Republic of the Philippines
Department of Education
REGION IV-A CALABARZON
SCHOOLS DIVISION OF RIZAL
SAN MATEO SUB-OFFICE
GUINAYANG NATIONAL HIGH SCHOOL

SMARTeacher: Students' Learning Management and Academic Records Tracker (SMART)

An Action Research
Presented to the
DepEd Division of Rizal

FLORO T. DEL PILAR III

MARK ANTHONY B. EPETIA

MARCH 2024

SMARTeacher: Students' Learning Management and Academic Records Tracker (SMART)

FLORO T. DEL PILAR III
MARK ANTHONY B. EPETIA

Guinayang National High School
San Mateo Sub-office

ABSTRACT

The study aimed to develop and implement a system specifically designed for the teachers and class advisers of Guinayang National High School for efficient management and monitoring of students' data. Per OUA MEMO 00-0820-0130 issued on August 17, 2020, also known as the Guidelines on the Use and Administration of Microsoft 365 for Education, the researchers created the Students' Learning Management and Academic Records Tracker (SMART) using Microsoft 365. This tool aims to support teachers and advisers in effectively managing student records, including data on Learning Oriented Assessment (LOA), Student Report Cards (SF9), and Student Permanent Records (SF10), with a focus on ensuring quality, accuracy, systematic organization, and reliability to support the mandate of DepEd's MATATAG program particularly the '**Gi**ve support for teachers to teach better' part.

The researchers created the system and 63 teachers utilized it throughout the school year 2023-2024. Moreover, the researchers conducted a system evaluation to collect favorable feedback and suggestions for enhancing the system in the future. This study utilized a combination of qualitative and quantitative methodologies to collect data to address the research questions. The study employed a descriptive research approach to ascertain the respondents' level of satisfaction with the utilization of the system.

Based on the study's results, the project SMART is highly valuable and effective. The system is highly beneficial for educators and advisers in documenting and producing DepEd school forms such as the report card (Sf9) and the student permanent record (SF10). The system is user-friendly and greatly alleviates the workload of teachers. The system provides significant assistance and simplification for teachers and advisors in ensuring data accuracy, hence preventing errors in the inputted information regarding students and their grades. Considering the findings of the study, it is advisable to establish a connection between the system and all DepEd Forms. It is advisable to create the second version of the system according to the recommendations of the respondents.

ACKNOWLEDGMENT

The researchers wish to express their profound gratitude to those who in various ways extended their assistance and cooperation in the preparation and completion of this study. Special mention is addressed to the following persons who through their distinct roles contributed much to the accomplishment of this study.

Dr. DORIS DJ. ESTALILLA, Schools Division Superintendent, for her consideration in allowing the researchers to pursue and conduct their research in the Division of Rizal;

Dr. GLORIA C. ROQUE, Assistant Schools Division Superintendent; **Dr. ROSEMARIE C. BLANDO** and **Mr. FERDINAND C. PASCUAL**, CID and SGOD Chief, respectively, for their support towards research advocacy;

Dr. PITSBERG B. DE ROSAS and **Mrs. MA. CHRISTINA CAMARSE**, Public Schools District Supervisors in San Mateo Sub-office, for their professional guidance, technical assistance, and opportunity to conduct this study;

Dr. ELVIRA R. CONESE, **Dr. KAREN V. DELICA**, and **Mrs. RAQUEL T. ORTEGA**, District Principal Consultants in Research, for their valuable comments and motivation extended to accomplish this project;

Mrs. CATHERINE B. GONZAGA and **Mr. GILBERT O. CRUZ,** District Research Coordinators, for sharing their expertise, technical support, and valuable suggestions for the improvement of this study;

Co-Team Players in Guinayang National High School, for their time and effort exerted in support of the accomplishment of this research work;

Mrs. AIMEE JOYCE A. DEL PILAR, and their son **JUANCHO MIGUEL DEL PILAR** for the unconditional love, motivation, and support to finish this research project;

Ms. DIDITH NEBREJA, for the source of love, support, and inspiration to accomplish this study; and

Above all, to **ALMIGHTY GOD**, for the wisdom, knowledge, strength, courage, faith, perseverance, and overflowing blessings for the researchers to successfully accomplish this research work, in the service of their learners and fellow teachers.

- The Researchers

CONTEXT AND RATIONALE

Among the most essential responsibilities of a teacher is the maintenance of student records, which includes the production and recording of academic performance records. Grades and report cards are examples of academic performance records that offer insight into a student's growth and support educators and parents in making important decisions regarding a student's educational requirements. Therefore, every teacher must use a record-keeping system that is precise, dependable, user-friendly, and uniform. It is fortunate that the Department of Education has secured a Microsoft 365 account for all teachers so that they may use the applications for student records online. The information contained in this record is documented on the student's report card (SF9) and permanent record (SF10).

Report cards, also known as progress reports, offer written documentation of students' achievement of curriculum objectives for a specific timeframe. School report cards have multiple functions, such as enhancing accountability in the education system, aiding in school planning and budgeting procedures, offering feedback to administrators and teachers, and promoting social engagement, which can enhance civil society (Cheng, Moses, et al., 2016). School progress cards play a crucial role in facilitating the monitoring of a student's academic performance by instructors, students, and parents. Many parents consider it to be the most significant document they receive from the school. The content of the report card has a substantial influence on how parents perceive the school's level of care for their child. Therefore, it is crucial to provide accurate and dependable report cards.

The manual encoding and verification of data allows for a significant margin of errors and results in the generation of reports with reduced accuracy. Several educators and counselors are facing difficulties in finalizing their progress report cards (SF9), previously referred to as Form 138, SF10 (Form-137), and other documents about students' academic accomplishments. Compiling all of these materials is consistently a formidable task for every teacher during each academic quarter. Managing records and maintaining organization can be a highly time-intensive task for a teacher-adviser, particularly when they have a minimum of 50 students in their class. This requires extensive paper preparation and consumes the majority of the adviser's time, which affects the development of lessons for the students.

At Guinayang National High School, advisers and teachers are required to compile a summary of grades, report card (SF9), and SF10 every quarter. The process of entering all the necessary data to complete these forms is performed periodically. The researchers were motivated to design Project SMART, which stands for Students' Learning Management and Academic Records, due to the challenges faced by teacher-advisers in managing students' data. Kemoni and Wamukoya (2000) argue that efficient record-management systems are crucial for the smooth operation of an organization. The researchers propose digitizing the recording of students' academic performance reports as a potential solution to this issue. Document digitization enables educational institutions to retrieve data in a digital format, leading to enhanced efficiency (EduHealth, 2022).

The objective of this project is to create a system that will assist teacher-advisers in managing and producing student records. This study will also examine the level of satisfaction of the teacher-adviser about the correctness, dependability, and maintainability of the system. This project aims to assist teacher-advisers in effectively and dependably preparing students' records, as well as ensuring timely submission of all records.

ACTION RESEARCH QUESTIONS

This research explored the accuracy and efficiency of Guinayang National High School's Students' Learning Management and Academic Records (SMART) in preparation of the student records for the school year 2023-2024.

Specifically, this research answered the following questions.

1. What is the extent of satisfaction of the respondents in the use of Students' Learning Management and Academic Records (SMART) in terms of:
    1.1. accuracy;
    1.2. reliability; and
    1.3. maintainability;
2. To what extent does the employment of the Students' Learning Management and Academic Records assist teachers in terms of timeliness and punctuality of document generation and submission?
3. Which part of the SMART project still needs improvement?

PROPOSED INNOVATION, INTERVENTION AND STRATEGY

The Students' Learning Management and Academic Records (SMART) is a tool used by teachers and teacher-advisers in accomplishing LOA and other student reports such as transcript of records and others. It consists of 11 parts namely Data Input, Individual Card Slip, Final LOA, Quarterly Grades per Subject, Summary of Grades, Summary of Grades per Subject, SF10 Data, SF10 Front and Back, Card Slip, RCB Data, and Report Card Front and Back. As the tool is accessed and utilized online, the teachers are able to work with their fellow teachers whenever and wherever they are.

Data Input: Information about the students and their section are encoded here which will appear in all the other parts of SMART. Examples of the information are grade, section, name, LRN, gender, age, and name of subject teachers and subject coordinators.

Individual Card Slip: This is where pieces of information that appear on a card would be found. Using a dropdown menu, the teacher can just choose a student and the student's information including the grades he received per subject and quarter would appear and be ready to be printed.

Final LOA: This part shows the quarterly summary of grades per subject. This is usually shared to the district for the checking of LOA data.

Quarterly Grades per Subject: This is where subject teachers encode the grades of the students per quarter which will become available to all the other parts of the SMART.

Summary of Grades: This is where the advisers can see the summary of grades of the students per subject in a quarter. General averages, remarks, ranks, and honors are included in this section.

Summary of Grades per Subject: This is where the subject teachers can see the summary of grades and the average of the students in their subjects.

SF10 Data: This is where the advisers can see the data of the students that are needed for the SF10 which is generated from the Input Data part of the SMART.

SF10 Data Front and Back: This is where the SF10 document is generated and ready for printing.

Card Slip: This is where the summarized card slips of the entire class is generated.

RCB Data: This is where the advisers input additional information on the students such as their number of attendance, advance units, lacked units, and the students classification. Moreover, the adviser can input the Maka-Diyos, Makatao, Maka-Kalikasan, and Makabansa performance of their students.

Report Card: This is where the report cards are generated for printing as an official document.

ACTION RESEARCH METHODS

A quantitative descriptive research design was implored in this study. Wayne W. Daniel (2020) stated that a quantitative descriptive study design entails gathering numerical data to depict a certain occurrence or population without altering any variables. This research kind tries to offer a current overview or features of the issue being studied.

A. Participants and/or other Sources of Data and Information

The participants of the study are the 63 teachers and teacher advisers of Guinayang National High School for SY 2023-2024. All these teachers used the SMART project in encoding and computing the grades of their students and generating official documents such as SF9 and SF10.

B. Data Collection

Upon completing the system, the teachers were oriented about the system and all the instructions the teachers should be aware of. After using the system for three quarters, the teachers were asked to evaluate the system. A validated evaluation tool was distributed to the teachers to obtain feedback on the system's accuracy, reliability, maintainability, and functionality. The researchers also gathered recommendations from the teachers.

C. Data Analysis

The survey was conducted via Google Forms. The results were compiled using Microsoft Excel. Measured with a system that assigns different values or importance to different factors. The mean and standard deviation were utilized to assess the level of satisfaction among advisors on the correctness, dependability, and maintainability of the Adviser's Record Management System. It is also employed in assessing the degree of system utilization about the promptness of document production and submission. The issues faced by teacher-advisers in utilizing the system will be described using text or verbatim form. It was also utilized to list the teacher-advisers' recommendations for enhancing the system.

RESULTS AND DISCUSSIONS

Problem No.1: *What is the extent of satisfaction of the respondents in the use of Students' Learning Management and Academic Records (SMART) in terms of:*
1.1 accuracy;
1.2 reliability; and
1.3 maintainability;

Table 1 Respondents' Feedback on the Accuracy of SMART

Indicators for Accuracy	N	Mean	SD	VI
The system produces accurate and correct data, allowing SF9, SF10, LOA, and Card Slips to be generated and checked quickly.	63	4.53	1.02	Very Satisfied
The system's formulas were valid, resulting in accurate data computations	63	4.53	1.02	Very Satisfied
The system's default data adheres to DepEd standards and regulations.	63	4.53	1.02	Very Satisfied
		4.55	0.98	Very Satisfied

Scale: 4.21-5.00 (Very Satisfied), 3.41-4.20 (Satisfied), 2.61-3.40 (Fairly Satisfied), 1.81-2.60 (Not Satisfied), 1.00-1.80 (Extremely Not Satisfied)

Accuracy is a crucial characteristic of a system as it determines how closely the actual controlled process aligns with the desired output. Table 1 presents the feedback from respondents regarding the accuracy of the Students' Learning Management and Academic Records (SMART). The evaluation results indicate that teacher-advisers are very satisfied and agree that the system

demonstrates a high level of accuracy, with a mean of 4.55 and a standard deviation of 0.98. The respondents also agree that the system generates and verifies accurate and correct data, enabling quick generation and verification of forms, with a mean of 4.53 and a standard deviation of 1.02.

Table 2 Respondents' Feedback on the Reliability of SMART

Indicators for Reliability	N	Mean	SD	VI
The system makes it simple to complete tasks, especially preparing SF9 and SF10.	63	4.58	1.01	Very Satisfied
The system makes it simple for adviser to identify student academic awardees.	63	4.55	1.02	Very Satisfied
The system facilitates easy encoding of data which maximizes my time in preparing student records.	63	4.55	1.02	Very Satisfied
The system is simple to use, reliable, and straightforward to understand.	63	4.53	1.02	Very Satisfied
System designs are based on DepEd requirements and system design alternatives can then be formulated and evaluated.	63	4.53	1.02	Very Satisfied
		4.55	0.98	Very Satisfied

Scale: 4.21-5.00 (Very Satisfied), 3.41-4.20 (Satisfied), 2.61-3.40 (Fairly Satisfied), 1.81-2.60 (Not Satisfied), 1.00-1.80 (Extremely Not Satisfied)

Reliability is the likelihood of a product successfully carrying out its intended function without any malfunctions or failures within a specified timeframe and under specific conditions (Phister & Olwell, 2022). To validate the system, the researchers conducted a survey of the teacher respondents to assess the system's reliability. Table 2 displays the feedback provided by the respondents regarding the reliability of the Students' Learning Management and Academic Records (SMART). The result shows that the teachers are very satisfied and have acknowledged that the system is very reliable, with a mean score of 4.55 and a standard deviation of 0.98. The respondents also concurred that the system designs adhere to the requirements set by DepEd. Furthermore, they said that alternative system designs can be developed and assessed, with a mean score of 4.53 and a standard deviation of 1.02. Amrutkar and Kamalha (2017) conducted a study that highlights the significance of reliability metrics in identifying the components that have a greater impact on improving system reliability or causing system failure.

Table 3 Respondents' Feedback on the Maintainability of SMART

Indicators for Maintainability	N	Mean	SD	VI
The formulas of the system, as well as the data encoded in the system, were protected by security measures.	63	4.50	0.96	Very Satisfied
The system is an internally organized whole where elements are so intimately connected that they operate as one in relation to each part.	63	4.53	1.02	Very Satisfied
The system can be modified and restored to operational status after failure occurs	63	4.53	1.02	Very Satisfied
		4.52	0.97	Very Satisfied

Scale: 4.21-5.00 (Very Satisfied), 3.41-4.20 (Satisfied), 2.61-3.40 (Fairly Satisfied), 1.81-2.60 (Not Satisfied), 1.00-1.80 (Extremely Not Satisfied)

Maintainability refers to the ability of a design, assembly, and installation to be restored to its normal operational state within a set timeframe after a system failure. This restoration is achieved by employing prescribed repair techniques and processes. Table 3 displays the feedback provided by the respondents regarding the maintainability of the Students' Learning Management and Academic Records (SMART). The result shows that the teachers are very satisfied and in agreement that the system has a high degree of maintainability, with a mean of 4.52 and a standard deviation of 0.97. The respondents also concurred that both the formulas and the encoded data in the system were safeguarded by security measures, with an average rating of 4.50 and a standard deviation of 0.96. Maintainability and reliability are interconnected since the ability to restore a failed product or system to its operational state is a crucial aspect of ensuring its reliability (Schenkelberg, 2022). The

researchers conducted this survey to assess the system's maintainability and assure system validation.

Problem no.2 To what extent does the employment of the Students' Learning Management and Academic Records assist teachers in terms of timeliness and punctuality of document generation and submission?

Table 4 Respondents' Feedback on the Timeliness of SMART

Indicators for Timeliness	N	Mean	SD	VI
The system helps me generate forms like SF9 and SF10 easily and accurately on time.	63	4.44	1.08	Very Satisfied
The system helps me submit forms to my department head on time.	63	4.46	1.10	Very Satisfied
The system helps me identify students with academic excellence awards on time.	63	4.49	1.07	Very Satisfied
The system helps me identify students who did not do well academically.	63	4.52	1.06	Very Satisfied
		4.48	1.05	Very Satisfied

Scale: 4.21-5.00 (Very Satisfied), 3.41-4.20 (Satisfied), 2.61-3.40 (Fairly Satisfied), 1.81-2.60 (Not Satisfied), 1.00-1.80 (Extremely Not Satisfied)

Being timely in reporting is crucial for the efficient delivery of public services as it plays a vital role in the monitoring and decision-making processes of management (Ofresio, 2017). Table 4 displays the feedback from teachers regarding the timeliness of utilizing the *Students' Learning Management and Academic Records* (SMART) in relation to the promptness of document submission. The results show that the teachers are very satisfied and agreed that the use of the system was both successful and efficient, with a mean score of 4.44 and a standard deviation of 1.08. Respondents also concurred that the system facilitates the effortless and precise generation of forms. Additionally, the system aids in the timely submission of forms and assists the teachers in readily identifying students deserving of academic excellence awards and those in need of remediation. The mean of all the criteria is 4.48, and the standard deviation is 1.05.

Problem No.3 Which part of the SMART project still needs improvement?

The Students' Learning Management and Academic Records (SMART) is an innovation that sought to make the recording and printing of students' records much more efficient and effective. In effect, it also lessened the administrative work of teachers significantly. After a year of usage of SMART, this research aimed to solicit pointers for improvement from the teachers.

The teachers are appreciative of the system as it lessened their burdens in preparing the forms of the students. The system serves its purpose effectively and efficiently so much so that the teachers are proud of it whenever they hear how hard-up other teachers are from other schools when it comes to forms. The system is also user-friendly and even the technophobe teachers had no problems using it. Tasks compliance had been easy because of the system and the teachers commended the innovators of the system.

Nonetheless, the teachers shared the following pointers for improvement: Firstly, a lock feature per quarter is necessary for added security. Advisers print copies of cards for the students every quarter so teachers must be limited in changing the marks they already input in the system unless the change is communicated to the students and their advisers. Secondly, teachers who made revisions must be detected by the system so that the advisers can always approach the right person on clarifications for the changes. Thirdly, for printing purposes, there should be a way for the system to be made editable so that unnecessary rows and columns may not be printed. Moreover, the layout can still be improved by following the latest form formats. Fourth, there should be an option on the appearance of failed marks on generated card slips since teachers sometimes opt to not give a mark yet instead of showing a failed mark to give way to the changes that will come after remediation classes. Lastly, the most problematic part of using the system is the unstable and unreliable internet connection of the school. Although the system cannot be blamed for this particular flaw, it would be nice to take note of the need to improve the internet connection of the school.

RECOMMENDATIONS

Based on the results of the study, the researchers made the following recommendations:

To the School Head. The researchers recommend that the school head should offer specialized training in Microsoft 365 and other data management techniques to improve the skills of the teachers and the IT teacher responsible for improving the system.

To the Teachers. The researchers suggest increasing the frequency of LAC sessions for teachers to enhance their digital proficiency, which is essential for effectively utilizing the system. Additionally, it is recommended that the teacher participate in a seminar focused on enhancing their proficiency in utilizing Microsoft 365.

To all other schools within the district. Various district schools may implement the creator's approach through benchmarking to reduce the amount of paperwork required and enhance the precision and dependability of students' created documents.

To the System Innovators. Taking into account all the ideas and suggestions provided by the respondents who utilize the system in the process of creating student records. These recommendations are quite beneficial for enhancing the system in the future.

PLANS FOR DISSEMINATION AND UTILIZATION

After the conduct of the study, the researchers developed an action plan for the improvement and continuity of Project SMART. The following schedules are set for the launching of Project SMART 2.0 for the SY 2024-2025.

OBJECTIVES	ACTIVITY	PERSONS INVOLVED	TIME FRAME	RESOURCES NEEDED
Discuss the results of the study to the Deped Community	Presentation of the Result of the Study to the School.	GNHS Research Team Floro T. del Pilar III Mark Anthony B. Epetia	INSET (one day)	Notice of Meeting Research Manuscript PPT Presentation
	Presentation of the Result of the Study to the District Office	PSDS Floro T. del Pilar III Mark Anthony B. Epetia	San Mateo Sub-Office Research Presentation (1 day)	Notice of Meeting Research Manuscript PPT Presentation
	Presentation of the Result of the Study to the 11th Division Research Conference	Floro T. del Pilar III Mark Anthony B. Epetia	11th Division Research Conference (1 day)	Memorandum Research Manuscript PPT Presentation Travel Order if Applicable
Develop of Project SMART 2.0 based research recommendations	Development of Project SMART 2.0	Floro T. del Pilar III Mark Anthony B. Epetia	June-July 2024	DepEd Memorandum for School Forms Recommendation form Project SMART 1.0 Microsoft 365
Launch Project SMART 2.0 for SY 2024-2025	Launching of Project SMART 2.0	Floro T. del Pilar III Mark Anthony B. Epetia	August 2024	School Memo
Conduct Training for Teacher-Advisers on the Utilization of SMART	Training of Teachers on the Utilization of SMART	Floro T. del Pilar III Mark Anthony B. Epetia	August 2024	School Memo

Utilize SMART for Student Record Management	Utilization of SMART	Floro T. del Pilar III Mark Anthony B. Epetia	SY 2024-2025	School Memo
Evaluate Project SMART 2.0	Evaluation of Project SMART 2.0	Floro T. del Pilar III Mark Anthony B. Epetia	June-July 2025	Evaluation Tool using Google Forms

Financial Report

Activity	Eligible Expenditures	Quantity	Cost in PHP	Source
For the printing of manuscripts and concept papers	Bond Papers	3 rims	900.00	MOOE
	Printer's Ink	2 sets	2,000.00	MOOE
Research dissemination expenses	Food	For 7 AP Teachers plus Research Committee members/ other faculty members	1,000.00	AP Budget/ Canteen/ MOOE
Research presentation in the district	Registration	2 researchers	600.00	MOOE
Total			4,500.00	

References

Cruz and Ramos (2022). Project ARMS: ADVISER'S STUDENTS' RECORD MANAGEMENT SYSTEM (ARMS) USING MICROSOFT EXCEL

Phister and Olwell (2022). SEBoK: Guide to the Systems Engineering Body of Knowledge. System Reliability, Availability and Maintainability https://www.sebokwiki.org/wiki/System_Reliability,_Availability,_and_Maintainability

Schenkelberg F. (2022). Reliability and Maintainability Management: A Primer. https://reliabilityweb.com/articles/entry/reliability_and_maintainability.

Knudsen (2021). School Report Cards in The Gambia Exploring perceived opportunities and challenges of digitization. https://www.mn.uio. no/ifi/english/research/groups /is/research-library/masters-theses/master-oystein-knudsen.pdf