Computer-based Military School Management System for Nigerian Army School of Military Engineering Makurdi, Benue State

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Abstract— A holistic approach to managing the affairs of Military men and women in terms of education, games, physical exercises, absentees from classes, punishment and reward, report generation for control purposes which hitherto has been carried out manually, has been tedious, time consuming and prone to errors of omission or commission. This is particularly so because of the dynamic nature of the military and the need to combine education and fitness. Therefore, this paper seeks to present the design and development of software for administration of a military school that will result in efficiency and effectiveness of the activities of the institution. The methodology used is structured system analysis and design methodology with iterative model as the variant adopted. The data used were collected through interviews, library research and personal observation. The system was developed using PHP scripting language and the underlying database was done using MySQL. The test implementation shows a simplified and organized management of wings, sport and mess/guardroom and it is highly recommended for use by any military school.
KEYWORDS:- Military Administration, School Management, Sports Administration, NASME, System Analysis and Design.

I. INTRODUCTION

Education system forms the backbone of every nation, hence it is important to provide a strong educational foundation to the young military personnel whose job is to protect the nations and its territorial integrity. Advanced technology available today can play a crucial role in streamlining education related processes to promote unity among students and civilians. According to Rajakumar (2006), educational technology (ET) is the efficient organization of any learning system adapting or adopting methods, processes, and products to serve identified educational goals. This involves systematic identification of the goals of education, recognition of the diversity of learners' needs, the contexts in which learning will take place, and the range of provisions needed for each of these.

According to Degif (2008), automation is the utilization of technology to replace human with a machine that can perform more quickly and more continuously. By automating the military school documents that took up many large storage

rooms, its training activities and learning facilities, the efficiency of the school will invariably increased multi-fold. To help promote student achievement and success, military school must have access to complete, accurate, and timely information about the students. Despite the popularity and wide application of computers, NASME still use paper based documentation for various tasks and the school administrators apply their knowledge of hit and miss approach in scheduling classes and courses which of course wastes manpower and time.

In order to control absentees and know the number of days that a student has been absent from the school during the school days the administrative officer has to collect the attendance slips from the corresponding course seniors and compile them, a time wasting process. The process of past students records retrieval for decision making is also quite tedious. Due to the inefficiency of the current manual system, the need arises to automate the school system in order to efficiently handle student's attendance, to produce various reports satisfying users and customers and to produce timetable which can schedule courses for instructors and classes of student on courses.

The research is significance because the military as it is with every organization cannot effectively function without personnel management and its tools for implementation. This research is geared towards assisting student officers and soldiers as well as the staff of the establishment to perform their task with technological tools. The objective of the research therefore will be the development and test implementation of a computer based system for managing NASME activities, validation and documentation of the results from the test implementation.

The remaining part of this paper is organized as follows: Section two contains a brief review of related literature needed and necessary to established adequate knowledge of the work. Section three gives the methodology adopted in this work. Section Four shows the results obtained from the test implementation and the discussion of the various results. Section five conclude the paper and give insight into future work that may be necessary.

II. LITERATURE REVIEW

Breiter and Light (2006) stated that School information systems constitute a clear sub-group of management information systems that are used in educational organizations. In schools, distinct information systems support different types of decisions: administrative information systems, learning management systems and assessment information systems. In principle we must distinguish between systems that are focused directly on the support of the teaching and learning process and systems that serve for the administration and instructional decisions. An

often cited definition for a school information system is given by Visscher: "An information system based on one or more computers, consisting of a data bank and one or more computer applications which altogether enable the computer-supported storage, manipulation, retrieval, and distribution of data to support school management." (Visscher, 2001). But this definition emphasizes only the aspect of administrative support.

Degif (2008) explained that manual timetables are prepared by dedicated teachers. In manual timetabling, it is common to proceed in an iterative fashion where each iteration selects and schedules a lesson. Scheduling a lesson requires to choose a classroom (fixed for each section of students) and a time slot such that the commitment to the choice will not violate any constraint. In our system, time table are created based on the available subjects in each wing and instructors are allocated to each subject.

Michel (2012) believes is an history of the modern penal system. They seeks to analyze punishment in its social context, and to examine how changing power relations affected punishment. He begins by analyzing the situation before the eighteenth century, when public execution and corporal punishment were key punishments, and torture was part of most criminal investigations. Punishment was ceremonial and directed at the prisoner's body. It was a ritual in which the audience was important. Public execution reestablished the authority and power of the King. In our system, the control of movement of the students will help the authorities to discipline any student that fails to abide by the rules and regulations of the school by either sending the student officers to mess stating the number of days to spend in the mess or sending the student soldiers to guardroom also where the number of days to spend is also to be specified. A student may be sent to mess or guardroom by a superior, the system will take note of the number of days to be spent by the student to avoid student over spending of the required days in the mess or guardroom during the punishment.

Willem (2012) wrote an article of military leadership development as an alternative model for leadership character development in the South African National Defence Force (SANDF). The SANDF reflects the racial and cultural diversity of South Africa as a nation. He wrote that one may assume that no nation wants its military leaders to be dishonest cowards with no integrity and weak characters. Militaries according to Willem are representatives of their respective nations and their leaders should exhibit admirable characters. Our system will enhance leadership and discipline among the students. A course senior who is more or less like the course representative is in charge of taking attendance of the students each day and also taking attendance during the night head count. This leadership position is by weekly appointment done by the course elder who is more or less like the most senior student in rank among the student. That leadership position is permanent within the period of the course.

Olaitan, Mohammed and Ajibola(2013) research is aimed at investigating the types of disciplinary problems, their possible causes and means of managing them. The study used a four point likert questionnaire for data collection. One thousand (1000) respondents were sampled in four (4) governments owned secondary schools in Jalingo metropolis. The results showed truancy, absenteeism, fighting, stealing and drug addiction among others as typical examples of disciplinary problems experienced in the study area. The study also revealed parental/home, political, social and economic, school environment, school curriculum and peer group influence among others as the causes of disciplinary problems. In our system, students' movements are managed through the use of pass which is to be applied for by each student. The reasons why students can absent themselves from classes and/or other activities are due to sickness in which they are to obtain a sick leave pass, colleague's wedding ceremony in which they are to go and either present sword or do sword crossing for the personnel whom may be student or not a student but each student will have to apply for pass and upload the wedding notification. Students' that failed to obtain the necessary pass with or without reasons will be punished.

Sport and Event Management according to Bem and Euromed (2014), is an enriching experience for all students. They were confident that an exciting cross-cultural exchange will take place and that this experience will be unforgettable for all of their students.

Sport and other events like morning judging will help the students of the Nigerian Army School of Military Engineering (NASME) to keep fit all the time. The Computerized Military School Management System will help the students to know the different available sports in the school. Students can choose any type of sport they want at any sport day. The system will help the PT Officer to keep and take the attendance of the students for morning judging and evening games. The sport activities are been managed properly using CMSMS. Using the system the PT officer can take the attendance of the students and set punishment for absenteeism.

Madiha (2013) stated that the use of information technology in educational management has rapidly increased due to its efficiency and effectiveness. In the initial stages of its development, management information systems (MIS) main purpose and usage was to improve the efficiency of school office activities. It was used to store student and personnel data. The most concern focused on data entry and collation, rather than upon data transfer or analysis. The value of management information was recognized during its integration stages. Overall review of literature has highlighted positive impact of MIS on school administration and management including better accessibility to information, more efficient administration, higher utilization of school resources, and reduction in workload, better time management, and improvement in the quality of reports. A number of inhibitors to MIS use are evident in the literature; foremost among these are lack of time, lack of confidence or skills, lack of training, lack of senior management support, and lack of technical support. MIS can provide administrators and teachers with the information required for informed planning, policy-making, and evaluation. MIS have changed school management in the areas of leadership, decision making, workload, human resource management, communication, responsibility, and planning. These systems can assist the school manager in determining the aims of the school, formulating strategic plans, distributing resources, and evaluating staff performance as well as organizational success.

III. RESEARCH METHODOLOGY

The methodology used in this work is the variant of the iterative model of structured system analysis and design

methodology. The data for this study was collected using interview, personal observation and consulting already published materials from literature.

3.1 Hardware/ software requirements

The Computer hardware required to run the system should be minimum of 1GB of RAM, 250GB Hard Disk Space and a Processor of 1.50 GHz and the should have any window-based Operating System such as Window XP, Window 2000 and Window 2007 and above. There should be MySQL query browser, command line client and administrator for the database files.

IV. RESULTS AND DISCUSSION

The system was developed using PHP and MySQL was used for the database of all the students and staff. Interfaces were developed for staff of NASME headquarter, staff of each wing, staff of mess, staff of guardroom, PT officer and the students. The interface also contains vital information and pictures about history of NASME, various wings in the school, various engineering barracks across the states in Nigeria, mess, guard room, sport complex and how to contact the school. There is also provision to add new students, re-document old students, take attendance both is class room, during sport and head count, register courses, assign courses to SIs and instructors, sign into mess or guardroom, query using the students' ID and generating reports (see fig. 1).

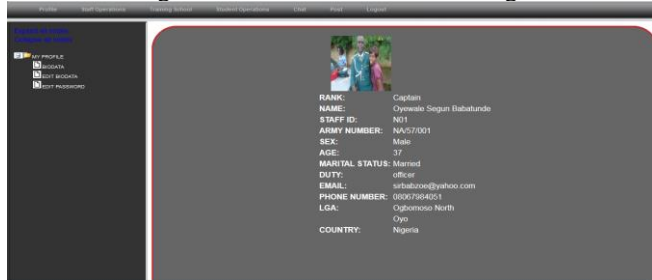Figure 1: Information Interface Page

Figure 2: Profile Module Displaying User's Information

From fig. 2, the users can views his/ her bio-data, edit the bio-data and also edit his/her password. The platform for editing is provided because students are been documented with limited information so that they can add more information such as phone number, email etc. The generated student's number is used automatically as the student's password and each student can thereafter edit the password.
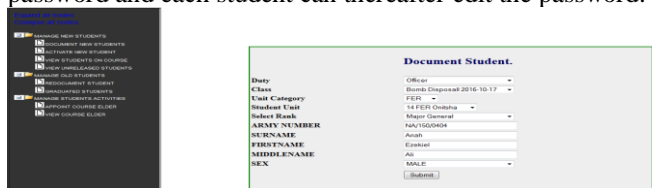

Figure 3: A Page For Documenting New Students

New students are been documented by the NASME chief clerk using fig. 3 which shows only the important information about the students to the school authorities. The

students can update their data after reporting which can also be activated by the same chief clerk.

Figure 4: Information Exchange page Between NASME Staff and/or Students

Fig. 4 provides the mean of communication between the staff of NASME and between the students of NASME. Students can chat with available students and post updates, likewise the staff.

Figure 5: Students attendance page

Students' attendance can be taken by each class course senior using fig. 5. The attendance is taken once each day and submitted. Sport attendance can also be taken by the PT officer using the same fig. 5.

Figure 6: Students' Attendance in a Selected Class and Punishment for Absentees

From fig. 6, students' attendance can be viewed by the wing staff and punishment for the absentee can be set by them. If punishments have already been set by either the wing CI or SI, Nil will be displayed under Action else the students can either be sent to mess or guardroom. Also the PT officer can view the students' attendance and set punishments for the absentee.
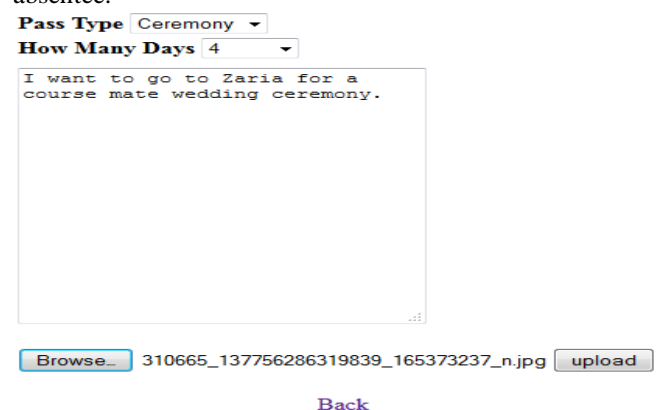

Figure 7: Students' Pass application page

From fig. 7, students can apply for pass base on medication or ceremony. For medication, students may fall sick and need to go to MRS (NASME hospital) for treatment. If he/she is to be

admitted, he/she will have to state the number of days, write a short summary and upload the doctor's report. For ceremony, the student has to state the number of days to be used to travel for the ceremony and to travel back. The student will need to write a short description too and upload the ceremony notification letter.

Figure 8: Page for assignment of punishment to students

Fig. 8 is used by the Mess/guardroom staff to search for student on punishment and to sign them into the mess/guardroom. The students' ID is been used to search for the student. If the record exist, the student punishment details will be displayed and the link for signing of the student.

Figure 9: Out of Punishment page

Fig. 9 is used to displays all the students inside the mess/guardroom and their due release date. Those that are yet to finish serving their punishment can also be viewed from this page. The various durations of the punishment and type of punishment assigned are also displayed.

CONCLUSION

Developing a computer based information system for NASME was of great importance to both the students and staff. It will be a medium for NASME's proper management of wings, sport and mess/guardroom in an organized way. It is now easier for NASME registry office to transmit the student's record on the system without crawling in various wings.

The school authorities can manage the records of each student both present and old students. The school will also be able to keep track of the records of students whose names were sent for course but were not released from their various units due to inefficiency at the various units. The school authorities will be able to set a resumption date for all students whose names are sent for a particular course and also the end date of that particular course. The school authorities will be able to manage the affairs going on in each wing, likewise in the guardroom or officer's mess and also on sport. Each wing will be able to appoint subject for each instructor and ensure they attend classes by each instructor logging in or out of classes. The students' attendance too taken by each course senior can be viewed by the school authorities. The report on night head count, sport, guardroom or mess can also be accessed by the school authorities. With the system, the commandant can check using the online platform the attendance of all the students and instructors, all the students in the mess/guardroom and the activities in the wings, PT officer and mess/guardroom without walking around physically to each unit.

It is our belief that NASME authority will consider the importance of this research and seeks powers to implement it in all their schools throughout the country.

FUTURE WORK

This work in future will be extended to include the result computation and hostel allocation since this particular research was limited to personnel administration, sports and discipline.

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