



The Design and Implementation of an E-Learning Portal for Federal College of Education Technical Omoku and its Implication to Teaching and Learning.

¹ Ekpa Onisowurun, ² Dr. Eze Chimdiya Chiemeka : ³Ordu Princewill Okey

^{1,2,3} Computer and Robotics Education Dept, Federal College Of Education Tech Omoku Rivers State Nigeria

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ABSTRACT

Electronic learning (or "e-learning") has become an integral part of organizational training. E-learning may be delivered via numerous electronic media, including the Internet, intranets, extranets, satellite broadcast, audio/videotape, interactive television, and CD-ROM. At its best, e-learning is individual, customized learning that allows learners to choose and review material at their own pace. E-learning is efficient because it shortens the time required to update students on new knowledge, methods, and processes. Proponents of e-learning suggest that it provides real-time learning of critical or just-in-time knowledge. With state-of-the-art e-learning management systems, training costs can be traced to individual learners and costs can then be measured against results. This study seeks to design and implement an e-learning system that will enable students study at their own pace while revitalizing with what has been taught in class, it's also seek to address issues that may arise such as pandemic outbreak citing instances from the Covid-19 outbreak and its' predecessors vis-a vis the negative effects (Social distancing).The design of the portal will fully capture the details of students and associated learning module inculcating their level (class) a login for lectures to also schedule classes for students will also be deployed. The design will integrate two facets in dynamic design; the front end for user interaction and backend for code interaction and storage.

Keywords: Learning management system, e-learning, open distance learning

INTRODUCTION

Students are the future of the nation and then stand at one pole of the education system in which teachers are at the other pole. The process of learning-teaching runs smoothly with the help of both of these poles. These two poles of the education system make a perfect balance and take the system to another height. Teachers work hard, collect information, and impart knowledge to students in the process of teaching. There are certain direct and indirect factors that affect the learning process or teaching. The teaching process gets affected by various parameters such as teachers, learners, and the environmental factors. These three factors make the whole process of learning easy and smooth. Learning in a student's life is very important as it builds the base of their career professionally

With its huge benefits as against the traditional face to face settings, E-learning will in the future form one of the core basis in planning school curriculum.

During the 2019 pandemic some schools quickly switched to this system while those who are stereotyped to the face to face traditional learning became stranded while awaiting the pandemic to abate, subject to this, the future is still unpredictable as previous pandemics have evolved.

Statement of Problem

Each time there's a global pandemic the need to shutdown various sectors is initiated, many countries of the world are affected and educational sector suffers a serious setback. Recently, the COVID-19 pandemic has created the largest disruption of education systems in human history, affecting nearly 1.6 billion learners in more than 200 countries. Closures of schools, institutions and other learning spaces have impacted more than 94% of the world's student population. This has brought far-reaching changes in all aspects of our lives. Social distancing and restrictive movement policies have significantly disturbed traditional educational practices. Most students as a result of distance and crises find it difficult to meet up with classes, same is applicable to teachers thereby rescheduling classes which may not be convenient to all concerned, but with the existing of a portal alternative for learning. Classes can be held anywhere irrespective of location, scheduled time and learning materials can be accessed as they are stored up in digital formats

Objective of the Study

The general objective of this study is to design and implement an E-learning portal for students and teachers in FCE (T) Omoku

1. Design an interactive online portal that will assist both teachers and students of FCET Omoku schedule classes irrespective of location and have access to study materials in various digital formats
2. Implement the design using various interactive web-design tools, hosting the portal and allow duly registered students have direct access to scheduled lectures.
3. Design a portal where Students should be able to view, read and download books, as well as communicate with lecturers through available contact forms and get feedback through their profile's email address.
4. Design a portal that will provide a medium for students to lodge complains.

Significance of the Study

The use of new multimedia technologies and the Internet in learning is seen as a means to improve accessibility, efficiency and quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration. The e-learning has come to stay in the field of education as a result of its tremendous benefits and contribution to the field of teaching and learning

This research seeks to overcome certain challenges of face to face learning by building an interactive online portal for both students and teachers in FCE (T) Omoku, the effective learning of students in the face to face traditional classroom have high tendencies of responding to many factors affecting learning but with the adoption of E-learning this factors maybe infinitesimal in its effect.

In many instances where global pandemics affected schools and the interaction between students and schools seized, students became stranded in learning and a handful of them engaged in antisocial activities to keep up with the trend subjected them by idleness and peers..

Literature review

E-learning in education is the wholesome integration of modern telecommunications equipment and ICT resources, particularly the internet, into the education system. Tracy (1995) defines the internet as the international network of communications in which computers in the Wide Area Network (WAN) talk to each other. Shavinina (2001) defines ICT as all the digital technologies, including: computer, scanner, printer, telephone, internet, digital satellite system (DSS), direct broadcast satellite (DBS), pocket-switching, fiber optic cables, laserdisc, microwaves, and multi-media systems for collection, processing, storage and dissemination of information all-over the world. E-learning as an aspect of ICT is relatively new in Nigeria's educational system. It is a departure from the conventional approach in curriculum implementation. The main purpose of e-learning is to transform the old methods and approaches to curriculum implementation and not to silence the curriculum or to extinguish the contents of curriculum. E-learning is driven by the curriculum. It should follow the curriculum and should not rob the curriculum of its essence.

E-portal

Learning portals are becoming an increasingly popular choice for organizations that want to get E-learning content to their learners, fast. The flexibility of employee training portals offers a simpler, scalable solution for learning distribution compared to that of the learning management system (LMS).

According to (www.elucidat.com)The e-portal is characterized by the following

User centric – Learning portals should provide the best user experience possible and make it easy for learners to access E-learning materials as and when they want to, instead of it being pushed to their inbox.

Personalized – Some learning portals offer the option of employee pre-assessments that allow you to understand their proficiency and learning style, and serve relevant content accordingly.

Multi-format – Learning portals usually allow for multiple different learning formats e.g. written content, videos, quizzes and interactive PDFs so learners can choose based on their preferred learning styles

Multi-device – Learning portals should be compatible with multiple devices, e.g. desktop, tablet and mobile (Android and iOS) enabling learners to choose how they consume the content.

Interactive elements – Some learning portals provide 'gamification' options which allow students to compete with their colleagues and receive recognition or awards for good performance.

The benefits of the E-Learning

In an articles shared by ([Ajidoku Lucky](#) 2020) on the benefits of E-learning he stated that, the benefits are tied to its advantages viz;

Flexibility

When attending a virtual campus, online education allows for far more autonomy in deciding your own schedule. That means you can study whenever it's convenient for you. Live with some noisy roommates? Having more control over your schedule also means you can avoid distractions easier.

Because your schedule isn't dictated by classes, you can spend more time doing the things you want. That might mean focusing on your career or spending time with your family. All you need is a digital device and an internet connection, and you have access to the necessary tools to further your education and earn your degree.

One-on-One Attention

Sometimes in a room of 30 or more students, it is hard to get the one-on-one attention on certain topics. In a self-paced online class, students can receive individualized assistance on the topics with which they need help. The students have the power to determine when they receive that specialized attention. Our teachers focus on good communication to allow opportunities for the focused attention all students deserve.

Recover Lost Classes or Get Ahead

Online education is a great option for students who need to make up classes or for those students who want to get ahead. Regardless of a student's situation, our teachers want to see each and every student find success. Virtual school provides students the flexibility and options they need to graduate.

Self-Paced

Because online courses are self-paced, students move on to each unit after they demonstrate mastery, not after a specific date on the calendar. Students who may need to spend a little more time on a lesson can do so. Students can also move faster through content and skills that they have mastered previously. There are no mandatory lectures that students must sit through regardless of their previous knowledge. Move through the content with the help of your teacher at the pace that suits you best.

Sharpened Digital Skills

While increasing your knowledge and skills in your area of study, you'll also be honing your digital skills on the most sophisticated online learning technology. As you continue to learn and study in an online world, you'll become confident and highly productive using interactive online tools such as online tests, drop boxes for homework, collaboration tools, e-mail communications to faculty and fellow classmates, and video presentations by faculty.

Methodology

The methodology will detail the development and testing process for the e-learning website, as well as how the features will be launched and delivered. The approaches that have been chosen are Waterfall and Agile processes. Each of the suggested alternatives will have its own definition and explanation for being chosen.

Method of Data collection

During the search for the target audience (students), interviews were conducted with some of the students in the school, their opinions were requested and a quick survey based on what they would like to see and/or experience when using the website was taken. The interviews were conducted virtually. Some of the lecturers were interviewed too and their answers and suggestions were noted.

Analysis of Existing System

In the current approach employed by most colleges, students have no communication medium between them and lecturers for online class schedule during challenges; This causes a great problem in keeping records of daily attendance, performance of each student on the side of the lecturer, and there are lots of difficulties for the students regarding interaction with their departments and getting up-to-date information concerning their respective lecture activities.

Web Application Architecture

To guarantee that many applications can operate together, web application architecture describes the relationships between apps, middleware systems, and databases. The system architecture for the proposed web-based system contains three necessary components: (i) Client and client Application, the user can view the user interface via the web browser (ii) Data server for the data base (iii) Web server where the application is hosted as shown in Figure1

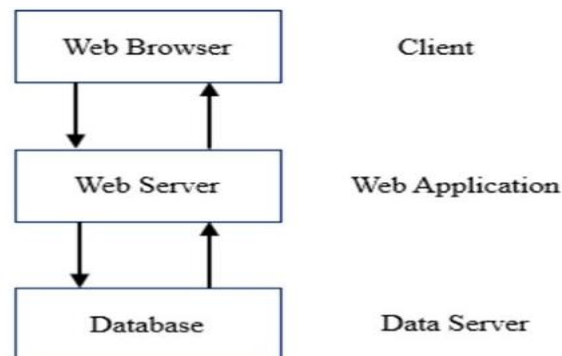


Figure 1: Web-based Software Architecture

Analysis of the proposed system

The system has been divided into modules where each module is described below.

a. **Login Module:** The purpose of this module is to provide entry to the system or website. Based on the type of login, the user is provided with various facilities and functionalities. The main function of this module is to allow the user to use the portal. This module provides two types of login —Admin login and Student login.

Administration Module: In this module the administrator enters his/her user name and password, which enables access to the administrator page. This page consists of two following sub modules.

- Student Addition/Updating/Deletion: Each Student is added, updated or deleted according to his/her department.
- Notice/Updates/Result Generation: On the portal, information about notice, attendance and Internal result is generated

Study Material Module: This module provides the feature of access to read/download study materials available on the website. The module could be edited only by the administrator of the web portal. Any student can download the material available at any time and a link to schedule classes for students via (zoom) of various departments associated to the faculties. It gives profile information of all the departments. Anyone can contact these departments through the available complaint form.

Requirement Specification:

Requirement specification is a description of what the users of a system will be able to do with it, the functionalities the system should have and how it should react in certain situations. The expected functionalities of the 'to be system' is indicated

- The system should maintain a central base of information.
- The system should deliver all the information about student profile and results to be accessible by various departments within the institution.
- The system shall display various courses from each department.
- The system should provide a medium for students to lodge complains.
- Students should be able to view, read and download books, as well as communicate with lecturers through available contact forms and get feedback through their profile's email address.
- The system shall provide the school with lecturers' officials an interface to read and access student request as well as respond to such request in a user friendly manner.

System Design

The system is a web based system that allows multiple access concurrently. System design is divided into stages:

Logical design: This is concerned with object oriented modeling of the system analysis.

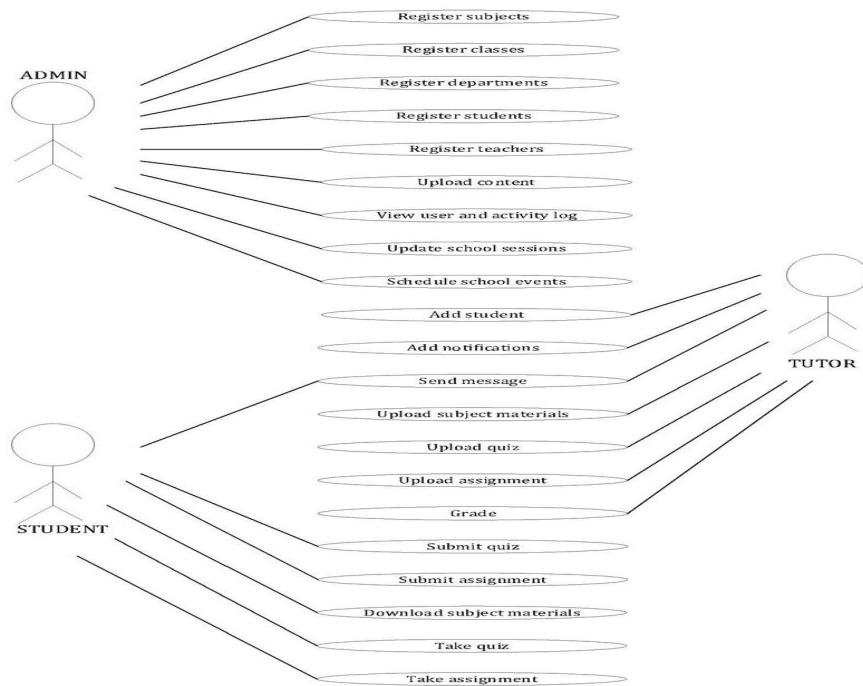
Physical design: This is concerned with the construction of the real system.

In the object oriented analysis and design, Unified Modeling Language will be used to model the system where a model is the act of drawing one or more graphical representations of a system with modeling being the process of abstracting and organizing significant features of part of the real world.

Design Models

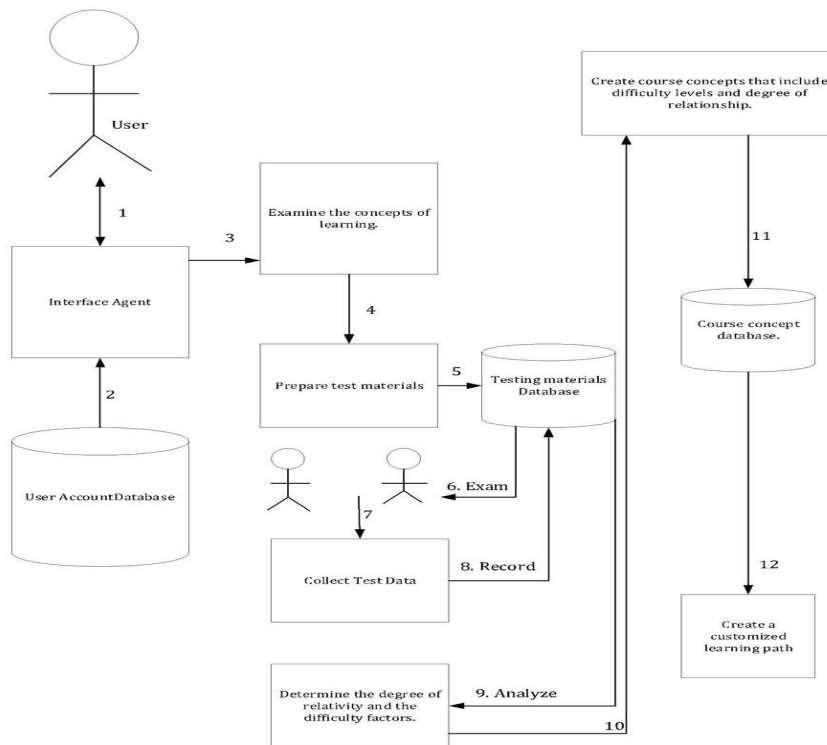
Different models were constructed with unified modeling language using CASE (Computer Aided Software Engineering) tools for proper understanding of the system and also to provide a coherent strategy of the way forward. Such models include Use Case Diagram and Data Flow Diagram.

a. Use Case Diagram: A use case is a story or a case of using a system by some users to carry out a process. A use case describes the sequence of events of some types of users called actors, using some part of the system functionality to complete a process. Each use case then captures a piece of functional requirements for some users. All the use cases together describe the overall functional requirements of the system. The first step in requirements capture is to capture requirements as use cases.



Data Flow Diagram:

This is a process model used to depict the flow of data through a system and the work or processing performed by the system. In this model, there are four symbols, the rounded rectangle represents processes or work to be done, the square represents external agents, which are the boundary of the system, the open ended box represents data stores, which are sometimes called files or databases, the arrows represent data flows, or inputs and outputs, to and from the processes.



System Development Software Tools

MySQL database to store and secure information. PHP, JavaScript, CSS, HTML to develop the system. Apache Server testing the application during development. System Hardware development Tools Microprocessor: AMD Athlon™ X2 Dual Core QL-66 2.2GHz RAM: 2 GB of RAM Hard Disk: 160 gigabytes (GB) on installation drive *Operating Systems*: Windows 7 Home Premium 32 bits Operating System for developing this system. End-user Characteristics, Every user must have basic knowledge of English. He/she should be able to work with computer. All users must have his/her unique login name and password to access the web portal.

Future Enhancements

With the time given, there is always room for improvements. These improvements include:

- Development of an android application to run on phones.
- Issuance of certificates.
- Text to speech function.

Conclusion

E-learning systems have been increasingly used to provide efficient learning services, especially after the declaration of the global COVID-19 pandemic by the World Health Organization in mid-March 2020. A lot of post-secondary institutions have introduced e-learning systems alongside online courses. In this paper, we provide comprehensive review on the efforts of applying new information and communication technologies to improve e-learning services. We first systematically investigate current e-learning systems in terms of their classification, architecture, functions, challenges, and current trends. We then present a general architecture for big data based e-learning systems to meet the ever-growing demand for e-learning.

REFERENCES

Subedi, S., Nayaju, S., Subedi, S., Shah, S. K., Shah, J. M. (2020). *Impact of e-learning during COVID-19 pandemic among nursing students and teachers of Nepal*.

International Journal of Science and Healthcare Research, 5(3), 9. Retrieved from: [Google Scholar](#)

Gonzalez, T., Rubia, M. A., Hincz, K. P., Comas-Lopez, M., Laia, S., Santi, F., Sacha, G. M. (2020) *Influence of COVID-19 confinement on students' performance in higher education*. Retrieved from: <https://doi.org/10.1371/journal.pone.0239490>

Haythornthwaite, M.M. Kazmer, Robins, j. and Shoemaker, s. (2000)

Community development among distance learners: Temporal and technological dimensions, " *Journal of Computer-Mediated Communication*, volume 6, number 1, at <http://www.ascusc.org/jcmc/vol6/issue1/haythornthwaite.html>

J. Lave Rozina I. (2002) *Theory and Practice of Computer assisted Communication in Russia: Present day Situation and Future Perspectives*. In: *Theory of Communication and Applied Communication*. Journal of Russian Communication Association. Issue 1

Shavinina, L.V. (2001). *A new generation of educational multimedia: High intellectual and creative educational multimedia technologies*. New York: Mary Ann Liberty Publishers.

Tracy, L. (1995). *The internet companion*. New York: Addison-Wesley Publishers. Retrieved from: <https://www.elucidat.com/blog/learning-portal-examples/> [Ajidoku Lucky](#) Last Updated: May 15, 2020 [ARTICLES](#)