



**WEB-BASED ACADEMIC ADVISING SYSTEM
FOR NIGERIAN UNIVERSITIES**

By

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ABSTRACT

Web-based academic advising system was designed to facilitate more accurate advising sessions on campus, as well as provide a complete history of past advising sessions. Advisors may select which courses they wish a student to register in, up to several semesters in to the future, as well as leave comments for the student and other campus staff. The system was designed and developed using Relational Data Model (RDM) and Data Flow Diagram (DFD) and was implemented using PHP and MySQL programming languages. The researchers have developed an interactive web-based information system that can help Nigerian universities to facilitate more accurate advising sessions on campus and make important decisions. The developed System can handle errors, updates and modification of data more efficiently and can be accessed anywhere and anytime than the manual methods of academic advising system. This paper describes an Advisement System designed to mitigate the issues of an out- of-the-box implementation in Nigerian university to help improve retention and graduation. A successful implementation of this research study would enable the main objective of this system to assist Nigerian universities orientation camp in solving the problems associated with the manual method of academic advising system,

Keywords: Academic advising, Web-Based, Counseling, PHP, MYSQL Database. Relational Data Model.

INTRODUCTION

The core missions and values of higher education still remain to contribute to the sustainable development and improvement of society as a whole. Graduation and retention is a major concern for all universities. The current influx into Nigerian universities poses a great challenge to the realization of that mandate. With the increase in student population, institutions are faced with increasing diversity of student population both in academic preparation, socio economic background and other factors. It can no longer be assumed that students are sufficiently motivated to learn for themselves in the face of indifferent teaching. There is, therefore, the need for Nigerian universities to reposition themselves to adequately cater for such diversity.

The focus of the proposed research is to develop a web-based advising system to mitigate the issues of an out-of-the-box implementation in Nigerian universities to help improve retention and graduation.

BACKGROUND

Web-Based Academic Advising System was created after searching for a commercial solution to online academic advising and retention services. The original release of the software was functional but lacked the framework necessary for contributions from the source community. The core code had been modified to resemble many of the development framework features of Drupal, a popular open-source content management system (CMS), making it now suitable for adoption by other universities.

LITERATURE REVIEW

The introduction of computer into information technology has massively improved the information need of organization; the success of this machine is dependent on the knowledge base.

To streamline the activities of academic advisers, Hemwall and Trachte (2005) proposed ten vital principles academic advisers should adhere to. They include consideration of university mission and vision; encouragement of critical thinking in students; alignment of advisee personal goals with institutional goals; awareness of advisee's strengths and weaknesses, dissecting advisee mindset and sensitizing them as well as understanding advisees' individual backgrounds. Others are creating conducive atmosphere for academic excellence; leading the dialogue between adviser and advisee as an advanced learner with more useful information; guiding advisees in ways that

make the students think critically about their role in college as well as to face contradictions and difficult issues as they arise. Lowenstein (2005) also outlined basic functions of academic advisers cutting across their academic, personal/social and career aspects as well as full integration into the university culture.

Emphasis on academic advising stems from its obvious importance in actualizing individual and institutional goals. Quality advising fosters student development and at the same time enriches the academic community, the adviser, and the society at large. It contributes to students' perceptions of the University as they teach their students the cultural robes of their institutions. Good academic advising generally has a positive impact on students' academic performance as well as personal satisfaction with their college experience (Habley and McClanahan, 2004). Universities should leverage on academic advising to enhance learning outcomes and other benefits. Simpson (2013) identifies the benefits of effective academic advising as creating relationships between gown and town (college and real world), increasing retention, fostering alumni relationships, fostering development of life-long learning and decision-making abilities as well as adjustment to college life. Drake (2011) highlights that academic advising assists student to understand their strengths and weaknesses. Oriano (2013) concludes that recurrent and meaningful academic advising increases student's engagement and learning outcomes. Smith (2005) identifies proper academic advising as increasing overall satisfaction with college, promoting effective use of campus support services and encouraging contact with staff outside the classroom. Good academic advising might be the single most under-estimated factor of a successful college experience (Light, 2001).

However, Pizzolato (2008) shows that advising is more effective in eliciting learning outcomes when advisers alter their communications with advisees in ways that encourage an interpersonal relationship between adviser and advisee, stress personal connectedness, genuine concern and accommodation based on the specific needs of the advisee. Pang (2012) proposed a learner (advisee) - centered, holistic and flexible academic advising in our Universities for it to be impactful. Pietras (2010) suggests a restructuring of the provisions of academic advising in an effective and efficient manner that meets the needs of both the advisee, college and the society.

The proposed research is intended to facilitate more accurate advising sessions on campus, as well as provide a complete history of past advising sessions.

MATERIALS AND METHODS

System Design

The system is designed to have several windows PHP form. These windows have three main sections, namely: the login window, the main menu and sub menu. The login window requests a valid user name and password from the Administrator to be able to gain access into the software.

The Administrator is any staff that is authorize by the management of the school to be in charge of exams and records unit, hence he should have a valid user name and password created by him to be able to login to the software.

Some of the core features are as follows;

- View student's transcript and degree plan, grades, etc.
- Perform substitutions and exceptions
- View transfer credit equivalences
- View course descriptions
- Search complete set of degree plans available
- Leave comments for students or other staff
- See complete advising history
- Easy to customize for developers and administrators
- Compatible with all major browsers
- Mobile theme

The Administrator should be able to perform the following function:

- Create user account for Lecturers (academic staffs), Departmental Exams officers and Head of Departments.

The Head of Departments must have a valid user name and password to perform the following function:

- Register students in His Department
- Register staff in the Department
- Register courses offered in the Department
- Assign courses to registered staff in the Department
- Assign examination officers to Different levels.

The Departmental Exams Officer of each level should have the authentication of the Administrator. He/she needs to be a registered Staff, and thus have a valid username and a password. He should be able to perform the following functions:

- Enter student's scores and view students' grades as it is in the raw score sheet.
- Process student's results in the department, which includes calculating the GPA and CGPA
- View all the students' results in management approved format (Agreed marked sheet)

The Lecturer (Academic staff) should have the authentication of the Departmental Exams officer. Hence, he should be registered by the Administrator, should have a valid username and password. He should be able to perform the following functions:

- Enter students' scores for courses he/she thought.
- View the grades he entered.

Software Development

The approach for the development of the system is based on AMP (Apache, MySQL and PHP) open source solution. This is preferred because of its security and low cost of maintenance compare to other solutions and also PHP is faster with proper coding.

Applications developed with MySQL and PHP make use of a single client called the web browser. For any application to run on the web, there must be a web server which is an application that enables communication with browser, an object-oriented database server, which stores all the information required by the web server, a programming language needed to broker request between the web server and database server and to perform programmatic tasks on the information that comes to and from the web server, and off course, an operating system that will interface between the server and programming language. A robust operating system such as windows NT/2000 or UNIX is better suited for running web applications and they account for more than 90% of all web servers on the web.

Implementation Procedure

The system was implemented using MySQL 5.0 as the backend database and PHP 5.3.1 as the scripting language. The data parameters were used as the rule-based parameters to determine the information of each student. The system was fed with valid and invalid data to test its robustness. The system is designed and implemented such that the following are carried out during its use:

User validation: To be able to use the software, staffs are to be registered by the Administrator with a default password on the first login to the software.

Students Registration: Students in the Department are to be registered on the system.

Course Registration: Courses offered from first year through final year should be registered in every department.

Usage: At the end of the period (semester or session) staff will login to the software and enter students' marks from the score sheet (agreed marked sheet) for any course they are assigned. Staff can also view results already submitted, if they want, or change their password when desired, while Departmental Exams officers will have the authentication to process students' results (i.e. calculate GPAs and CGPAs) for their respective units for any academic session they choose. The Departmental Exams officers can also view any student's GPA and CGPA in his unit. Finally, the HOD can view all staff, students and course registration, as well as be able to view any student's result irrespective of the student's unit in the department.

RESULTS AND DISCUSSIONS

The result of the system has shown that:

The developed interactive Web-Based Academic Advising System can handle errors, updates and modification of data more efficiently and can be accessed anywhere and anytime than the manual methods of academic advising system

After the newly designed system has been implemented and tested, some results were produced as shown in Figure 1, Figure 2 and. Figure 3 on the appendix. The login screen is shown in Figure.1. The Adviser screen is shown in Figure.2. The Student screen is shown in Figure.3. Once the user is able to log in, the main window appears. If the password entered is valid, the software will then open the main page. The main page/window has two menus; the main menu, and the side menu.

The main menu contains the following commands; the Admin, Registration, Computation, Transcript, site administrator (login user) and log out.

Within the Registration, Computation and Administration commands, there are sub-menus that appear once they are clicked. For example, when Result Computation is clicked, sub-menus such as “Agreed Marked Sheet (Score sheet)”, “View Agreed marked sheet (Result)”, “Summary Sheet (Process Result)”, “CGPAs”, and “Carry Over” will appear on the screen.

The information obtained from the system has a reasonably high degree of accuracy, because all the computations are automated. Any errors found would probably be those introduced by human error in the keying in of the raw scores. Computations are carried out very speedily by the system, once all raw data has been entered, and then required information is available almost immediately.

Add-on Modules

The functionality is extensible through the use of add-on modules. Below are a handful of examples⁴

- Banner Integration - Uses student and course data from the Banner student information system
- Locale - Translates static text into other languages
- LDAP - User authentication handled through an LDAP server

Deployment and Installation

Installing the software is relatively easy. Its source code is copied onto a compatible server, and then visited from a web browser. An automated installation wizard then guides the user through the remainder of the setup process.

Server Requirements

Web-based Academic Advising System uses industry-standard web server hardware and software.

- MySQL
- Apache
- PHP
- Linux, Unix, or Windows
- Minimum of 1GB of RAM and 10GB hard disk space.

CONCLUSION AND RECOMMENDATIONS

Conclusion

In order to introduce the new system into the manual processing of Students' Academic Advising System, careful investigation and analyses were carried out on the existing method. Many text and journal (handbook) records were consulted to have an in-depth and thorough understanding of the major concepts of operations.

The new system has replaced the traditional manual system by providing interactive Web-based Academic Advising System to assist in effective and timely information storage and retrieval.

Robust, comprehensive, effective, efficient and flexible academic advising system should be instituted, implemented and monitored. This will foster and propagate university culture of excellence and integrity in teaching, research and extension of knowledge in Nigerian universities.

The application was successfully developed, tested, and found to be working as expected.

Recommendations

The efficiency of the system can be further enhanced based on the following recommendations: Effort should be made to validate the input data to ensure the integrity of the system. The primary users should be given an initial orientation on how to interact with the system for optimal utilization of the facilities of the system.

The application is web-enabled, which makes it easier for users to access the application from anywhere via the Internet, and be able to carry out their work, and students with authorization would be able to view their academic records online. The issue of security could also be looked into, with a view to improving it so that users would have greater peace of mind, knowing that their data would not easily be compromised.

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APPENDIX

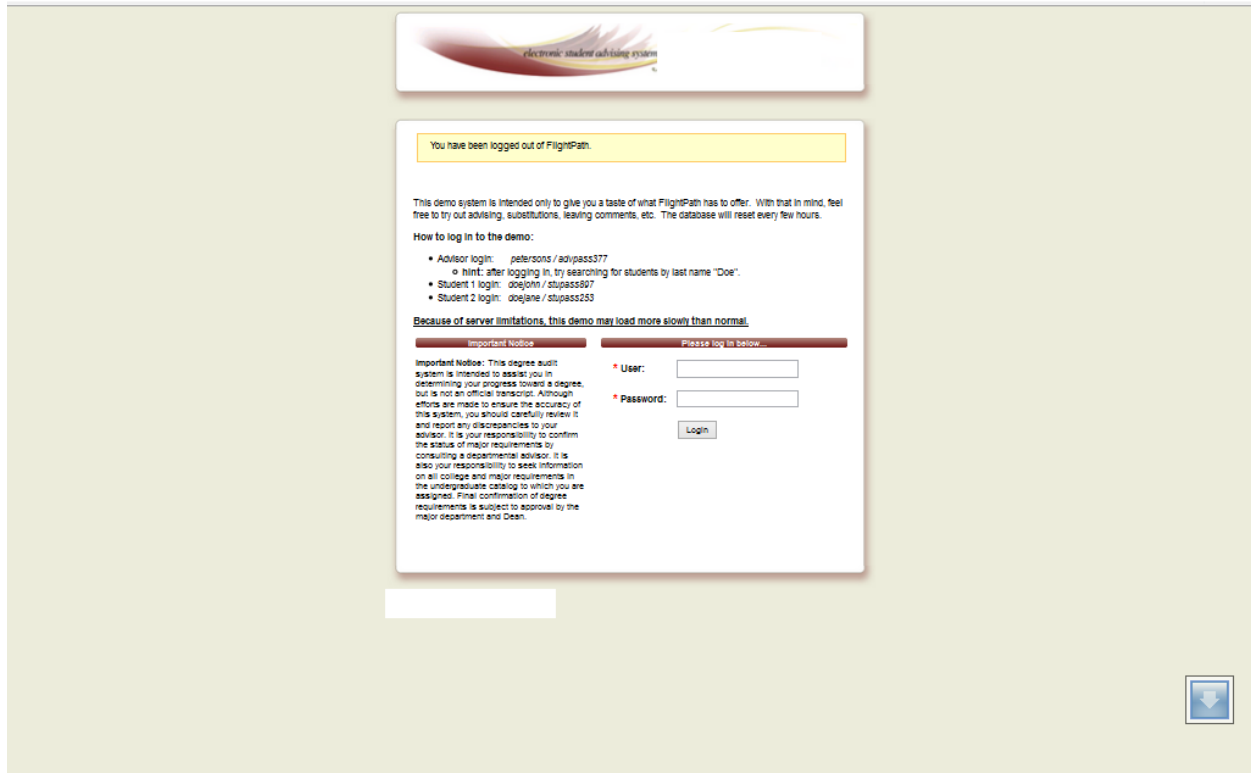


Figure 1: Login Screen



Figure 2: Adviser's Screen



Figure 3: Student's Screen

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