source and is available in 35 languages.
- Forma Lms is Free, open source and was born in 2012.
- Eliademy is a Free and Web-based application.
- OLAT is a Free and open source developed by the University of Zürich.

3. Methodology

The methodology adopted in this work is Structured System Analysis and Design Method (SSADM). This is the process of defining the problem in structure way. It consist of well-defined structure stages like; investigation of the present system, definition of the new system, establishment of constraints and system analysis documentation. These methodologies feature the unified modeling language (UMLs), data flows diagram and high level model diagram. This paper design and implement an e-learning platform for computer science students using a Moodle Learning Management Software (LMS). LSM software enable student to study anytime, anywhere, at their own pace.

3.1. Advantages of the New System

The proposed system has the following advantages:

- The system will give the students the freedom to learn at their convenience and at their own pace.
- It will save time and money for transporting to classroom every day.
- It will result to high retention rate in that student refresh and update their coursework whenever needed.
- It will also enable both the lecturers and students to quickly create and communicate new policies, training and ideas.

3.2. The UML Case Diagram for the Proposed System

The UML Case Diagram for the Proposed System as shown in Figure 1 consists of the three main users of the system: Admin, Lecturer and Student.

Admin can create lecturer account, student account, create course, set permission, and upload course material.

Lecturer can upload course material, give assignment, grade assignment, ask question, answer student question, and upload news update.

Student can Study course material, do assignment, view grade, ask question, answer question, and view news update.

4. System Design and Implementation

System design can be considered as putting solutions to the problem(s) on hand

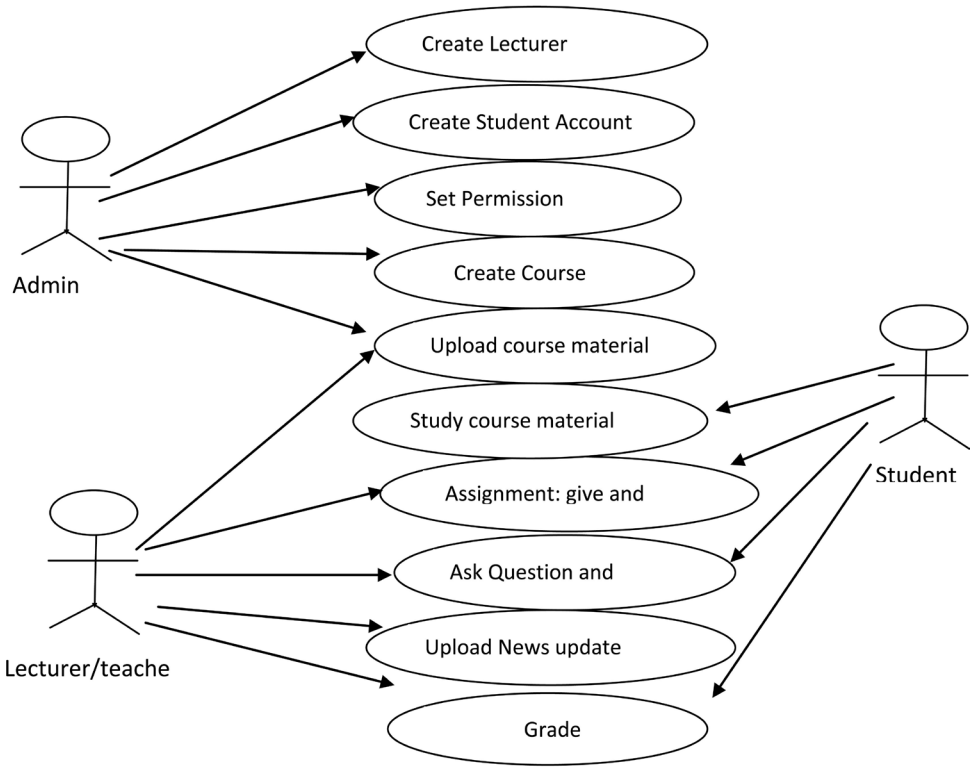

Figure 1. UML case diagram for the proposed system. Source: (Field Work).

using the available capabilities. It is the blue print of the system that is to be developed.

Activities in this stage of software life cycle entail the following activities:

1) Decompose system into components—that is, identify the software architecture. It discusses the various menus and screen displays, how the system can be installed, the hardware and software specifications/requirements for the installation of the system and how to start up the system.

2) Determine relationships between components –e.g identifies component dependencies.

3) Determine inter-component communication mechanisms.

4.1. System Description

An e-learning website is a system adopted by many organizations today more especially in higher institutions as a means of providing adequate distance method of teaching and learning. E-learning provides easy access for students and staff of the institution to share learning materials to students, set assignments, teach, grade and interact with their students from a remote area whereby cutting cost on both the lecturers and students.

Adaptation of this system by the department of computer science Imo State University Owerri will ensure that the students understands, study at their pace anywhere, anytime, without really visiting the classroom always. The design is made up of Twelve (12) modules as listed below.

Login Module: This module allow the admin to login with his or her password and correct user name before performing any work on the platform.

Home Module: This module serves as a central point where all the other modules are linked together it is where courses and other.

Users Accounts: This module is used by the admin to create or add more users.

Course: This module allows the admin create more courses and assign role and participants.

Grades: Students/users can be graded based on their performance on the platform by the admin.

Location: The admin ensures that the location of the website is configured or set to the rightful location.

Language: The admin sets the language which the courses will be thought in this module.

Plugins: This module gives the admin access to bring in or install new plugins into the platform.

Security: Configuration and securing of the information's and activities on the platform done with this module by only the admin.

Appearance: Setting and designing the front page or home of the website is done with this module.

Server: This module is in charge of controlling the server of the website, giving privileges and other permissions to the web platform.

Reports: Issuing out reports by the admin is achieved with this module.

Development: In case an external source code for more look and feel or better design of the website where another programming language can be brought in is done with this module.

Program/System Design

System requirements are those features that must be incorporated into the new system to produce desired changes in the existing system.

In this research work, the system requirement also known as the expectations of the new system are as follows: HOME PAGE, USERS ACCOUNT, CREATE COURSE, GRADES, LOCATION, LANGUAGE, PLUGINS, SECURITY, APPEARANCE, SERVER, REPORT, DEVELOPMENT. **Refer to Figures 1-7 respectively**.

4.2. Choice and Justification of Programming Language Platform

To design and develop this System Moodle CMS Template was used which is made up of PHP, HTML, AJAX, CSC AND MYSQL are used. The choice of the language care as a result of its:

- Open source software
- Ease of access
- Easy web development designs
- Flexibility
- Object Oriented Programming nature

5. Conclusion

LMS enables educators to create online course for students, assignment, e-book,

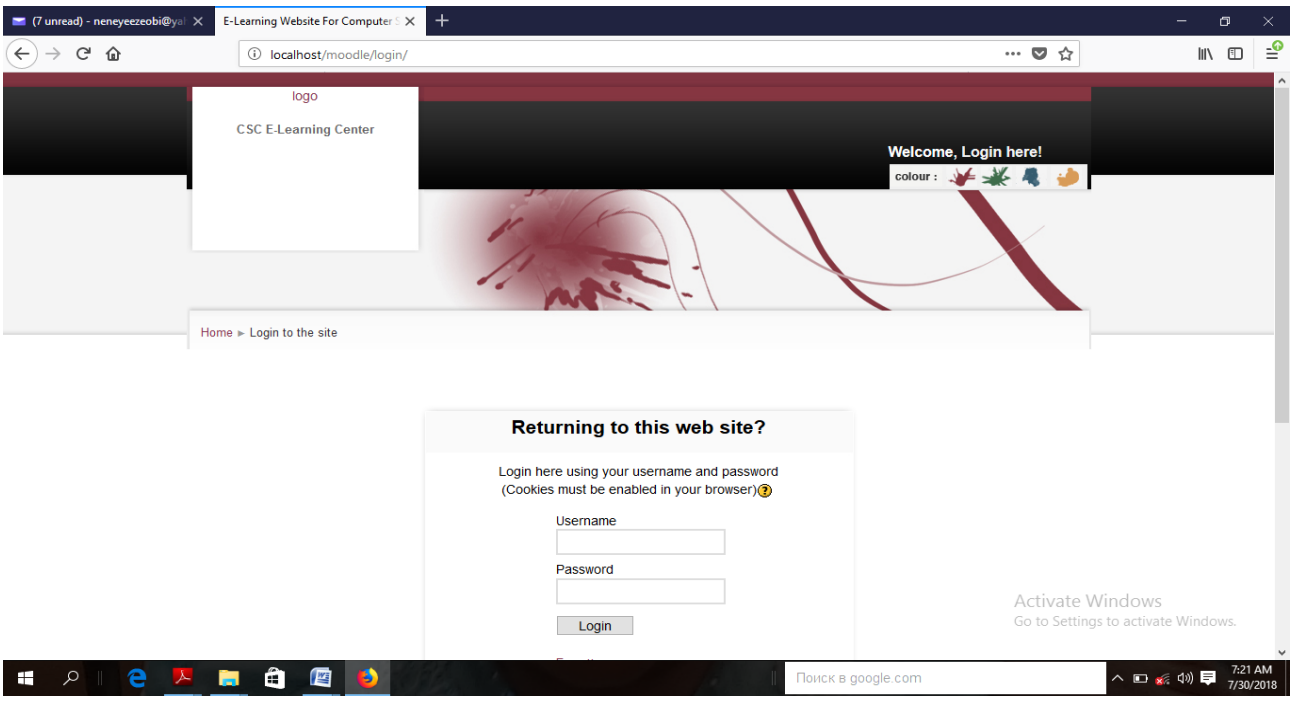

Figure 2. Log in page for the Computer Science e-learning site. Source: (E-Learning site).

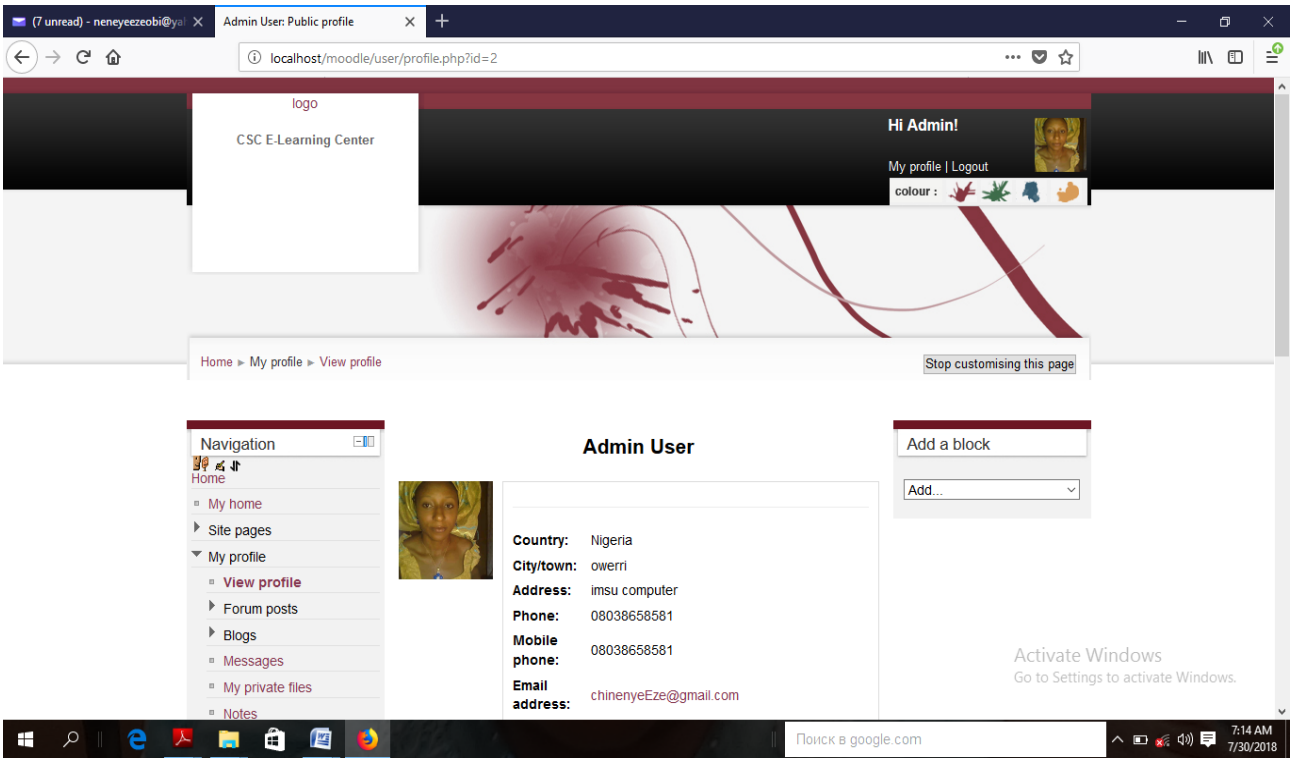

Figure 3. Log in page for the site administrator. Source: (E-Learning site).

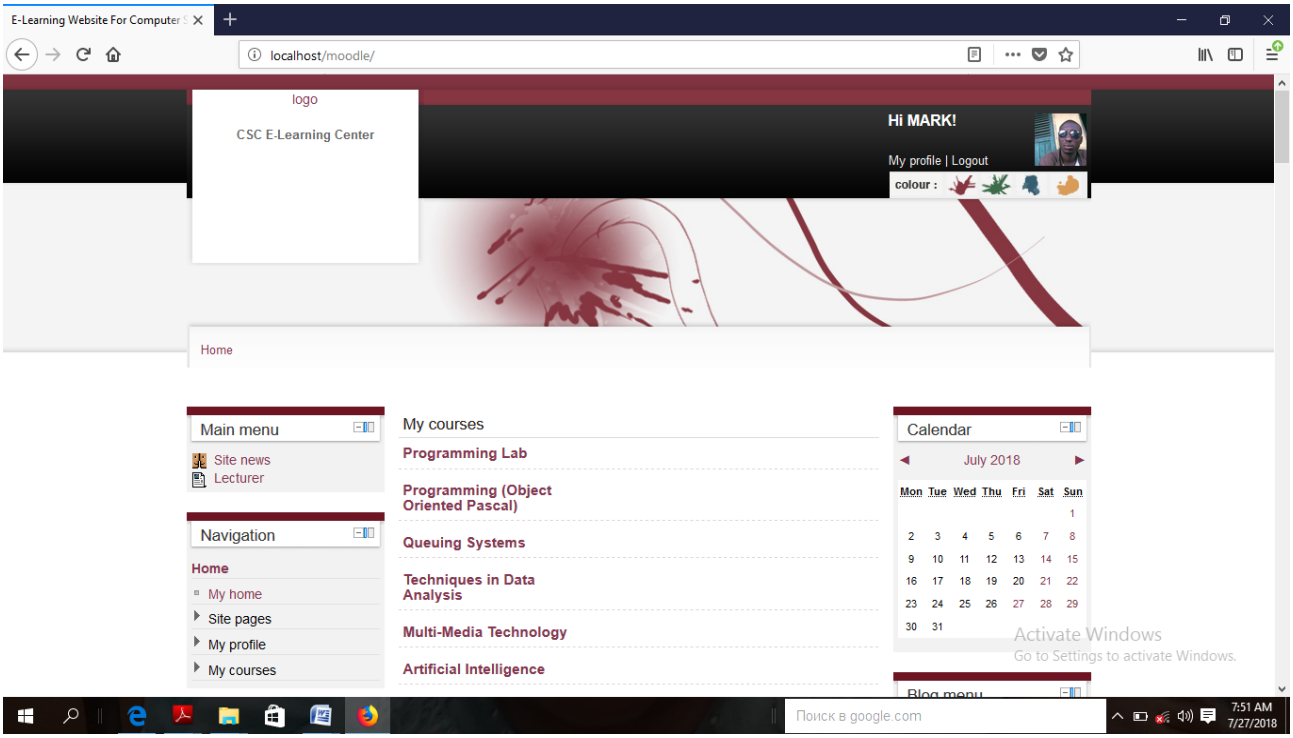

Figure 4. A Lecturer log-in in the site. Source: (E-Learning site).

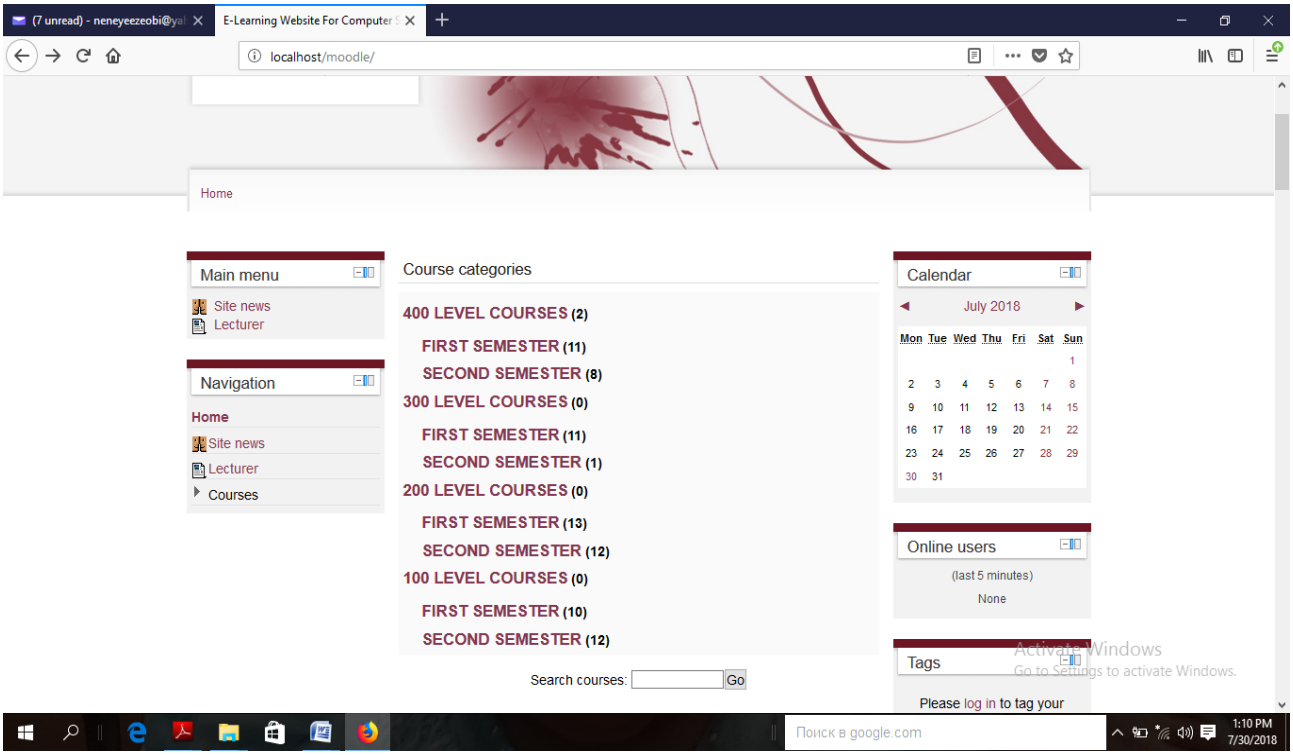

Figure 5. Page displaying the available course category. Source: (E-learning Site).

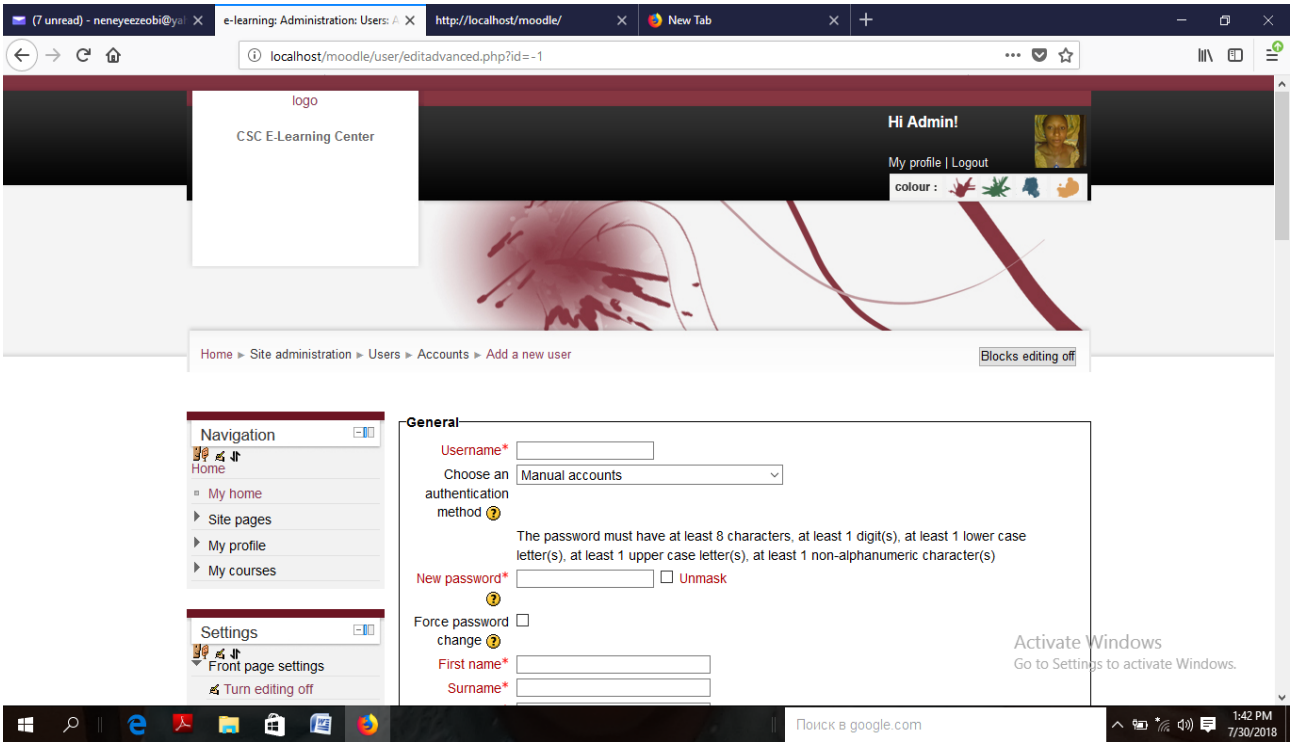

Figure 6. Page displaying where the Site Administrator is creating a new user account. Source: (E-learning site).

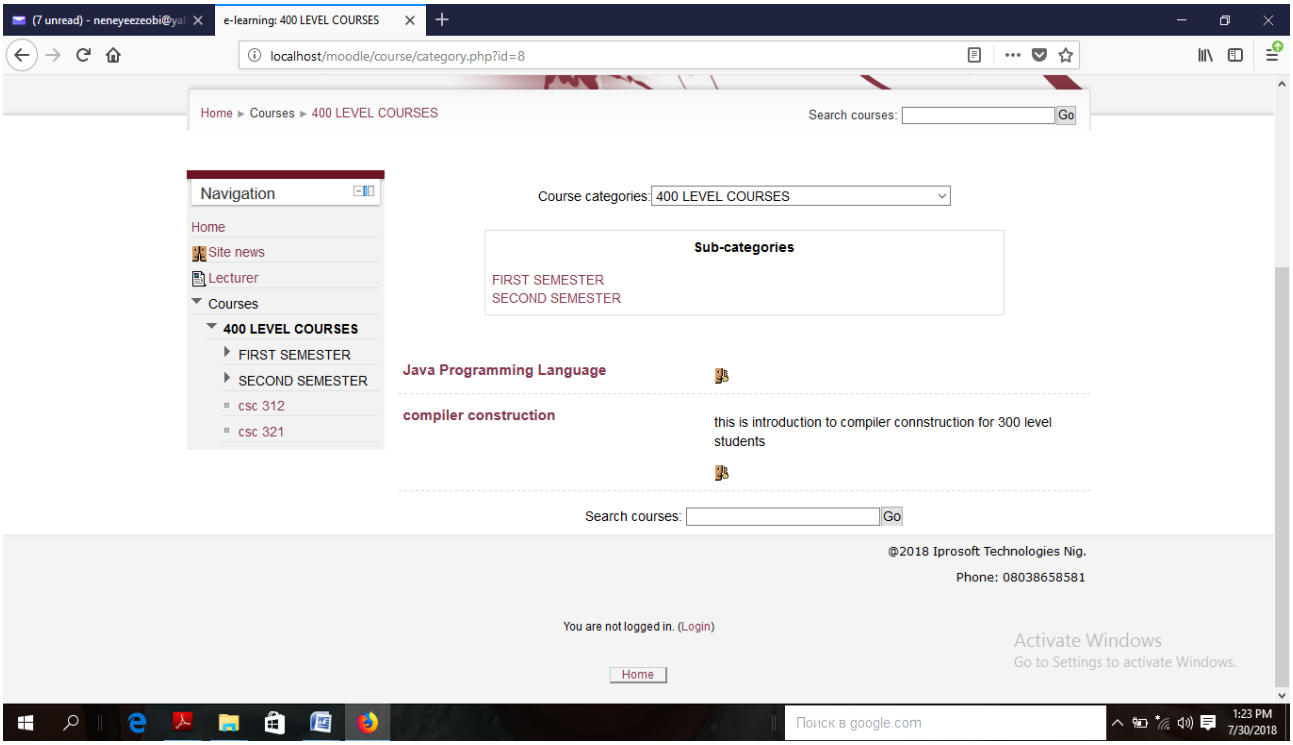

Figure 7. Search course by category. Source: (E-Learning site).

and videos on various courses to be taught by the lecturer which will be both affordable by the users (the students and partly the lecturers to upload or give assignments to student). E-learning is becoming more popular day after day due to the rapid technological advancements made especially in ICT. Disappointedly, the under-developed countries like Nigeria are yet to implement e-learning effectively, in the acquisition of education, knowledge, skills and training. This is partly because of the inadequacy of the required infrastructure and the improper attention given to its impact. Although most of the tertiary institution had already commenced the use of Moodle LMS, more is still expected. From the list of first 20 universities as retrieved from dailypost.ng publicating on December 17, 2017 and the list of universities using Moodle LMS as retrieved from Moodle.org, we discovered that most of the Universities using Moodle LMS are included in the first 20 universities in Nigeria.

6. Recommendation

We therefore recommend that:

1) All tertiary institutions in Nigeria to embrace the use of LMS to improve teaching and learning process.

2) Further work be done on this area using other types of LMS.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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