

# Digital Student Examination System of Cebu Normal University - Balamban Campus in the New Normal: Analysis and Implementation

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**Abstract:** This study aimed to modernize the current examination process by implementing a digital student examination of Cebu Normal University – Balamban Campus. The study made use of the computers sets for the authorized users. The results showed that the faculty and administering instructor could easily monitor the exams after the program was put in place. Prior to the actual exam day, the system enables Faculty and authorized workers to change their questions and answers. For purposes of authenticity, students from a specific class must fill out the student information that is displayed on the computer screen. They can see the randomize examination and would not be able to compare their answers. Since it is in digital format, therefore the results are delivered right after the examination. The digital system had been capable of providing a variety definition of examination as to its perspective; therefore, the digital examination elevates the manual examination that has been practiced and adapted that may scale down the epitome of producing effective learning. The activity promotes effectiveness of a computer-based product that involves proper handling during quality assurance to students. Therefore, to adapt the digital student examination for a quicker and more effective way to deliver the right assessment and evaluation system in response to the demands of the academe-industry scenario of the twenty-first century, the administration and faculty of this successful university get to familiarize themselves with the system.

**Keywords:** Digital Student Examination, innovation, ICT, modernization, optimization

## Introduction

The universal goal of Higher Education Institution (HEI) – public or private has always been this notion of producing great and useful citizens in our society. To identify if these schools and university achieved their vision, mission, and objectives, they follow similar procedures of companies that go through quality assurance testing regarding product quality. This quality assurance method that are applied to students in the academe settings are in the form of assessment and evaluation, directly say “examinations”. There is always difficulty and enormously inefficient checking of individual’s examination paper by the instructor and validating the results of each student the traditional way.

In today’s age of information technology, business sectors, government agencies and other organizations have undoubtedly been using computers extensively to handle tedious paper works, provide better services and enhance efficiency and productivity. Computers are now becoming part in almost every individual and in some aspects of every virtual activity in an organization. More commonly, these electronic devices store records of transactions and other pertinent documents and information.

To adapt to the changes brought about by the modernization of nearly everything around them, society must also evolve into the modern world. Everyone has been impacted by technology, which is present everywhere. One example is when a person buys vegetables at the grocery store and the cashier scans a bar code to read the price. Another example is the method used to communicate with family members who live abroad. Today's communication style is centered on the internet.

The use of a computerized testing system has previously been put into many different situations. The resources are available online either as licensed commercial software or as free and open-source software (OSS). Internationally renowned universities have already started using this technique. However, due to several issues including ICT infrastructure, hardware requirements, and technical expertise, institutions in the Philippines still struggle to adopt such systems. Additionally, due to the security and policy implementation as well as the effectiveness of the approaches offered by the system, other universities are reluctant to adapt these systems.

### Current Examination System

The current examination system in Cebu Normal University – Balamban Campus is paper-pencil examination. The execution of the examination would be prior or after the topic discussion that will be presented by the instructor. Paper – pencil examination in this methodology is always performed in the presence of the instructor or an authorized representative by the instructor or a proctor. The examination is usually divided into a number of parts, depending on the creator of the examination, and usually have different methods of answering and types, such as multiple choice, matching type, true or false, enumeration, analysis and discussion questions.

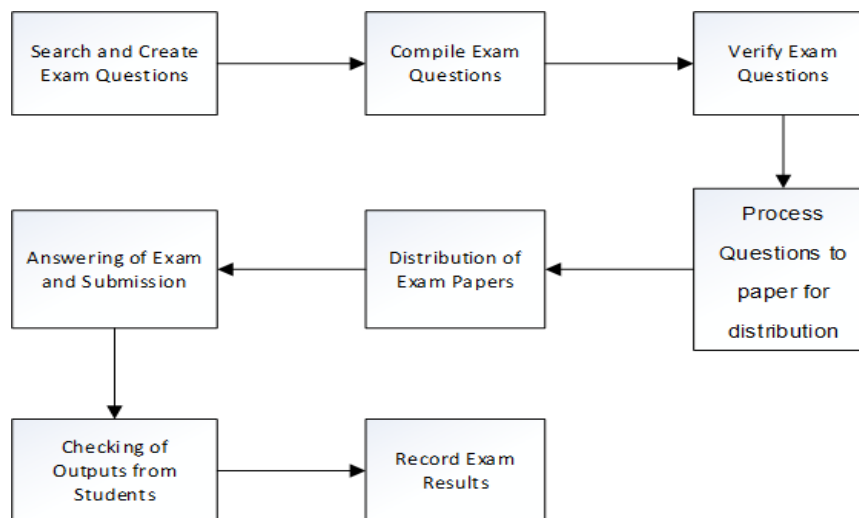


Figure 1.0 Current Process of Cebu Normal University – Balamban Campus Examination System

The figure above presented the different process of the current examination system of Cebu Normal University – Balamban Campus. This process flow is the pattern of all examinations in each college and it is presented in all variations. All of the processes are performed by a proctor during each examination. Record keeping is done by instructor with the exception of answering the exam, which is done by the students.

The first process which is **Search and Create Exam Questions** where the faculty do research and use the topics discussed in order to have basis for constructing the exam. Once the Faculty had **Compiled Exam Questions** gathered from all references followed by **Verify Exam Questions** which is done in order to identify if all topics discussed are covered up for the examination. **Process Questions to paper for distribution** prior to the actual period of examination, where papers are reproduced and next is the **Distribution of Exam Papers** to the students on their permitted schedule. After receiving the exam papers, **Answering of Exam and Submission** of the exam sheet to the proctor assigned. Then the **Checking of Outputs from Students** is usually done by the instructor or by the students. Finally, the **Record Exam Results** which is done by the Subject instructor. All the process involved had been adapted through the years, however this should be minimized in order to have more time to accomplish another academic purpose.

Hence, this research will be created in order to provide a system to Cebu Normal University that caters the needs of the users and utilizes the information and communication technology to meet the globally-competitive university standards across the ASIA-PACIFIC Region.

### **Theoretical Background**

Examinations inspire distinct behaviors in both students and teachers. In addition to giving the teacher the chance to learn relevant information to share with their pupils, it also gives the students a task that effectively expands their horizons and their capacity for exploration. (Bhardwaj & Singh, 2011).

It raised the concern that even though learning is now delivered through the use of technology, some institutions still use the outdated method of conducting it to test students' abilities in schools, creating barriers and discouraging the adoption of new techniques and opportunities that could result in more difficult and time-consuming work. (Fluck, 2013).

Manual examination system has its limitation. In a lot of classes with different subjects and managing them has always been a challenge for many instructors. Several discrepancies had been observed (Fagbola, Adigun, & Oke, 2008). In fact, it takes a lot of time to comply with the requirements of the curricula especially just checking the examination papers or making the exams themselves.

The process of checking is a delicate job which indicates the delay of releasing the result that could lead to wasting of resources due to number of papers being kept and improper location of examination papers (Bhardwaj & Singh, 2011).

There have been a large number of cases in academe where fraud and corrupt practices exists resulting doubt to the students as to their quality (Bhardwaj & Singh, 2011). In some courses such as programming, it is observable and clear that pen and paper method has its own imperfections since the students have different ways of examination by inputting and running their codes with paper, results will not be understandable given that students from this course learn through the use of computer (Jonsson, Loghmani, & Nadjm-Tehrani, n.d.).

Recognizing the impact information technology-based systems have on society allows us a dynamic transformation that improves our capacity to develop. One example that combines the two goals of automating a service and modernizing is the digital student examination system. Electronic services that enable them to improve the quality of life for their consumers are used by many different fields. Technology advancements in the present day can be used to solve the issues with the manual examination technique now in use. It is critical to recognize the improvements it has brought about, not just for the positive.

The necessity for automated testing systems was raised in the late 1990s, when the value of education was being examined for a lifetime. There are several ways to provide education that is suited to create an effective learning environment (Jonsson et al., n.d.).

Thereupon, the progression of using Internet as means of acquiring knowledge had also brought changes to individuals and specially to isolated places. According to Pritchard, A. (2017), most educational materials are easily accessed for the purpose of attaining important and useful information.

On the contrary, the development of assessment in the academe has a great impact in promoting education (Rashad, Kandil, Hassan, & Zaher, 2010). Despite the difficulties that remain, a variety of computer and web-based exams have currently been developed. In addition, a lot of capable people came up with various strategies. (Fagbola et al., 2008). Electronic exams are already being adopted by several private institutions in Nigeria. Computer-based and performed in a private university, Covenant University, is an example of one of these systems. The goal of the project is to reduce inconsistencies in the current examination setup. Microsoft's developed technologies will be used in another technique, and an auto-grading approach was one of the features that was suggested in several papers. However, a panel of assessors selected certain systems to test, and among the 6 schools, only 1 was using the Internet while the other was using an intranet, which was later discovered to lack integrity. (Adebayo & Abdulhamid, 2010).

The number of schools and students are growing at an Indian university as a result of the University Grants Commission's 2008 report on concerns related to higher education's expansion, inclusivity, quality, and finances. The idea of Information and Communication Technology (ICT), which is a tool in giving them a transparent, reliable, efficient outcome and also offers a compact storage, speedy retrieval of data that has been a great help in university examination, is acknowledged by the processes involved and the large number of students. The Automated Integrated Examination is one of the proposed systems for adopting ICT (Bhardwaj & Singh, 2011).

The student records in this system are unmatched because it is centralized and has robust security features. The students must register online for a particular subject, and they will get an email a few days ahead of the exam time. If the student has received a confirmation, details on the exam's location, and a Permanent Identification Number (PID) that serves as identification, they are eligible. Students must have their PID with them throughout the test and write it down on the document that will act as their attendance and permission to take the test. (Bhardwaj & Singh, 2011).

Writing essays using computer software is one method used in the USA, especially in their legal schools, to verify students' knowledge. Each pupil is prohibited from duplicating and reproducing ideas from any types of data and sources thanks to the software's characteristics (Fluck, 2013). A technology called the Authentic Examination System (AES), which connects the teacher and student, has been designed (Jonsson et al., n.d.). A robot or the Scheme Robot aids in evaluating the students of a particular computer science, and it was through this that the developer was able to determine that using a computer as a method of assessment is straightforward and creative (Jimoh, Yussuff, Akanmu, Enikuomihin, & Salman, 2013). A system that is built on a browser or server architecture and tends to provide a wide range of services is another idea. There have been numerous implementations, however for some reason problems emerged that had been researched to help better and separate the benefits and drawbacks of current systems (Adebayo & Abdulhamid, 2010). It was discovered through a different study that looked at a number of systems that, despite recent advancements in computer-based testing, a certain system lacks a necessary attribute to be regarded as dependable for all different sorts and kinds of evaluation (Luecht & Sireci, 2011).

Digital systems are frequently the subject of many inquiries, particularly in our nation where concerns over data security still exist. This persistent worry is a response to systems that were inadequately designed and implemented in accordance with policy. In terms of modern technology, the resources and tools for developing systems are secure and are regularly checked for vulnerabilities, whether they come from commercial or open-source sources.

### **Proposed Digital Student Examination System of Cebu Normal University-Balamban Campus**

The figure below represents the process of the proposed Digital Student Examination System of Cebu Normal University – Balamban Campus.

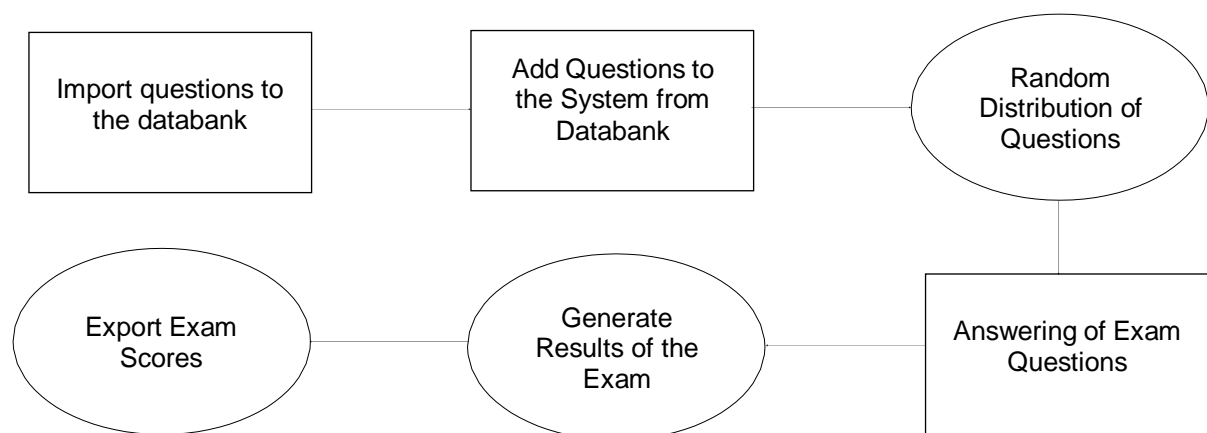


Figure 1.1 Expected Process Flow with the Proposed Digital Student Examination System

Figure 1.1 shows the expected process flow of the Digital student examination system as implemented by this project. The exam questions vary in sequence for each student.

The use of digital examination, **Import Questions to the Databank** is the process of inputting the set of questions in the database and is performed by an authorized person or the faculty itself. **Add Questions to the System from Databank**, is the process of uploading set of questions from the databank to the system. **Random Distribution of Questions** is the process where the system will randomly distribute questions to the students, who will input their identities before the questions are displayed on the computer screen. **Generate Results of the Exam**, the technology also generates exam results, and once students have responded, they will just await feedback and **Export Exam Scores**, is the process done by the faculty or authorized representative for recording purposes. Additionally, a copy of the scores is stored and kept inside the system's database.

## Research Questions

This research aimed to analyze the current examination system of Cebu Normal University – Balamban Campus. This study motivates the researchers to develop and implement a system that will provide an efficient solution to the identified problems.

1. How the system enhances the current examination system in the aspects of:
  - 1.1 time;
  - 1.2 security; and
  - 1.3 management?
2. What improvement the system has offered to the following beneficiary:
  - 2.1 Faculty;
  - 2.2 Students; and
  - 2.3 School?
3. Is there a significant relationship between the manual and automated process in checking student's assessment?

## Methodology

The system is using Programming Languages specifically HTML, JavaScript, PHP and MySQL wherein the system specifications and flow of the system is observed. The study was conducted at the Cebu Normal University – Balamban Campus, Nangka, Balamban, Cebu. The respondents of the study are the students and selected faculty members handling subjects in Bachelor of Tourism Management and Bachelor of Secondary Education. The researchers have a consultation with the participants who tested the system, this was through interview on how the process works.

## Results and Discussion

The findings of the study are presented, analyzed and interpreted in this section, namely: Correlation between Manual and Automated Process in Checking Students Assessment and improvements the system has offered to Faculty, Students and School.



Checking student's assessment is a process that verifies the answers of each student to track their performance.

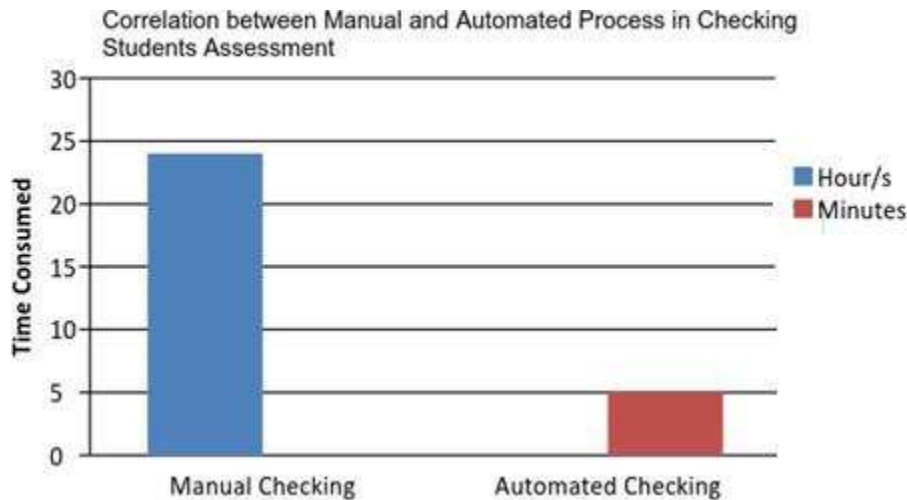


Figure 1.2

The bar graph shows that automated process of checking consumes a marginal time.

The results of the Digital Student Examination were demonstrated in the data that was presented, and it is implied that reviewing the assessment using CNU's DSES is appropriate in order to keep up with the current changes in test administration.

Some universities may not transmit the evaluation results immediately following the activity, which could be another drawback of encouraging automated exams. After the computerized assessment was evaluated, they were able to compile respondents made up of professors and students. Most of the results result in numerous recommendations and critiques of the examined system. They stated that the current e-examinations require proper administration and user-friendly interfaces so that people may easily adjust to the automated system (Adebayo & Abdulhamid, 2010).

A time counter is one of the many characteristics of the numerous examination systems that have been put into use, and it is displayed on the examinee's screen (Fagbola et al., 2008). This feature can be somewhat distracting because it might cause students to feel under pressure and mindful while responding to the exam.

The Balamban Campus of Cebu Normal University's Digital Student Examination System contains a function that makes administering assessments simpler. The system was able to release the scores so that they could be viewed by the students online while the faculty withheld the scores' records.

## **Improvements the system has offered to Faculty, Students and School**

The system primarily benefits the faculty, students, and the institution. The adopted student examination system has addressed various factors that have an impact on the degree of assessment taking, which was our initial concern in the study. Because it has been around for a while and is now a subject that students are required to take, information technology is nothing new to the users who follow.

The issue of authentication, proper management, a bundle of printed papers being used as the examination sheet, and the delayed release of results is supplemented by the Digital Student Examination System. By doing this, the institution would be able to offer another service with the goal of providing a system that is used and implemented all over the world.

## **Conclusion**

This chapter presents a summary of the findings, conclusions, and recommendations from the study "Digital Student Examination System of Cebu Normal University - Balamban Campus: Analysis and Implementation."

The Cebu Normal University's Balamban Campus has upgraded the serviceability of delivering exam results with the implementation of the digital student examination. The system does its own tasks, making it easy for the user to get used to it. This is a positive indication that information technology has been used effectively and efficiently in a variety of disciplines, whether they be medical or computer-related programs.

Based on the findings, the following statements of conclusions are made:

1. With the availability of the computer sets inside the laboratories, it enabled the system to give an innovative and convenient kind of service to the beneficiaries.
2. The user-friendly interface of the Digital Student Examination System enables everyone to handle the procedures with ease.
3. Sufficient knowledge to computers is a basic need for the users to handle and perform the operations in using the digital examination system.

## **Recommendations**

Based on the findings, the researchers would like to recommend the following:

1. Maintenance of the system is highly recommended to sustain the process and security.
2. Users of the system must be able to become familiar with its capabilities and workings so they can use it effectively in future situations.
3. The researchers suggest that the feature of the system include an additional option that can supply images and other sorts of answering the examination in future studies of computer-based products.
4. The researchers recommend that computer-based goods should take into account technological aspects in addition to functional goals.



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