# Online Student Information System of Benguet State University (OSIS-BSU), Philippines

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## ABSTRACT

Changes in Information Technology (IT) allow schools to utilize databases and applications such as Online Student Information System (OSIS) thus, making the accessing of records centralized. One of the changes that came about is the online-based applications. These applications improved the traditional-transaction processing systems. Thus, most universities switch to the online-based system because of its effectivity to acquire, process, store and retrieve information from the Internet. Moreover, the system is accessible to all students' information.Benguet State University (BSU) is still using a semi-computer based system and paper-based student information system. Staff finds it tedious in searching and preparing reports on student's information and also laborious due to repetition of processes done in filling and updating of records. As main goals of the school "to generate and disseminate new knowledge and technologies that will promote sustainable resource development and enrich the competent and effective services geared towards efficiency and economy" the current system is inconsistent with the asserted school's main goals.The methodology used in the study was Rapid Application Development (RAD). RAD is designed to provide quick software methodology that involves iterative development and quick construction of prototypes.

**Keywords**: Online Student Information System, Benguet State University, Rapid Application Development (RAD), Web Design and Development, Hypertext Preprocessor (PHP)

## INTRODUCTION

The OSIS-BSU would be a new way of record management and transaction processing that would achieve efficiency on processing student information. It would be a great help to the administrative personnel, academic personnel, grantors or stakeholders, parents and students in updating, retrieving and generating student data.

The main objective of the study was to design and develop an online student information system of Benguet State University. In order to achieve the general objective, the following specific objectives of the study were identified:

1. To identify the information requirements in the existing student information system of BSU.
2. To identify the problems encountered in the existing student information system.
3. To identify the information requirements needed online.



ISSN 1839-9053

4. To determine appropriate security and control measures are needed for online student information system.
5. To determine the benefits of an online student information system as perceived by:
    a. Administration Offices;
    b. Academic Offices;
    c. "Grantors"/Stakeholders;
    d. Parents; and
    e. Students.

## BACKGROUND

This section presents the researcher's source of information and her background readings on related literatures and studies and other important concepts that have bearing on the present study.

## MAIN FOCUS OF THE MANUSCRIPT

Benguet State University (BSU) is still using a semi-computer based system and paper-based student information system. Staff finds it tedious in searching and preparing reports on student's information and also laborious due to repetition of processes done in filling and updating of records. As main goals of the school "to generate and disseminate new knowledge and technologies that will promote sustainable resource development and enrich the competent and effective services geared towards efficiency and economy" the current system is inconsistent with the asserted school's main goals.

The main objective of the study was to design and develop an Online Student Information System of Benguet State University. The OSIS-BSU would be a new way of record management and transaction processing that would achieve efficiency on processing student information. It would be a great help to the administrative personnel, academic personnel, grantors or stakeholders, parents and students in updating, retrieving and generating student data.

### Review of Related Literatures and Studies

Marrero (2009) in his study entitled "Student Information System for the University of the Cordilleras" stressed that the concept of Information Systems (IS) emerged in the early 1960s. More often, when information system is defined, the field Information Science is always associated, IS is an academic field that deals with the generation, collection, organization, storage, retrieval, and dissemination of recorded knowledge. Furthermore, it is a collection of related components designed to support operations, management, and decision making in an organization. Generally, IS is supposed to inform people. Information System supports people or users in making intelligent decisions based upon the information derived from reliable data.

MIT (2009) gave emphasis that Student Information System (SIS) provides students with access to their academic and biographic records as well as the ability to update their address information and pre-register for classes; it provides instructors and departmental administrators with class list information; and provides advisors and departments with access to the individual academic records of their students. Therefore, SIS is an integrated approach in acquiring, storing, analyzing and controlling the flow of student data throughout the institution. Highly developed SIS can be useful in nearly all institutional



ISSN 1839-9053

departments' functions and can greatly increase efficiency and response times of traditional labor and time-intensive processing of student data.

According to Evangelista(2008) the university's Student Information System (SIS) of Nueva Vizcaya State University is a secure, web accessible interactive computer system that allows user access to grade reports, transcripts, schedule of classes, and remaining balance for the semester and register for classes online. Through the system, students would be assigned a unique identification number. All data to and from the university would use that unique identifier. The use of individual student records would: 1) Increase the admissions capacity to follow a student's progress over time; 2) provide better quality data to drive more enlightened policy decisions resulting in enhanced educational opportunities for all students; 3) reduce data collection burden through a web enabled SIS; and 4) as a tool of parents in monitoring the academic performance of their children.

According to Desousa (2008), Web based application have four core benefits. These are the following: 1) Compatibility. Web based applications are far more compatible across platforms than traditional installed software like web browsers. 2) Efficiency. Everyone hates to deal with piles of paper unless they do not have any other alternatives. The benefit of web based solution makes services and information available from any web-facilitated Personal Computer (PC). 3) Security of live data. Normally in more complex systems data is moved about separate systems and data sources. In web-based systems, these systems and processes can often be merged by reducing the need to move the data around. Web-based applications also provide an additional security by removing the need for the user to have access to the data and back end servers. 4) Cost Effective. Web-based applications can considerably lower the costs because of reduced support and maintenance, lower requirements on the end user system and simplified plans.

Swartz (2007) gave emphasis that almost all institutions depend on data. Consequently, we are witnessing a profound change in the way in which institutions perceive, understand, and manage their information. There is now a clear recognition of the value of information, the creation of new information, the retrieval of existing information, the storage of important information, and the disposal of redundant information. There is also greater awareness of the cost of acquiring bad, incomplete, or inaccurate information.

Villafania (2007) reported that in the Philippines, the Commission on Higher Education (CHED) has initiated programs to secure academic records. CHED and the National Printing Office (NPO) have signed a memorandum of agreement (MOA) on the Securitization of Academic Records for college and university graduates beginning school year 2007. The move is part of CHED's drive to stop the use of fake diplomas and school records. CHED former chairman Carlito Puno said the MOA aims to secure authenticity of academic records such as diplomas, transcript of records and special orders from all colleges and universities in the Philippines. Thus, protect the image and integrity of Filipino College students to potential employers both locally and internationally. Puno emphasized further that the MOA would boost the competitive edge of the graduates in the labor market for it will ensure the integrity of credentials of the graduates while protecting the reputation of higher institutions of learning.

AISIS Online (2006) posted a precise definition of Ateneo Integrated Student Information System (AISIS) serves as the portal for Ateneo students, faculty and staff. Through the AISIS Online officially enrolled Ateneo students may view pertinent school information including their Individual Program of Study (IPS), grades, class schedules and the like. Students may also eventually enlist using AISIS Online. Ateneo faculty and staff with access to AISIS, on the other hand, may submit grades and access their class schedules from outside the campus.



ISSN 1839-9053

Richard (2004) emphasized that information about students is vital, but time-consuming to manage and it is essential that the most effective tools be used to aid both staff and students go about their work and studies. The Cambridge Student Information System (CAMSIS) replaced various student records system used by the colleges, departments and universities. CAMSIS provides comprehensive and accurate information about student body and also improves data quality, reduce the administrative burden dramatically and provides better services to both academic staff and students.

Benguet State University (BSU) is still using a semi-computer based system and paper-based student information system. Staff finds it tedious in searching and preparing reports on student's information and also laborious due to repetition of processes done in filling and updating of records. As main goals of the school "to generate and disseminate new knowledge and technologies that will promote sustainable resource development and enrich the competent and effective services geared towards efficiency and economy" the current system is inconsistent with the asserted school's main goals.

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## METHODOLOGY AND DISCUSSION OF FINDINGS

This section discusses the methodology used in designing and developing the proposed system and discussion of findings, it also explain the scope and delimitation, the different techniques and different sources of data.

### *Software Development Methodology*

The software development methodology used in the study was Rapid Application Development (RAD). RAD technique allows "Rapid" application development, with development time to 30 or maximum of 90 days. However, RAD approach is concerned with few comprises usability, features, and execution speed. (Kaatib, 2005)

Rapid Application Development (RAD) is an object-oriented approach to systems development that includes a method of development as well as software tools. (Kendal and Kendall, 2005)

There are three broad phases of RAD that engage both users and analysts in assessment, design, and implementation.

1) Requirement Planning Phase. In this phase, users and analysts meet to identify objectives of the application or system and to identify information requirements arising from those objectives. This phase requires intense involvement from both groups; it is not just signing off on a proposal or document.

2) RAD Design Workshop is heart of interactive development process. The RAD Design workshop phase is a design and refine that can be best characterized as a workshop.

During this phase, users respond to actual working prototypes and analysts refine defined modules based on user responses.

3) Implementation Phase. As soon as the system was built and refined, the new system or part of the systems are tested and then introduced to the organization.



ISSN 1839-9053

The implementation phase of RAD improved speed of development through rapid prototyping, better end-user utility, simplicity and usability of Graphical User Interface (GUI) design and in many ways it is less stressful. Figure 1 depicts these three phases.

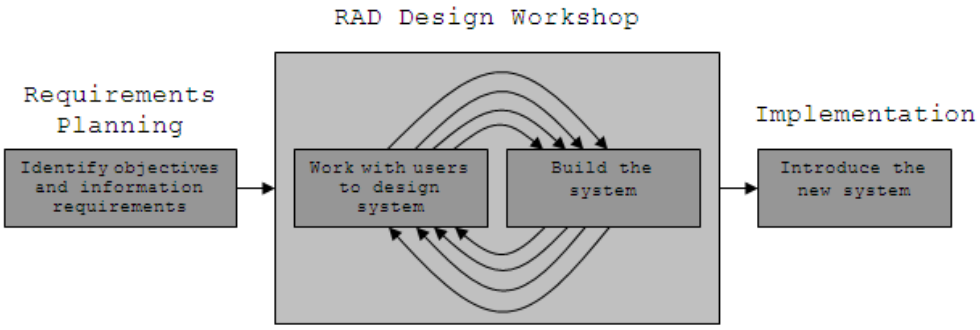


*Figure 1.Three Phases of Rapid Application Development.*

*(Source: Kendal & Kendal, 2005)*

## Scope and Delimitation

The proposed online student information system is integrated to the website of the university which serves as a portal for the students.

The system covers the posting and updating of students' personal data sheet, curriculum, grades slip, statement of accounts, and unofficial transcript of records. It also includes the status of a student whether active or inactive. An inactive status is further categorized to dropped, stopped, graduated or transferred. Under the statement of accounts, balance forwarding is also adopted.

The system did not include the monitoring of attendance and queries such as subjects yet to be enrolled by students.

The report generation includes students' personal data sheet, curriculum, grade slip, statement of accounts, and unofficial transcript of records. It also includes a summary report of active and inactive students categorized according to course.

## Data Gathering Techniques

In order to develop the Online Student Information System of BSU, series of interviews were conducted in the registrar's office, accounting office, office of the student affairs, and dean's office to know the processes involved in keeping, retrieving and updating the records of students.

Questionnaires were administered to the administration personnel, academic personnel, stakeholders or grantors, parents, and students to capture their perceptions on the benefits that an online student information system has to offer.



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***Sources of Data***

Data were gathered from the Administration office particularly in the offices of the registrar and accounting. The personnel under Office of Student Affairs were also included as respondents in the study. Interviews, observations, and gathering of printed sample forms, documents, reports and files were also important sources of facts and were major instruments in gathering the needed data. Questionnaires were also used to gather data pertaining to the perceptions of the users on the proposed system, the questions was based on the online student information system of Nueva Vizcaya State University. A Slovin's formula was used to determine the sample size for the IT students.

$$n = \frac{N}{1 + Ne^2}$$

Where: N = 296

E = 0.13

n = 49.31 or 49

The output of the guide questions were vital in the analysis of the study which provided suggestions in choosing and implementing the proper design and development intended to answer the issues raised in the existing system.

## DISCUSSION OF FINDINGS

This section presents the discussion of findings on the existing student information system, processes, problems encountered, information requirements, security and control measures, and benefits as perceived by the respondents of the study. The following were the summary of findings:

1. The information requirements in the existing student information system of BSU are (a) student personal data containing the personal information, educational and family background, and work details of a student; (b) curriculum which includes subjects per semester, subject code, subject description, units, number of hours for lecture and laboratory, and pre-requisite; (c) checklist that shows the list of subject codes, subject descriptions, units with corresponding grades; (d) grades that indicates the student's grades for a particular semester; and (e) statement of accounts that details tuition, miscellaneous and other fees of a student.
2. The following problems identified in the existing student information system of BSU were (a) inefficient retrieval and updating of student records due to labor-intensive processes; (b) limited storage capacity as a result of mounting up of student records every semester; (c) unorganized record keeping as attributed to inconsistencies, unsecured, and redundant student records in different offices; and (d) slow generation of reports because of manual processing.
3. The following information requirements needed online are (a) student personal data that includes the personal information, educational and family background, work experiences of a student, and the category of student whether active or inactive; (b) curriculum that shows subjects per semester with corresponding subject code, subject description, units, number of hours for lecture and laboratory, and pre-requisite; (c) grades indicating the final grade for a particular subject enrolled; (d) statement of account that details tuition, miscellaneous and other fees; and (d) unofficial transcript of records showing finished subjects with corresponding final grades.



ISSN 1839-9053

4. The following security and control measures needed to be adopted include (a) password protection where only authorized users would be allowed to access the system; (b) level of access for authorized users would be categorized into two levels; the administrator with full read and write privileges and users with limited read privileges; (c) physical security for the server that would be confined at the registrar's office; and (d) an audit trail for every transaction that would enable the system to track every users who logged-in for a particular date and time, and what event or action done.
5. The benefits of an online student information system as perceived by the administrative and academic personnel, stakeholders/grantors, parents and students are (a) online viewing of curriculum, unofficial transcript of records, and statement of account; (b) increases the capacity to follow students' progress over time; (c) reduces burden in data collection through an online enabled SIS; (d) timely updates leading to optimum performance; (e) provides tool for parents in monitoring the academic performance of their children; (f) eliminating the hassles and high costs associated with manual-based transactions; and (g) unlimited possibilities in system enhancement resulting to improve student services.

## FUTURE RESEARCH DIRECTIONS OR RECOMMENDATIONS

The findings, conclusions and insights of this study are interrelated. An online Student Information System would definitely improve the efficiency in managing and maintaining student information, thus translating to a better student services for Benguet State University. It is therefore highly recommended that the system be given consideration for implementation in the near future. These can be done through the following recommendations:

1. A pilot test should be conducted to all users of the system to draw some more recommendations and improvement of the system
2. The OSIS-BSU be fully integrated in the existing website of BSU.
3. Security and control measures should be followed to secure and maintain the system.
4. Online student information system should be implemented so that the perceived benefits of administration and academic personnel, stakeholders/grantors, parents and students would be realized.
5. Evaluation shall be done after the implementation of the system in order to have a basis of integrating system requirement in line with the institutions growing requirements.
6. A retention and disposal policy be considered, where old records are disposed off after it has been captured and stored digitally.

## CONCLUSION

Based on the findings of the study, the following conclusions were drawn.

1. The existing student information system of BSU is done manually using paper-based transaction processing system.
2. Problems usually encountered in the existing SIS were inefficient, error-prone, and costly maintaining of student information.



ISSN 1839-9053

3. Information requirements needed online are student's personal details, program of study, academic achievements, and statement of accounts.
4. Security and control measures that are needed to be adopted in the SIS of BSU in terms of accessing the system are password protection, level of access to authorized users, physical security for the server, and audit trail.
5. The benefits of an online SIS would be efficiency and cost effectiveness in maintaining as well as managing student information for BSU.

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ISSN 1839-9053