Design of an Effective Management Information System A Case Study of the Federal Polytechnic, Ede Staff School

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Abstract – Management Information System was developed to enhance the processing and flow of information. With the advent of various technological developments and a higher amount of data to be processed, there is a higher demand for good and timely information from individuals and groups, virtually anywhere and all the time and new technologies are helping to meet this demand. The main purpose of this research is to provide accurate and timely information necessary to facilitate the decision-making process and enable the school's planning, control, and operational functions get carried out effectively. The research is aimed at providing an electronic method of managing the information system of the school (case study). However, the scope is limited to registration of students, processing of students results, and storage of students data. The design of the system, which is a broad based application that uses the functionality of several application, programming and database, has been developed to minimize and eradicate all sorts of problems encountered or emanating from the use of manual system of information management.

Keywords: Information, Management, System, Information Technology, MIS

1. Introduction

Management information system is a type of information system designed to manage (handle effectively) information within a company or organization, and in this case, a school. The kind of information includes employees, departments, projects, clients, students, finances and other types of data. At its most general level, an MIS may include non-computer based elements, such as the structural hierarchy of an organization. However, in the computing world, an MIS typically refers to the hardware and software used to manage information.

Several surveys have been designed in recent years to gather information on the extent to which schools are developing the capacity to integrate ICT into learning, teaching, and management processes. A steady increase in the number of computers and other technologies over time has been evident in the literature, with most schools achieving the baseline targets for computer-to-pupil ratios (Condie, 2007). This finding, to a degree, masks considerable variation within and across schools with regard to regular access to reliable technologies and broadband connectivity.

Demir (2006) surveyed 98 elementary school principals in Turkey to explore their perceptions about MIS and their use in primary schools' management. The study indicated that although technology infrastructures in elementary schools were insufficient, MIS had an important contribution to school management. Demir (2006) suggested that school managers should be encouraged to use information systems and they must believe that data are valuable sources for decision making and that the MIS back up the implementation of educational reforms. Mumtaz (2000) in her review of this area highlighted both positive and negative factors affecting ICT use in schools. Positive factors included collegiality among computer-using staff, availability of technical support, resources for school development, smaller class sizes, and more formal computer training. Technical support and senior management commitment and support were the most recurring themes. Other themes apparent were the staffs' personal feelings, skills, and attitudes to IT in general (Kirkman, 2000; Mumtaz, 2000).

1.1 Problem Statement

The existing system is a manual one, which involves entering student information, processing and storing their results by hand. Seeing this as a setback and time-inefficient in our contemporary world, we decided to improve on this existing manual system by introducing an electronic method of managing information.

1.2 Research Aim and Objectives

The aim of this research is to develop an efficient and effective Management Information System that will provide the school (case study) administration with better accessibility to information, electronic storage of student data, and improvement in the quality of reports.

The specific objectives are:
  i. To develop Management Information System input modules
  ii. To design a user friendly interface
  iii. To design a database system for storing and retrieving information that would suit the strength of the data coming into the system
  iv. To improve the quality of student's reports

2. Overview of the Existing System

A review of the previous system is necessary because it creates a firm foundation for advancing knowledge. The current system employed at the Federal Polytechnic, Ede staff school is a manual one. That is, the processing of result, information dissemination, and other information management processes are done manually. As a result, it takes more time to execute simple tasks. The manual system also increases the paper works, and it is less efficient.

2.1 Overview of the New System

The new system is web based, which requires a user to log in to the system with a username and password. A new user needs to sign up and create a new user profile before such user has an opportunity to login to the system and manage student information. The new system will provide an efficient and effective Management Information System that will provide the school (case study) administration with better accessibility to information, improved storage facility, and better quality of reports.

2.2. Welcome page

The homepage is the welcome screen and the first page of the system. It introduces the system, and also contains a section where an already registered user can login.

Fig 1. Welcome Interface

2.3. Login page

This is where authentication takes place. It is the bridge between the user and the system. An already registered user inputs their unique username & password and gets authenticated before the system proceeds onto the next page.
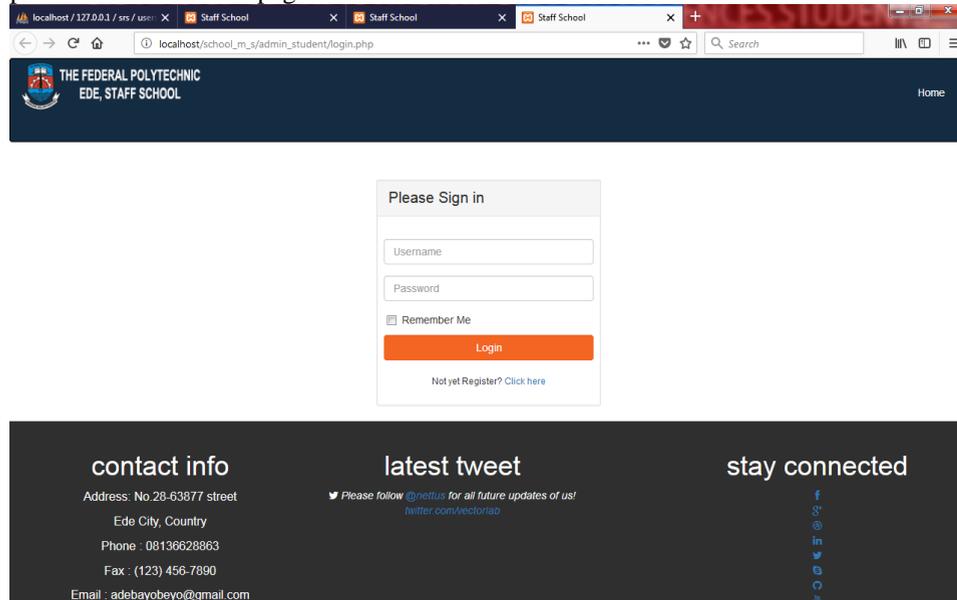

Fig 2. Login Interface

2.4 Student Registration page

This is the page where the user (class teacher) inputs information about a new student into the system.
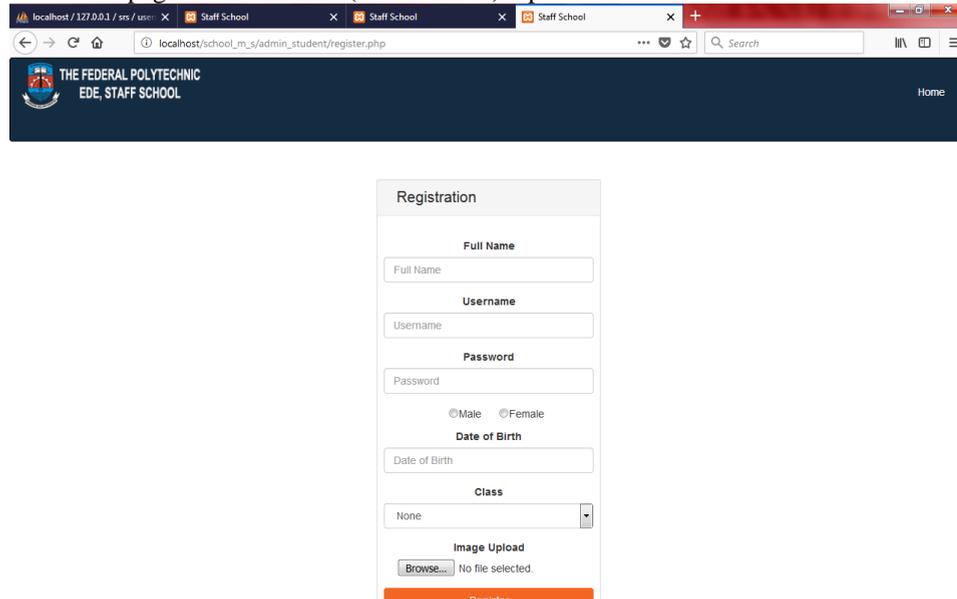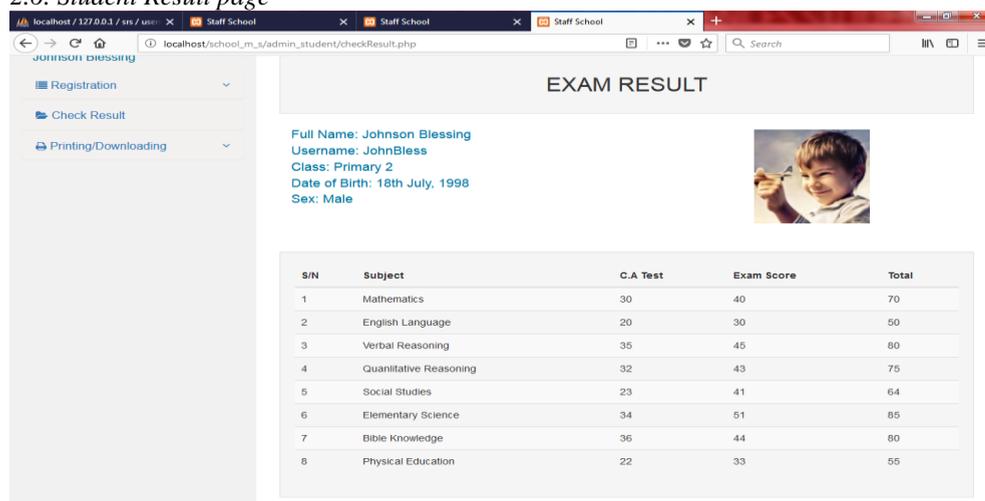

Fig 3. Login Interface

2.5. Student Profile page

Fig 4. Student Profile Interface

2.6. Student Result page

Fig 5. Student Result Interface

3. Research Methodology

The model of this research, which targets to look at why a management information system should be used in schools (case study), and to juxtapose between manual and electronic means of data processing, is a review model.

In the course of this research, the following data collection methods were employed:

i. Visitation to the Federal Polytechnic Ede Staff School and observing the operations and activities of the current system.

ii. Consulting past literature works done similar to the project being undertaken.

iii. Conversing with the users of the current system about the limitations of it and the expected features of the proposed system.

The population of the school is about four hundred, while the number of academic staffer is just 17. During interviews with the staffers, teachers mostly, it was discovered that result processing, as part of the Management Information System modules, usually takes more time. After marking student's exam and test scripts, each class will then calculate the class average and pass it on to the school management for consideration. After approval, input the scores on each student's report cards. Similar method is used for other Management Information System operations.

Also, the school has limited numbers of computers and, the only time a computer is used in the school's operations is in typing of exam questions. Due to this reason, it can be said that there was an important infrastructure problem of the recognition of the use and importance of electronic means of managing information.

4. System Implementation

Before implementing the system, an appropriate changeover method must be carefully chosen. Having considered the basic approaches of implementing a new system, the "PARALLEL CHANGEOVER" method is believed to be the most effective and appropriate method for this system. This is so because it allows both the old and new system to be run side by side. After a while, if the new system is satisfactory, the old system is discontinued and, if otherwise, the new system is reprogrammed. This system being web-based, will implement the use of a local server located on the school premises. Each computer will be connected locally to the server and the system will be accessed via a web browser on each computer.

5. Conclusion

Realizing a project of this nature is interesting. It will go a long way in reducing paper work and also lessening the work of the administrators. In spite of the constraints encountered in the course of this research, we can proudly say that the aim has been theoretically accomplished.

6. Recommendation

We recommend that the administrators, i.e. the class teachers, principal and other academic members of the school should be well trained on how to use the system. Also, the school should make provision for an online backup.

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