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RESEARCH ARTICLE

AUTOMATED STUDENT RECORD SYSTEM FOR THE GUIDANCE OFFICE OF JOSE RIZAL MEMORIAL STATE UNIVERSITY-KATIPUNAN, CAMPUS KATIPUNAN, ZAMBOANGA DEL NORTE, PHILIPPINES

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ABSTRACT

The utilization of advanced technology in colleges and universities has led to increase efficiency in processing and exchanging of records, maintaining data quality, and production is leading to increase quality education and services. The study aimed to design and develop a computerized system to improve the student record management at the Guidance Office of Jose Rizal Memorial State University-Katipunan Campus, Philippines. The automated student record system computerizes the student records such as data from student record form, psychological test results, counseling notes, admission slips, referral slips and generates good moral certificates. It uses the developmental research method which system development life cycle approach is applied. Information Technology professionals and students were utilized to evaluate the system using the software quality factors by the International Organization for Standardization (ISO) 9126-1. The statistical tool used was mean computations in tabulating the results. The research revealed that this system possesses five software quality characteristics which are very much functional, reliable, usable, efficient and maintainable. Storing, sorting and retrieval of student records became faster and more efficient. The study concludes that this system eliminates the existing problems like untimely retrieval and time-consuming in sorting and searching records as well as improves the student record management.

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INTRODUCTION

Educational records on students are those records, files, documents and other materials that contain information directly related to the student registered at the university. These include academic records and demographic information maintained by different offices like Registrar's Office, Accounting Office and Guidance Office. The copies of these information are kept by the designated personnel within their respective areas and monitored by the deans/directors. Several studies indicate that problem on the administration of student records are complex. Li *et al.* (2011) state that problem on the administration of student records of colleges and universities is more complex because the scale of recruited graduate students expands. Li states further that education policies, social environment and the students' mental states are the main reasons that make the administration of student records more complex.

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In Nigerian universities, personnel handling the records are not trained in records management, inadequate facilities for the preservation, storage, and retrieval of records, inadequate computers to manage the volume of records generated and the attitude of administrators towards records and records management constitute the problems of records management (Basil Iwhiwhu, 2005).

Likewise, the Guidance Office of Jose Rizal Memorial State University-Katipunan Campus also encounters problems in managing the student records since this office is using the traditional way of filing, sorting and retrieval of student forms which take a lot of time. According to Amanchukwu and Ololube (2015) that record keeping are concerned with achieving cost-effectiveness and efficiency in the creation, maintenance, use and disposal of the records of educational institutions throughout their entire life cycle and in making the information they contain accessible in support of the school business administration. They stressed that it is essential to keep the record in school for effective administration because proper record keeping facilitates retrieval of valuable information that might be helpful in day-to-day operations and decision making in school systems globally. They emphasized

that school records are of great importance to school guidance counselors as these records can provide counselors with a holistic picture of the students they counsel (academic grades and achievements, disciplinary measures taken and/or extracurricular activities) and can help counselors to track student progress. Regina (2011) also affirmed that the purpose of record keeping and management is to ensure that accurate and proper records of students' achievement and growth, information on school activities and matters that will promote efficiency and effectiveness of the school system are kept. According to Regina (2011) records are important tools for effective planning and administration of a school. Furthermore, the student records are utilized for many important educational purposes that include instruction and administrative purposes such as determining tuition status, scheduling students into classes, monitoring program completion, and completing reports for local and national authorities. The maintenance of extensive, accurate, historical, and current data about individual students is essential to the functioning of the colleges and universities and can promote effective educational practices at all levels of the education system.

According to Clements (2000) a well-designed student record system yields many benefits. Clements (2000) also stressed that with the use of automated systems there is efficiency in processing and exchanging student records among schools. It allows for timely retrieval of needed information; provide the information required on request, easily, and without burdensome trial-and error searching; and maintains data quality. The researcher believed that the Guidance Office needs a well-designed student record system to address the existing problems encountered in processing these records. So this research focused on the designing and developing of a computerized system that is expected to provide an alternative to the manual system of processing students' record and improves student record management.

METHODOLOGY

The researcher utilized the developmental research which develops a computerized system to solve problem in processing the students' record in the Guidance Office. This method uses the System Development Life Cycle (SDLC) which involves a systematic process in developing the automated student record system. According to Manoharan (2015), SDLC is a process used by the software industry to design, develop and test high quality software. It aims to produce high quality software that meets or exceeds customer expectations and reaches completion within times. He stressed further that SDLC is a framework defining tasks performed at each step in the software development process.

The following are the stages in SDLC that served as the guide of the researcher in the system design and development.

Planning: This is the first stage in SDLC that involves the process of extracting information from the Guidance Office. The researcher focused in collecting the data that have been interviewed and observed in the conduct of manual processing of students' record in the said office. The researcher also defined the problems, formulated objectives and identified the resources needed in the project after meeting with the Guidance Office personnel, students, faculty and staff.

Analysis: After the end-users specification requirements were obtained the researcher analyzed these requirements for its validity. The researcher considered the grouping of requirements into three (3) categories namely: functional requirements that describes how the computerized system should function from the end-user's perspective; operational requirements which define operations that must be carried out in the background to keep the computerized system functioning over a period of time and transitional requirements that defines the steps needed to implement the new product or process smoothly.

Design: This is the third stage in SDLC which the researcher focused in defining the components for the computerized system that would satisfy the specification requirements of the end-users. In general, the researcher determined how the computerized system looks like and would function.

Testing and Integration: During this phase, the researcher focused on verifying the computer program or processes for determining the degree to which a system meets, exceeds, or fails to meet the end-user specification requirements. The researcher ensured that the actual outcomes are compared and equal to the desired outcomes.

Implementation and Deployment: After the computerized system had satisfies the desired outcomes the researcher installed the system at the Guidance Office of Jose Rizal Memorial State University-Katipunan Campus and made operational. Training on the use of the system was done to make sure that they know how to operate the system and to get familiar with it. Data entry and system monitoring were conducted until it reached to the operation in accordance with the defined requirements.

Maintenance: Finally, the periodic maintenance for the system is carried out to make sure that the system would not become obsolete and continue to meet the current end-users specification requirements.

Figure 1 shown below is the schema of the study that applies the System Development Life Cycle (SDLC). It shows all the processes involved in converting the traditional ways of processing student's record in the Guidance Office of Jose Rizal Memorial State University-Katipunan Campus to an electronic way using the automated student record system. The conceptual framework of the study covers three (3) stages.

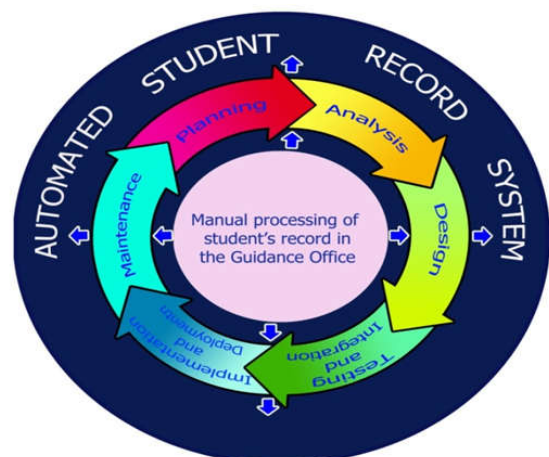


Figure 1. Schema of the Study

The first stage represented by the inner circle describes the requirements in developing an automated student record system. It involves identifying and collecting the information and procedures of the manual method of processing the student's record in the Guidance Office. From there, the researcher developed a computerized system applying the System Development Life Cycle (SDLC) approach as represented by the middle circle. Finally, the third stage of the study represented by the outer circle is the Automated Student Record System for Jose Rizal Memorial State University-Katipunan Campus. The system provides a great benefit for the institution in which the system serves as the new innovation in processing the student records at the Guidance office. Simple random sampling technique was used in the selection of research respondents which composed of ten (10) Information Technology (IT) professionals and twenty (20) IT students. All of them have the interaction to the system evaluation and rated with the used of evaluation rating sheet that was based on the software quality characteristics by the International Organization for Standardization (ISO) 9126-1. A 5-point Likert's scale was used to measure the functionality, reliability, usability, efficiency and maintainability of the system. The statistical tool applied was mean computations in tabulating the results.

RESULTS AND DISCUSSIONS

Research Problem 1: What are the existing problems encountered in the traditional way of processing the students' record at the Guidance Office of Jose Rizal Memorial State University-Katipunan Campus?

The traditional way of processing the students' record at the Guidance Office of Jose Rizal Memorial State University-Katipunan Campus consumes more effort and time in sorting, searching and updating of Student Record Forms. The volume of student records is continuously increasing every semester which requires additional office space for storage. There is also poor security of student records since they are only stored in the filing cabinet which can be physically accessed by any students who visit the said office.

Research Problem 2: What automated student record can be designed for the Guidance Office?

The Automated Student Record System for the Guidance Office of Jose Rizal Memorial State University - Katipunan Campus is a computerized system for storing and updating data from the Student Record Form submitted by each student enrolled in a semester.

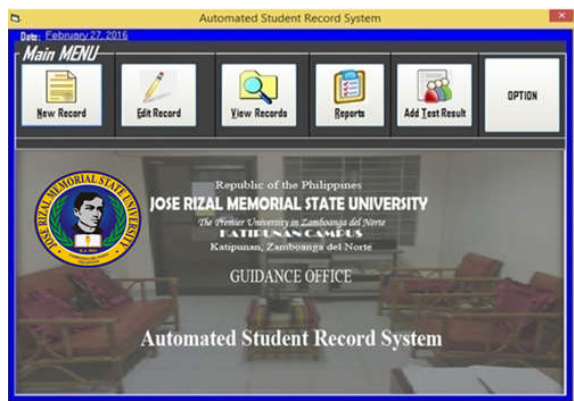


Figure 2. Main Menu of Automated Student Record System

It can also be used for storing psychological test results, counseling notes of the Guidance Counselor, and reason for receiving an admission slip. This computerized system generates admission slip report, counseling report, report on psychological test result, good moral certificate of students and blank form of referral slip.

Research Problem 3: What are the system features of the automated student record system that will solve the existing problems encountered by the Guidance Office personnel?

The automated student record system for the Guidance Office of Jose Rizal Memorial State University-Katipunan Campus contains features that would eliminate the existing problems encountered in sorting, searching and updating of Student Record Forms. These features are:

- Creates new student record based from the Student Record Form.



Figure 3. Page 1 of Student Record Window in the Automated Student Record System

- Adds and updates records on psychological test results of students, counseling records, reasons for readmission of the student to the class, and violation and sanctions of the student.
- Automatic recording of student violations into the remarks on character and behavior once there is an update of student violations.
- Automatic sorting of records once there is a creation or updating of student records.
- Options of sorting records by student identification number, or name of students in ascending or descending order.
- Views student's record using search button by student identification number or student's name.
- Provides string/text suggestion based on previously inputted words on selected textbox
- Creates and updates list of programs offered by the university.
- Prints list of registered students in the Guidance Office and admission slips of students.
- Prints psychological test results of students by individual students or summary of test results by program and year.
- Prints semestral counseling report and admission report which can be filtered by start and end of date.
- Prints Good Moral Certificate of students with no violation records.



Figure 4. Student Record Viewer of the Automated Student Record System

Table 1. Mean for Software Quality Factor: Functionality, Reliability, Usability, Efficiency and Maintainability as rated by IT Professionals and IT Students

Software Quality Factor	IT Professionals		IT Students	
	Mean	Description	Mean	Description
1. Functionality	4.78	Very Much Functional	4.79	Very Much Functional
2. Reliability	4.47	Very Much Reliable	4.68	Very Much Reliable
3. Usability	4.84	Very Much Usable	4.72	Very Much Usable
4. Efficiency	4.66	Very Much Efficient	4.77	Very Much Efficient
5. Maintainability	4.33	Very Much Maintainable	4.73	Very Much Maintainable

The system will warn if the student has a violation before proceeding to printing of the said certificate.

- Prints blank form of Student Record Form and Referral Slip

The computerized system also contains features that would eliminate the other existing problems encountered like poor security of records and filing of numerous forms. These are:

- Security feature uses username and password to access the system. Security account can be updated with correct password confirmation.
- Provides tool for backup database.

Research Problem 4: What is the characteristic of the automated student record system in terms of:

- **Functionality,**
- **Reliability,**
- **Usability,**
- **Efficiency,**
- **Maintainability, and**

The Automated Student Record System was evaluated using the software quality factors by the International Organization for Standardization (ISO) 9126-1 by ten (10) Information Technology (IT) Professionals and 20 graduating IT students as shown in Table 1. Table 1 shows the result of the system’s evaluation based on the five (5) software quality factors by the International Organization for Standardization (ISO) 9126-1. The Information Technology (IT) Professionals revealed that the automated student record system for the Guidance office of Jose Rizal Memorial State University-Katipunan Campus is very much functional which means that the system functions

according to the end-user specification requirements. The system is also very much reliable which means that it can maintain its performance when used. It is also very much usable which means that the automated student record system gives very much satisfaction to Guidance Office personnel and students from using the system because it can be easily learned and understood without much effort on training. The efficiency of the system is also very much efficient which means the system provides appropriate performance and production relative to the amount of resources used. Lastly, the IT professionals revealed that the automated student record system is also very much maintainable which means that it has the ability to be maintained. The ratings of evaluation conducted by the IT Professionals were also supported by the IT students as shown in the table. This means that the automated student record system for the Guidance Office possesses the standard software quality characteristics by the ISO.

Conclusion and Recommendation

Applying the use of computerized system in the students’ record at the Guidance Office of Jose Rizal Memorial State University (JRMSU) - Katipunan Campus requires a careful investigation and analysis of the existing method. The researchers concluded that implementing the use of automated student record system in the manual process resulted to more convenience and efficiency. Storing, sorting, retrieval and updating of students’ record become faster and efficient. This is opposed to the manual method which is stressful, time consuming and prone to mistakes due to excessive dependence on the human element involved. Several features of this computerized system were tested and found to be working as

expected. It also solves the existing problems encountered by the Guidance Office in processing the said records. Hence, the student record management of the said office has been improved. The researchers recommended to implement the said system in the Guidance Office JRMSU-Katipunan Campus to improve their services to the students. At the same time, the efficiency of the said computerized system can be further enhanced on this recommendation: an effort shall be made to make the system accessible in a local area network so that students can automatically register their record by themselves to lessen the workload of the Guidance Office personnel in terms of encoding the information from the Student Record Form filled-up by the students.

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