Online ISSN: 3082-5121
Aloysian Interdisciplinary Journal of Social Sciences, Education, and Allied Fields
https://journals.aloysianpublications.com
Volume 1 Issue 7 (2025)

Senior High School Database System with Short Messaging Services Support (SHSDSS)

Jessie S. Callas [1], Elvin T. Lucatin [2]
1 – Sagay National High School
2 - Northern Negros State College of Science and Technology

Publication Date: July 31, 2025 DOI: 10.5281/zenodo.16880749

Abstract

The nationwide implementation of Senior High School (SHS) has significantly advanced the Philippine educational system, aligning it with global standards. However, manual processes for track preference assessments remain inefficient, leading to delays, administrative burdens, and data inconsistencies. To address these challenges, this study developed the Senior High School Database System with Short Messaging Services Support (SHSDSS), a technology-driven solution integrating database management and SMS communication.

The system employs XAMPP for local hosting, Code Lobster for development, MySQL for database management, and PHP/VB.Net for SMS functionality. Evaluated using McCall's software quality model, the system achieved a mean rating of 4.67 (Very Good) from experts. End-users assessed its acceptability via ISO/IEC 9126-1:2000 criteria, yielding a 4.97 (Very Good) rating, highlighting its usability, reliability, and efficiency.

SHSDSS streamlines track/strand selection, automates parent notifications, and reduces paper-based inefficiencies. While the system enhances decision-making, results should complement—not replace—guidance counselor interventions due to potential response biases. The study recommends adoption across Cadiz City schools, emphasizing database security and user confidentiality.

Keywords: *Senior High School, database system, SMS integration, track preference assessment, educational technology, automated notifications, Philippines*

INTRODUCTION

The computer has been widely used in all areas of development. It has significantly improved processes in business and finance, agriculture and food production, schools and infrastructures, industries and factories, and many others. Thus, the desire for system improvement and development is limitless and breaks boundaries for the unceasing growth of demands and necessities.

The Department of Education's K-12 program aims to transform primary education from Grades 1 to 10 and add two years to produce graduates who are highly equipped with knowledge and skills that will create a deep impact on the welfare of Filipinos (Ronda, 2013).

Online ISSN: 3082-5121
Aloysian Interdisciplinary Journal of Social Sciences, Education, and Allied Fields
https://journals.aloysianpublications.com
Volume 1 Issue 7 (2025)

A Grade 10 student must take a track preference exam before graduation, facilitated by the school's guidance counselor. The results take time since they are manually checked and computed. Often, the guidance counselor encounters students who change their minds about their track specialization, leading to changes in records and increased paper consumption due to updates (Hsieh et al., 2023).

Manual recording and filing of student profiles are subject to typographical errors introduced by data entry personnel (Hsieh et al., 2023) and data inconsistency. Deciding a student's future path is a significant challenge for individuals and should be well-guided by the guidance counselor (University of Wisconsin, 2021).

The researcher will develop a system with a database that stores student information and interest categories (Tingo, 2007). Students can identify their desired track through an assessment. The system will incorporate SMS-based information (Joshi & Pathak, 2015) and send announcements via SMS to Senior High Schools within the Division of Cadiz City, Negros Occidental.

The Senior High School Database System with Short Messaging Services (SHSDSS) aims to address the challenges of manual record-keeping and improve the accuracy of announcements to parents. The system will effectively determine students' chosen tracks/strands, send announcements to parents, and maintain student profiles.

Objectives of the Study

This study aims to develop and determine the effectiveness of Senior High School Database System with SMS Support.

Specifically, it aims to:

1. Assess the level of performance of the proposed system according to the following criteria.
2. Assess database system using software evaluation criteria, the MC calls will be used to determine for software quality model.
3. Assure the acceptability of the system thru generating the following reports.

MATERIALS AND METHODS

Methodology

In the rapidly growing field of educational media and technology, development research plays a prominent role. Flagg (1990) emphasized the role of formative evaluation in program improvement, while Richey and Nelson (1996) provided a comprehensive analysis of developmental research in educational technology. Their work highlights improving instructional design, development, and evaluation through problem-solving and generalized inquiry (van den Akker, n.d.).

Study Population

The respondents of the study were the grade ten (10) students of Dr. Vicente F. Gustilo Memorial National High School in the Division of Cadiz City.

Respondents of the Study

The school had a population of 756 Grade 10 students enrolled in the 2016–2017 academic year, along with the guidance counselor. Stratified random sampling was used for students, while purposive sampling was applied for the guidance counselor (Omair, 2014). Pagoso's formula determined the sample size:

Online ISSN: 3082-5121
Aloysian Interdisciplinary Journal of Social Sciences, Education, and Allied Fields
https://journals.aloysianpublications.com
Volume 1 Issue 7 (2025)

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

where n = sample size
N = population size
e = margin of error

Table 1. Respondents of the Study

Respondents	Number of Respondents	Percentage of Sample Size	Distribution of Sample Size	Sample Size
Guidance Counselor	1			1
Grade 10-1	37	5%	13	
Grade 10-2	37	5%	12	
Grade 10-3	39	5%	14	
Grade 10-4	39	5%	14	
Grade 10-5	39	5%	14	
Grade 10-6	39	5%	13	
Grade 10-7	39	5%	14	
Grade 10-8	40	5%	14	
Grade 10-9	40	5%	14	
Grade 10-10	40	5%	13	
Grade 10-11	39	5%	14	
Grade 10-12	39	5%	14	
Grade 10-13	40	5%	14	
Grade 10-14	41	5%	14	
Grade 10-15	41	5%	13	
Grade 10-16	42	6%	15	
Grade 10-17	42	6%	15	
Grade 10-18	42	6%	14	
Grade 10-19	41	5%	14	
Total Grade 10 Students	756	100%	262	
Total Respondents				262
Total Sample Size				**263**

Table 1 shows on how the respondents were selected as sample size.

Research Instrument

The study utilized a standard questionnaire. Such as: First, McCall's questionnaire was used for the Experts on the field of the study to determine the software quality based to the experts and ISO/IEC 9126-1:2000 for the End-Users to assess the level of user acceptance.

System Design

The researcher used Rapid Application Development (RAD), which emphasizes fast product development through workshops, prototyping, and reusable components (Software Development Methodologies, n.d.).

Online ISSN: 3082-5121
Aloysian Interdisciplinary Journal
of Social Sciences, Education, and Allied Fields
https://journals.aloysianpublications.com
Volume 1 Issue 7 (2025)

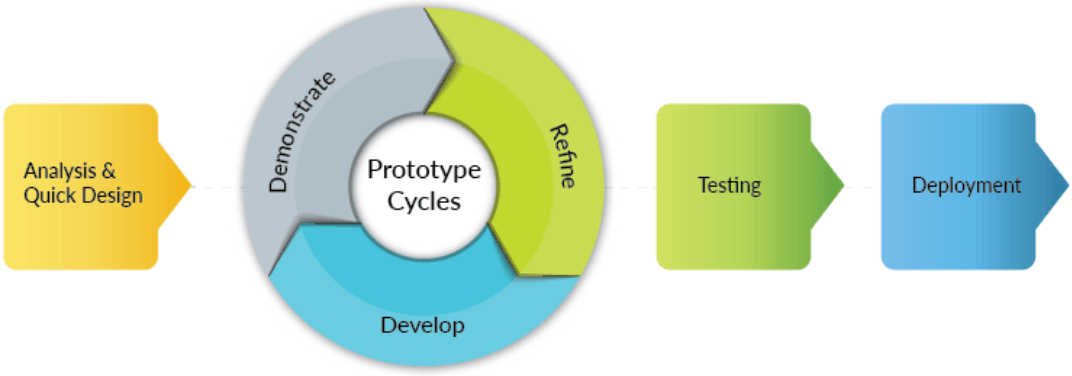

Figure 1. Rapid Application Development

The **SHSDSS** started by gathering data from the respondents as to the gap of its present system in conducting the student track preference assessment. The data was analyzed by using System Analysis and Design Tools. The outcome of the quick design is the development of the system follows. The development of the system follows by coding to meet the desired features. The next step is to demonstrate the partially done in the system to the End-user, for determining earlier the need of the End-user. The need of the End-user will be refined, develop and demonstrate incrementally. The system will be tested and debug. Finally, the system will be deployed for the different End-users (Figure 1).

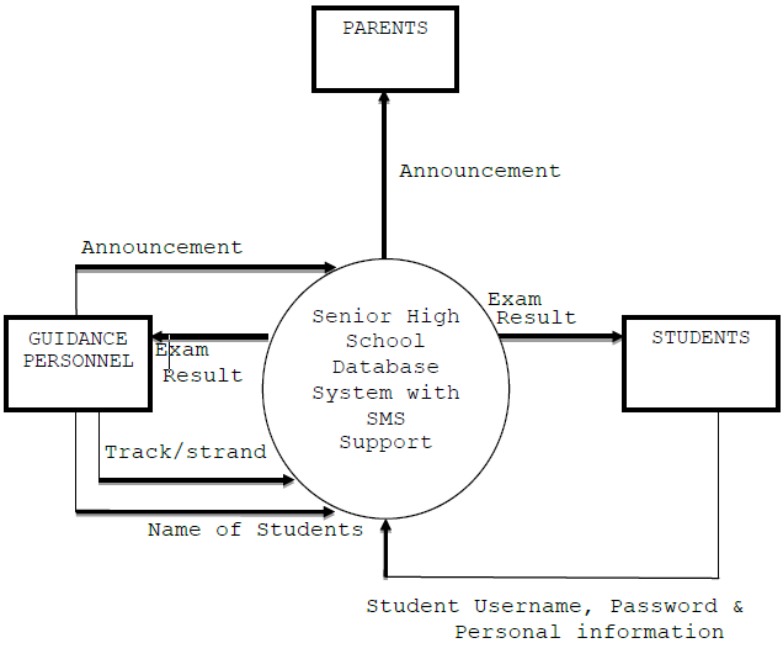

Figure 2. Data Flow Diagram

The figure above shows the Data Flow Diagram of the system. The Guidance personnel is in-charge to encoding the different End-user (Except for students), the content of the exam, and view assessment results per track. The students will register in the system, take the assessment and view the result. The parents will be notified with the student result (Figure 2).

Online ISSN: 3082-5121
Aloysian Interdisciplinary Journal of Social Sciences, Education, and Allied Fields
https://journals.aloysianpublications.com
Volume 1 Issue 7 (2025)

RESULTS AND DISCUSSION

This study presents the results and discussion based on the data collected.

1. The level of performance of the system according to McCall's criteria:

Table 2. System Characteristics

Criteria	N	Mean	Descriptive Rating
Auditability	263	4.55	Very Good
Accuracy	263	4.34	Very Good
Completeness	263	4.56	Very Good
Communication Commonality	263	4.65	Very Good
Conciseness	263	4.33	Very Good
Consistency	263	4.59	Very Good
Observability	263	4.98	Very Good
Operability	263	4.67	Very Good
Security	263	4.68	Very Good
Self-Documentation	263	4.65	Very Good
Simplicity	263	4.77	Very Good
Software System Independence	263	4.75	Very Good
Traceability	263	4.78	Very Good
Training	263	4.68	Very Good
Controllability	263	4.87	Very Good
Data Commonality	263	4.81	Very Good
Decomposability	263	4.39	Very Good
Error Tolerance	263	4.78	Very Good
Execution Efficiency	263	4.65	Very Good
Expandability	263	4.54	Very Good
Generality	263	4.66	Very Good
Hardware Independence	263	4.78	Very Good
Instrumentation	263	4.76	Very Good
Modularity	263	4.87	Very Good
Grand Mean		4.67	Very Good

On the functionality characteristics of the system, two hundred sixty-three (263) respondents evaluated the system with the Grand Mean of four-point sixty-seven (4.67). The system was interpreted to be Very Good. It was found out that the system functioned based to the desired track of the students

2. **Database system assessment using software evaluation criteria for software quality model.**

Table 3. Database System assessment

Assessment	N	Mean	Descriptive Rating

Online ISSN: 3082-5121
Aloysian Interdisciplinary Journal of Social Sciences, Education, and Allied Fields
https://journals.aloysianpublications.com
Volume 1 Issue 7 (2025)

Database	263	4.67	Very Good

The table above shows the assessment of the database system resulted to four point sixty-seven (4.67). The result shows that the Assessment of the database system was Very Good. It reveals that, the systems database is well organized and stable that the data needed for determining the tracks of the students produce with consistency.

3. **The acceptability of the system using ISO/IEC 9126-1:2000 survey questionnaire**.

Table 4. System Acceptability

Characteristics	N	Mean	Descriptive Rating
Functionality Characteristics	263	4.95	Very Good
Reliability Characteristics	263	4.97	Very Good
Usability Characteristics	263	4.97	Very Good
Efficiency Characteristics	263	4.99	Very Good
Maintainability Characteristics	263	4.98	Very Good
Portability Characteristics	263	4.98	Very Good
Grand Mean		4.97	Very Good

The acceptability of the system using ISO/IEC 9126-1:2000 software characteristics questionnaire resulted to a Grand Mean of four-point ninety-seven (4.97). The result shows that the acceptability of the system was Very Good (Table 4).

Conclusion and Recommendation

Senior High School Kto12 program was well implemented in Dr. Vicente F. Gustilo Memorial National High School in the division of Cadiz City. However, with the use of the system SHSDSS will probably improve the school performance in conducting the student track for senior high school. Using the system is easy and will direct with the categories which could be found certainly such as: adding the name of the students, adding strand and tracks, viewing the result of the assessment, generating reports, printing and saving to the databases. Assessment with the use of the system may not be considered a basis for student's intellectual capacity and credibility as to answer such questions, since some may not answer it honestly.

It is recommended The SHSDSS can effectively improve the present manual system in determining the track/strand of the students' base on the responses of the respondents. In this regard, a close monitoring may be further recommended to chase its purpose. Security of the databases must be the priority, students should preserve its confidentiality, once students may offer to anyone their password and username, and it is the researcher's commendation to advise the students not to give their password to anybody. Students may seek an advice from the guidance counselor after getting the result of the system provided they had undergone the assessment in the system

Online ISSN: 3082-5121
Aloysian Interdisciplinary Journal
of Social Sciences, Education, and Allied Fields
https://journals.aloysianpublications.com
Volume 1 Issue 7 (2025)

REFERENCES

Flagg, B. N. (1990). Formative evaluation for educational technologies. Routledge.

Hsieh, Y., Rand, N., & Kark, D. (2023). System and method for improving the resolution of channel data (U.S. Patent No. US20040083214). Google Patents. https://patents.google.com/patent/US20040083214

Joshi, M., & Pathak, V. (2015). A survey of SMS-based information systems. ResearchGate. https://www.researchgate.net/publication/277334889

Omair, A. (2014). Sample size estimation and sampling techniques for selecting a representative sample. Journal of Health Specialties, 2(4), 142–147. https://doi.org/10.4103/2468-6360.143978

Richey, R. C., & Nelson, W. A. (1996). Developmental research. In D. Jonassen (Ed.), Handbook of research for educational communications and technology (pp. 1213–1245). Macmillan.

Ronda, R. A. (2013, January 7). Yearender: DepEd's K-12 program goes full blast in 2012. The Philippine Star. http://www.philstar.com

Tingo, G. (2007). Methods and apparatus for providing SMS notification, advertisement and e-commerce systems for university communities (U.S. Patent No. US20070105536). Google Patents. https://patents.google.com/patent/US20070105536

University of Wisconsin. (2021). *The role of school guidance counselors in K-12 education*. https://online.uwsuper.edu

van den Akker, J. (n.d.). Principles and methods of development research. https://pdfs.semanticscholar.org