

DEVELOPMENT OF AN ELECTRONIC COURSEWARE SYSTEM

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ABSTRACT

In a typical lecture room, the lecturer dictates or gives notes to be photocopied, he does the same for tutorials, sets and gives test questions to students, who in turn write the tests and await their grades or scores. This manual system of classroom learning consumes time, energy, and sometimes money.

An Electronic Courseware system can refer to an entire course and any additional material when used in reference an online or 'computer formatted' classroom. The term can also be used to describe the entire package consisting of one course bundled together with the various lecture notes, tests, and other material needed. This project made use of user friendly programming languages and tools such as PHP and HTML with Dreamweaver in the design of a user friendly E-courseware system. In conclusion, the Electronic courseware developed showed that Information Technology is a tool that can aid effective learning.

Keyword- *courseware, delivery, lecture notes, electronic, classroom*

1. INTRODUCTION

The rapid diffusion of the Internet has not only generated a renewed interest in the role of new information and communication technologies (ICTs) in higher education and learning (Dutton *et al.*, 2002), it has also affected the way people teach and learn (DeLacey *et al.*, 2002). At the same time, there has been growing concern over the possible decline of traditional practices in institutions, as e-learning, virtual universities, and distance education become feasible alternative platforms for higher education. Students, teachers, and administrators have continued to employ the Internet and Web for their practices, and e-learning has remained a key item on educational agenda. Among the various new e-learning systems, electronic course management software has been one of the most widely disseminated technologies in colleges and universities (Green, 2001). However this is not a common practice in Nigeria. For instance, private virtual learning systems have been adopted by numerous academic institutions, but mostly outside Nigeria. These Internet-based course management systems are designed to enable instructors to simulate most aspects of managing a course electronically, including: distribution of course documents such as readings, lecture notes,

assignments, and quizzes; discussion of issues; administration of exams; and posting grades (Fredrickson, 1999). The adoption of these systems in campus settings has many implications for ICT innovations in education. By establishing an institution-wide standard, adoption of electronic courseware creates incentives to invest in electronic content, and to link the course management system with other ICT applications within an academic institution. In addition, electronic courseware reshapes access to information by permitting interactive multimedia visualization, simulation of information, and the creation of educational networks beyond classroom walls (Dutton *et al.*, 2004).

The remaining parts of the paper is as follows: Section II describes the system architecture. Section III discusses the implementation pattern and its relevance while section IV concludes the paper.

2. SYSTEM ARCHITECTURE

2.1 Programming With PHP As Scripting Language

PHP is an open-source, server-side, HTML-embedded Web-scripting language that is compatible with all the major Web servers (most notably Apache). PHP enables you to embed code fragments in normal HTML pages code that is

interpreted as your pages are served up to Users. PHP also serves as a “glue” language, making it easy to connect your Web pages to Server-side databases. The php developers have done it all because php major is open source Programming language. The short answer is that it is free, it is open source, it is full featured, it is cross-platform, it is stable, it is fast, it is clearly designed, and it is easy. PHP is the Web development language written by and for Web developers.

PHP stands for *PHP: Hypertext Preprocessor*. The product was originally named *Personal Home Page Tools*, and many people still think that is what the acronym stands for. But as it expanded in scope, a new and more appropriate (albeit GNU-ish recursive) name was selected by community vote. PHP is currently in its fifth major rewrite, called PHP5 or just plain PHP. PHP is a server-side scripting language, which can be embedded in HTML or used as a standalone binary (although the former use is much more common). Proprietary products in this niche are Microsoft's Active Server Pages, Macromedia's Cold Fusion, and Sun's Java Server Pages. Some tech journalists used to call PHP “the open Source ASP” because its functionality is similar to that of the Microsoft product. This formulation was misleading, as PHP was developed before ASP. Over the past few years, PHP and server-side Java have gained momentum, while ASP has lost mind share, so this comparison no longer seems appropriate. PHP is developed and supported in a collaborative fashion by a worldwide community of users. Some programmers (such as the core developers) are more equal than others but that's hard to argue with, because they put in the most work, had the best ideas, and have managed to maintain civil relationships with the greatest number of other users (Converse et al, 2004). In storing user information such as username and passwords as well as in storing administrative information such as lecture notes, there will be a need to create one or more databases. In doing this, the tool to be used is MYSQL.

2.2 Creating A Database With Mysql

MySQL (pronounced My Ess Q El) is an open source, SQL Relational Database Management System (RDBMS) that uses “Structured Query Language”, and is free for many uses. Early in its history, MySQL occasionally faced opposition due to its lack of support for some core SQL constructs such as sub selects and foreign keys. Ultimately, however, MySQL found a broad, enthusiastic user base for its liberal licensing terms, perky

performance, and ease of use. Its acceptance was aided in part by the wide variety of other technologies such as PHP, Java, Perl, Python, and the like that have encouraged its use through stable, well-documented modules and extensions. MySQL has not failed to reward the loyalty of these users with the addition of both sub selects and foreign keys as of the 4.1 series. Databases in general are useful, arguably the most consistently useful family of software products the “killer product” of modern computing. Like many competing products, both free and commercial, MySQL is not a database until you give it some structure and form. You might think of this as the difference between a database and an RDBMS (that is, RDBMS plus user requirements equal a database) (converse et al, 2004).

2.3 Mysql Interface For The Creation Of Database



Fig 1: Creating a new Database using MySQL

Looking at fig 1 above, to create a database, enter the name of the database you want to create at the text column where you have CREATE NEW DATABASE. After the name as been entered, Click on create. When the database is been created, the GUI (graphical user interface) below will be shown:

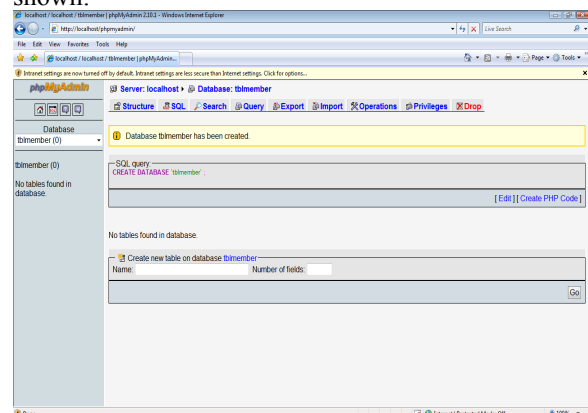


Fig 2: Creating a new table in a database

The name of the table that is needed in the database is entered and the number of fields needed is entered as well (see fig 2). When these have been done, The “GO” button at the bottom of this window will be clicked and the below GUI (Graphical User Interface) be shown:

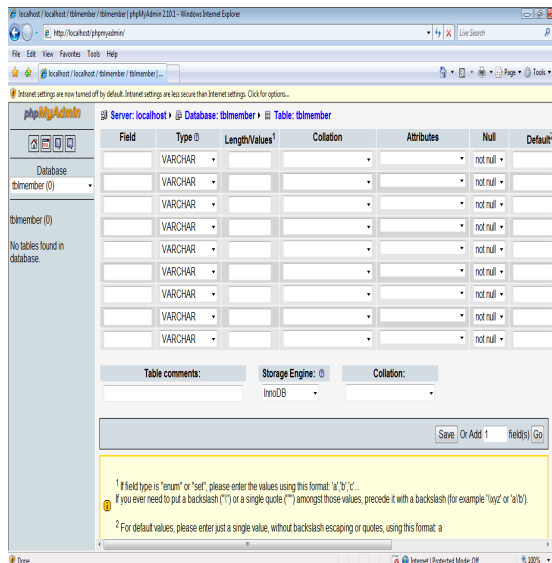


Fig 3: Entering the fields for a table

You may now enter the field names, data types, and the data length. After all the entries have been correctly, click “Save” (see fig 3). If you would like to add more fields, write the number of fields you would like to add in the space provided, and then click “GO”.

After the table is created, the Graphical User Interface below is shown. You may edit the table contents (see fig 4).

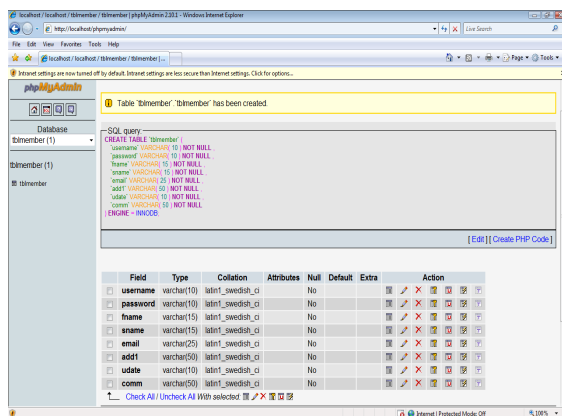


Fig 4 A fully created table

2.4 Method Of Information Gathering

For the purpose of this research, resource materials and relevant information were gathered from books, articles, and the World Wide Web.

Since provisions have been made for the scripting language and for the database(s), we can proceed with the design of the electronic courseware.

FLOW DIAGRAM FOR E-COURSEWARE SYSTEM

Figure 5 is the flow diagram for the E-Courseware system developed

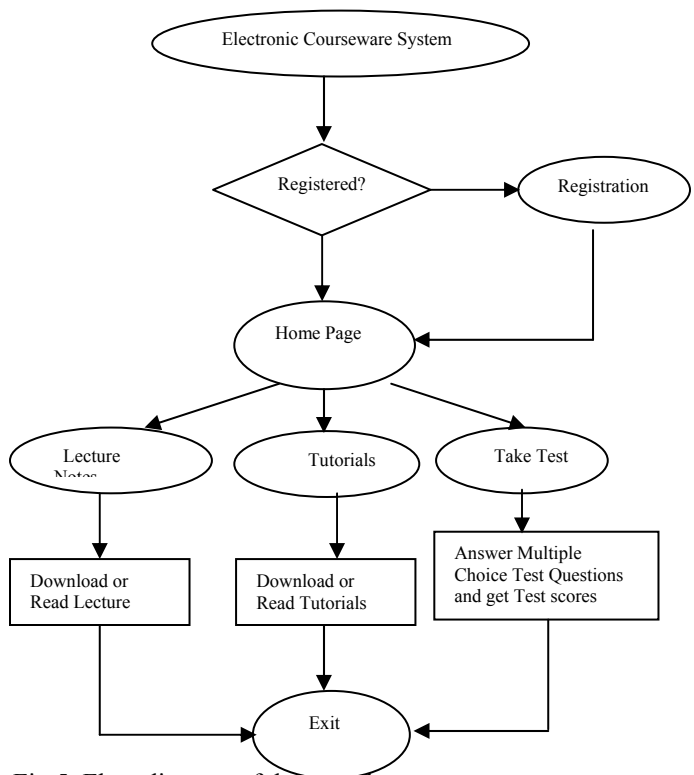


Fig 5: Flow diagram of the model

3 IMPLEMENTATION

3.1 System Requirement

This aspect comprises of both the server side and the client side. The systems used fall under one of these two categories.

3.1.1 Client Requirements

The browser is the handler for the presentation layer on the client-side. Hence the client machine does not necessarily need be a sophisticated one.

3.1.1.1 Software Requirements

The system can run on almost any Windows platform, but Windows XP and Windows Vista operating systems are the most readily available.

It provides information on how to set up a s

3.1.1.2 Hardware Requirement

- Intel Pentium IV/M processor running at 400MHz -1.7GHz
- 512 MB RAM
- SVGA Monitor

3.1.1.3 Server Requirements

The server-side as stated earlier will for implementation purpose house both the application logic layer and the database layer and as such is required to be a high-end machine. Its requirements are stated below.

3.1.1.4 Hardware Requirements

- Intel Pentium IV/M processor running at 700 MHz - 3.2GHz.
- 512 MB -3 GIG RAM

3.1.1.5 Software Requirements

- Apache version: apache 2.0.58
- PHP version 5.1.4
- MySQL version 5.0.22
- Microsoft Windows 2000 professional operating system

Instead of installing each of these applications separately, there is an application that contains each of these applications. The software is known as **WAMP** which stands for: **Windows-Apache-MySql-PHP**. WAMP contains PHPMyAdmin and MySQLite manager to manage databases. WAMP was used in this research work. Software which is highly essential is **Macromedia Dreamweaver**. Version 8 will be most appropriate for the kind of designs and coding involved in this research work.

4. NETWORK INFRASTRUCTURE

For implementation, the Electronic courseware was stored in the Bowen University, Nigeria database and be joined to the Bowen University Website. Users will first log on to the Bowen University Website before they can get to the Electronic courseware system. Figures 7, 8, 9, 10 and 11 are some results generated from the new system.

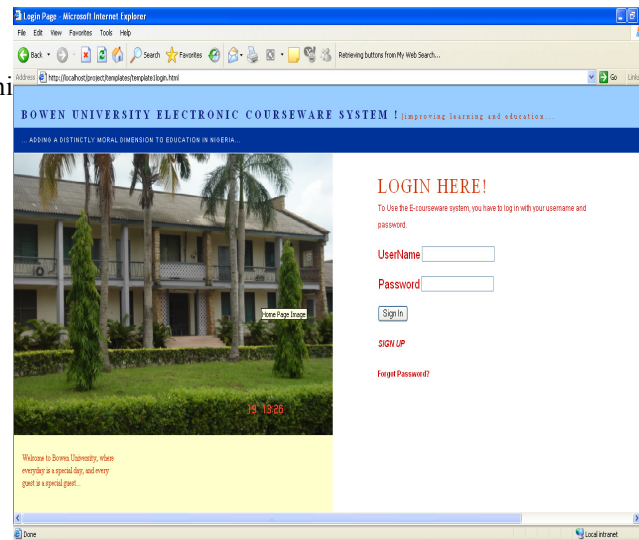


Fig 6: Screenshot of the login page

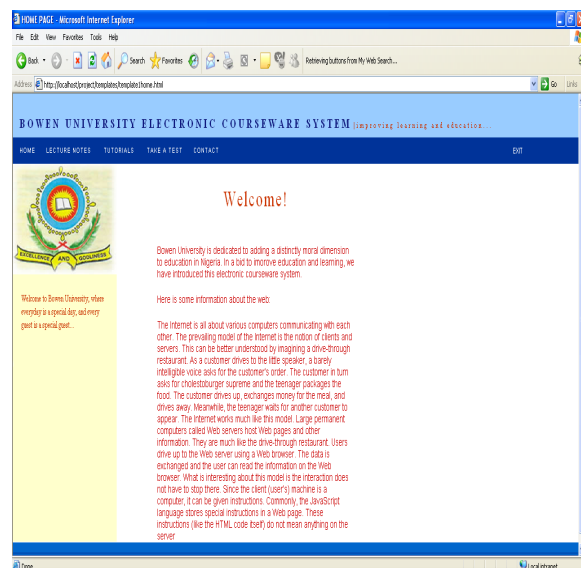


Fig 7: Screen shot of the home page

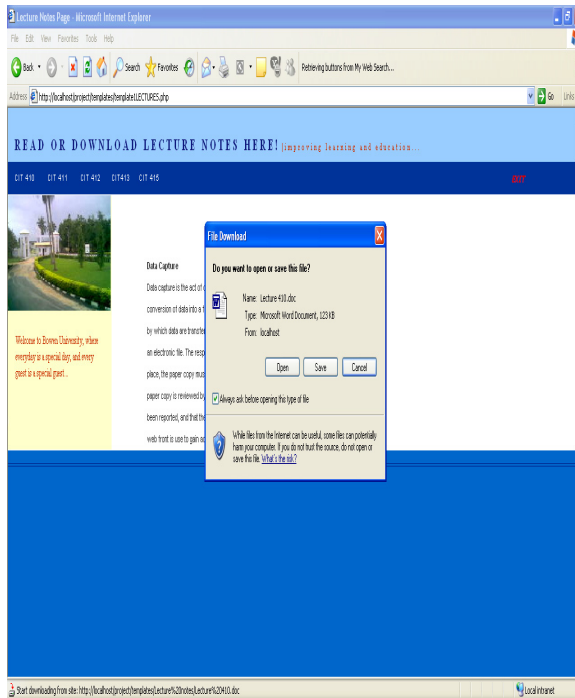


Fig 8: Screen shot of the lecture notes home page

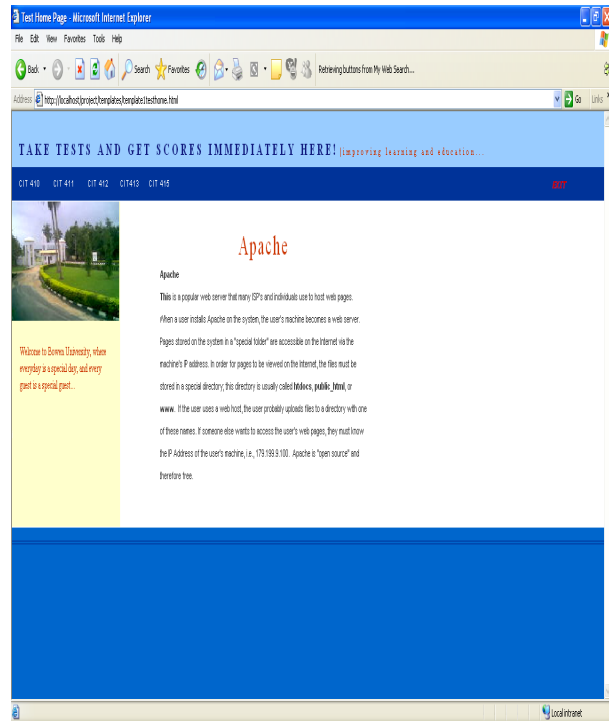


Fig 10: Screen shot of the Test home page

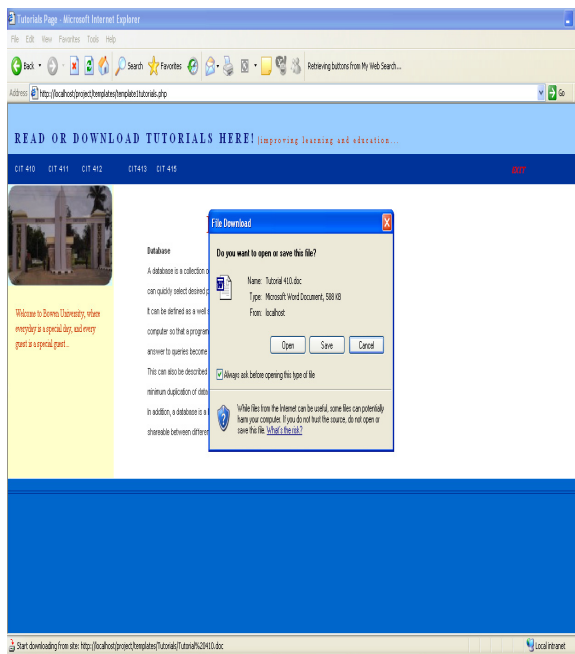


Fig 9: Screen shot of the tutorials home page

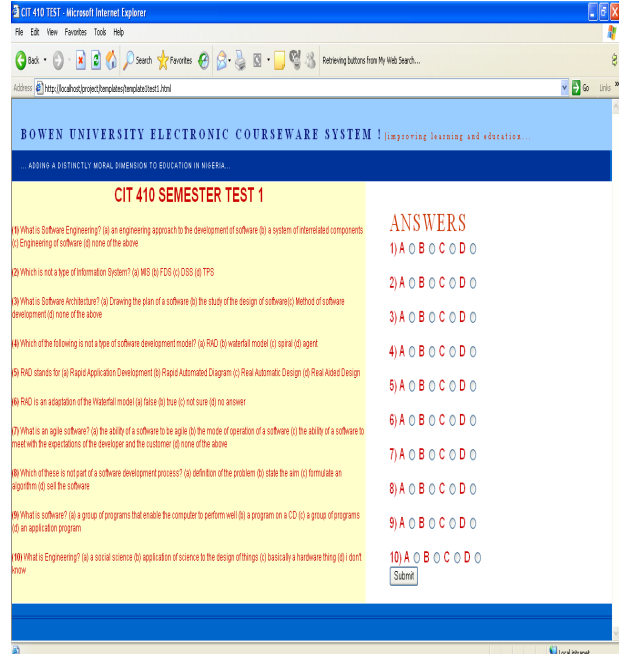


Fig 11: Screen shot of a test page

5. PAPER SUMMARY

The main goal of designing and implementing an Electronic Courseware system using Bowen University, Nigeria, Computer Science department as a Case Study, is improving the level of ICT use and reducing the level of the problems being encountered and undergone during the process of giving lecture notes, and grading of tests. Using the newly developed software, students can easily download lecture materials and tutorials, making e-learning easy to adapt and implement. It can also allow the addition of more courses and their components with ease and the modification can be performed with little efforts. Records are safely stored and adequately protected from unauthorized access.

The capabilities of the new system are as follows:

- Provision of necessary information on the courses offered and tutorials
- Provision of relevant information about some topics in Information Technology.
- Easy method of test writing and grading.

6. CONCLUSION

In conclusion, the design of an electronic courseware system will tremendously eliminate the problem inherent in the existing system. The system will also give job satisfaction to lecturers, and aid ease of learning for students. It will also encourage participation and willingness to learn on the part of the student.

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