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# eClaReMo: Web-bases Attendance Monitoring System for Senior High **School Teachers**

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#### Abstract

Managing and monitoring student performance consumes time and often a tiring process for a teacher. For instance, student attendance is being neglected due to limited time which oftentimes creates dilemma on assessing attendance, performance and justification. Another difficult task to do is tracking the student record that evaluates a student's quarterly performance. Although teachers are equipped with management abilities, an innovation to help lessen the burden of teachers is highly recommended, especially, in this era where technology is at its peak. This study aimed to attend to the growing needs of teachers in today's generation to allow them manage student's class record using web-based application. The system will provide teachers to comfortably manage and monitor not only the attendance of the students but also all the records pertaining to a specific subject performance which includes quizzes, recitations, projects and examinations using the growing web technology.

Keywords: Web-based applications, student monitoring system, mobile applications, class record system

#### Introduction

Teachers are the most valuable professionals in the society. Their knowledge and skills keep our education system to cope with the changing world. Some of the responsibilities of the teachers are monitoring and managing student performance. These roles must be done with high accuracy and credibility to ensure that the evaluation of a student performance is accurate and reliable. Accuracy and reliability of the student performance evaluations are vital. According to Sondergeld (2014), teachers' standard daily routines are attendance checking, performance assessment, and classroom management preparation; thus, this standard routines are broad enough to require longer class time.

In the current situation, teachers are challenged when imparting their knowledge and skills through lecture proper due to limited time given. As mandated by the Department of Education (DepEd), each subject consists of four teaching units distributed to four teaching hours per week distributed to one hour each subject daily (Deped Order No. 8, series, 2015). Following this guideline, teachers have limited time in checking attendance, recording performance, and

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computing student outputs. Timely submission of student performance report is at risk. According study of Resuelo (2017)<sup>[32]</sup>, teachers, being the major sources of information, make sure that the pieces of information they impart and handle are systematic and organized. They have to record attendance strictly and monitor the academic performance of their students, thus, proper classroom management is very vital. Not being able to do so will greatly affect the effectiveness and efficiency of a teacher and the development of a student.

Today, when modern technology is at its peak, maximizing its usage is highly recommended. Integration of modern technology is helpful to teachers in performing their daily routines. In this modern age, teachers are left behind. They are fixed to following a "pen-and-paper" type of procedure that demands ultimate time and effort in doing so. Like transport technologies and other emerging technologies which evolution is parallel to the changing world of technology are visible, technology could be useful to teachers to perform their tasks in full accuracy and dignity.

In the Philippine setting, most of the teachers are not

moving forward parallel to the emerging globalization. In the study of Motiwalla (2007) <sup>[25]</sup>, correlation between education and computers is collaborative. Mobile phones are used in the traditional classroom-based teaching. Same effort will help if enhancing class record monitoring and keeping will be used through other handheld devices like laptops and tablet PCs.

Teachers are still practicing the pen-and-paper procedure. In the process, teachers encounter challenges in monitoring and managing their class records. These challenges include time constraints in attendance and other performance checking, monitoring, and keeping, record security breech, lost records and retrieval difficulties. Because of these difficulties, integration of modern technology will be helpful; thus, eClaReMo: Web-based Class Record Monitoring System has been conceptualized. eClaReMo is a web-based application that will lessen and simplify the manual procedure being used by teachers using the power of web-based application through the use of modern electronic communication devices such as cellphones, laptops, tablets or even personal computers that has internet connection.

# **Related Studies and Literature**

# Teacher's beliefs and Technology Integration

According to Kim *et al.* (2013) <sup>[15]</sup>, teachers have different beliefs related to technology integration practices. Some believe that the nature of knowledge and learning is different. Others believe that integrating technology effectively improves the teachers' ways of teaching, and some believe that implications on professional development are at high risk in quality teaching. In this study, the beliefs of the teachers are highly considered; since, they will be implementing new set of methods to improve their class management and monitoring skills using technologies that are highly available. In this study, the researcher presented the power of web application in minimizing work loads of teachers. Using a web-based application is cost effective in terms of development. It is accessible everywhereanywhere, and is adaptable to increase workload.

#### Attendance Tracking System

Dobson *et al.* (2013) <sup>[3]</sup> have formulated the system that includes identification tags with wireless communication capability, scanners for detecting attendance, a server in communication with the scanner, handheld devices for attendance trackers like teachers and a software running on the server, receiving and managing the attendance data received from the scanners and for generating reports. This invention has clearly motivated the researcher to pursue further not only the attendance checking enhancement but also the class record management.

# Method and System for Monitoring and Filtering Data Transmission

The system is a present invention made by Irving *et al.* (2014) <sup>[13]</sup>. In the invention, the team has provided the creation of a secure virtual classroom through which teachers have effectively used the Internet in collaborating students and classes in a shared learning environment. The teachers can make a collaborative community using ICT technologies.

This invention type of study has a great impact on the

development of eClaReMo in terms of using the power of the web application and the Internet.

#### System and Method for Real Time Tracking of Student Performance based on the State Educational Standard

This system provides feedback on the educational standards within a school developed by Nolasco (2013) <sup>[28]</sup>. He has provided the system an interface for access to institutions standard through downloadable database of the system. The system has control modules which enable the user to establish educational programs associated in the institution. Real time reports on student performance are provided.

This system is related to eClaReMo in terms of developing modules allowing users to establish educational programs such as the learning areas (subjects) in line with the standards of the institutions. Real time reports on the student end users and teacher end user are also provided to relevantly check student performance.

# Android Based Application for Attendance Monitoring

Manual attendance taking process is time consuming (Hawanna *et al.*, 2016)<sup>[9]</sup>. Biometrics system has been considered to address the situation with which hardware and software applications have brought together to create a system that can provide fast authentication and verification without falling in queue. In the study, reliable and real time application on android operating system has been considered to track authenticity of users. Since android application is widely known and used platforms of mobiles phones and tablets, the researcher's solution is to maximize its usage; thus, he integrated android application in his study. Their study had greatly influences the development of eClaReMo but in another platform, instead of making use of mobile application alone, the proponent decided to develop a web-application that can be easiy accessed not only in android phones but to different modern electronic devices that is capable of accessing the worldwide web.

Furthermore, the researcher has introduced a solution to the challenges in the manual attendance monitoring with high reliability, time-saving and controllable application.

The aforementioned study is relevant to the current project, since, proving the need to innovate the manual process of class record monitoring is being proposed considering reliability and efficiency.

#### **Teachers Adoption of Technology**

Aldunate (2013) has emphasized that the technology adoption is modelled as dynamic transitions between costs and benefits. He explained that school teachers do not generally make effective use of technology in their teaching routine. He described the type of technology and the type of teacher towards innovation. These resulted in further elaboration of teacher's characteristics in technology adaptation based on the learning curve of new technology proposed for software development.

This article has helped the researcher of eClaReMo to assess the characteristics of the teachers in adopting the developed web-application.

# Automated Attendance Monitoring System using Android Platform

Kumbhar, Wanjara, Trivedi, Khairatkar, and Sharma (2014)

<sup>[9]</sup> published about the development of Attendance4 Monitoring System using Android Platforms which created a serious impact in the management of student attendance generation report phase. In the study, user authentication was considered a major factor in designing the system. Unique identification using the ID cards for both faculty members and students was used to enable them to register and sign-in to the system. This is significant to this study to secure authenticity of users to avoid false information in the future.

#### Automated Attendance using Android Devices

The study of Mendonca, D'mello, D'souza, and More (2015) <sup>[24]</sup> emphasized that the automated attendance android application is very effective. It reduces time, effort and resources such as papers and pen for both teachers and students. In the study of Mendonca, *et al.* (2015) <sup>[24]</sup>, West Chester University faculty concluded that the system eliminates tedious work of teachers of maintaining different attendance sheets for different classes and subjects.

In the aforementioned project, the researchers have introduced and recommended further enhancement of the project by adding several functions to eliminate the tedious conventional way of implementing class recording. Because of this study and recommendations, the researcher has included other functions that help in lessening the work loads of teachers and having more time preparing their lessons.

# Mobile Technology: Case-Based Suggestions for Classroom Integration and Teacher Educators

Herro *et al.* (2014) <sup>[10]</sup> have emphasized the mobile technologies role in the lives of the 21st century population. They have proved that people today use computers and other handheld devices to navigate personal, social and career responsibilities; thus, educators have long recognized the potentials of mobile technology in the educational setting. This paper has positively contributed evidence of possible integration of mobile technology in the classrooms and greatly motivated the researcher in pursuing the development of eClaReMo.

### Looking in Classrooms

Good and Lavigne (2017ab) <sup>[5, 6]</sup> have described classroom life from the student and teacher's perspectives. They have observed that students are highly motivated when teachers show their performance output from a specific learning area and the teacher's expectations towards student's learnings are high. With this, eClaReMo was strongly proposed to be implemented, for it can show performance report per student basis and so as per classroom evaluation which will greatly favor the needs of the teachers and the students.

# Revisit the Effect of Teaching and Learning with Technology

Lee *et al.* (2013)<sup>[20]</sup> have showed the effect of technology in the teaching and learning activities of teachers and students. The researchers have generally obtained an overall effective outcome from the sample data specifically in the cognitive and met-analytic abilities; also, this study proved how technology would greatly help teachers in managing their class records effectively.

#### Statement of the problem

The study aimed to address the issues in relation to all difficulties of student evaluation during enrollment such as the time consuming and an error prone processes in selecting course for a certain student to enroll. To solve this problem, the development of a system that will help to solve all those said issues became necessary which turned out to be the purpose of the study. And to achieve this purpose, answers should be made to the following fundamental questions: How may an automated student evaluation system be developed? How may the Kiosk be designed? And how may system be tested in terms of: security, functionality, accuracy, efficiency and user – friendliness?

### Objectives

To solve these issues, the study aimed to design and develop a Web-based application to enhance the traditional way of monitoring and managing student class records of teachers.

The specific objectives to accomplish this goal are identified as follows: to design a system that will reduce time constraints in student attendance checking, to design a system that provides secure consolidation of student academic records and personal information, to design a system that will automate the generation of academic performance and evaluation process and to design a system that will simplify the preparation of performance report of each student.

# System development methodology

The development of the system was guided by the System Development Life Cycle as (SDLC) which the proposed system needed to produce an accurate algorithm to accomplish its goal as shown in figure 1.



Fig 1: System Development Life Cycle

In the planning stage, the researcher has initially planned how and in what way should the system be designed and developed. Since the system aimed to develop a web-based application rather than widely formulated android application, PHP latest version has been chosen. PHP is an open source scripting language that is widely used in developing a web-based system. The project provides user

access controlled by an administrator of which PHP is known for such function.

In the requirement definition stage, the data from the three respondents are operationalized. Operational modules of the web application have been identified.

In the designing stage, the system's database has been designed. The system architecture, functional modules and the GUI has been initiated.

In the development stage, the actual creation of source code of the system was done. All modular functions identified on planning and finalized on requirement definition stage, and all concepts from the design stage were considered.

In the implementation stage, the system had week of dry run presentation to the three respondents (main users) of AICS Olongapo Branch mainly the admin, students and teachers, for the verification of validity of the system. Then the initial testing, the system has undergone three (3) iterations for betterment of the web application.

In the maintenance stage, after the implementation stage, the proponent tested the validity and reliability of the application through the help of Survey Questionnaires guided by ISO 25010 also known as Software Quality Model Form while system is up and running for the users to be tested and be used.

#### System design



Fig 2: Operational Framework

Figure 2 shows the operational framework of the study. As shown in the figure, the system offers three user interfaces; the Teacher's Interface, Student Interface and the Admin Interface. Each offers functionality that is unique for security and integrity purposes.

The Admin Interface is the platform where general data are being created such as the Curriculum, Class Record Data uploading, Teachers' subject loading, and Students' data collection. The Integrity purposes is the only platform where submitted class records can be altered or modified. Loading and de-loading of subjects may also be established in this interface. This specific interface generates all necessary data that are needed in the other two interfaces. Once curriculum is set, the system is now available for class setting which includes subject management and student management. Once classes and subjects are established by the Admin, class monitoring is now available for management in daily basis.

At the Student's Interface, students generally need to activate their accounts to establish the record in the Class Record Monitoring Sheet. A student is given a specific account to activate. Once activated, the student may now able to see his own performance in a specific class.

In the Teacher's Interface, students' class performance management and pre-modification are available. In this interface, a teacher is given a specific account verifiable through pre-inputted data available only at the Admin Interface. In this account, the teacher is only allowed to see and manage all given class loads. The teacher only needs to input raw scores and the system automatically computes the Final Rating of all students in the Class Record.



Fig 3: Conceptual Framework

Figure 3 represents the conceptual framework of the project study. As shown in the figure, the inputs are mainly the school curriculum, student's individual information; the teacher's handled subject description, and the individual student record per class monitoring sheet, the attendance, examination results, performance tasks done and graded, and the written works. As inputs have been accepted, the web application will now save necessary data into the database using local database using MySQL server for later retrieval and needs which can either be viewing on the students and administrative side or even printing. Teachers and the administrative office will now enjoy the benefits of automated student ranking per subject handled by a specific teacher. Students' class record reports are even ready in the comfort of their homes through Internet connection and any device where browsing is possible.

The system is generally designed to have authentication at the teachers, student and staff's ends. This is to ensure that all entities accessing a specific record are known and verified.

Table 1: Hardware Specification for Admin Users as Server

Hardware	Recommended
Processor	Intel Core i5 and equivalent
Random Access Memory (RAM)	At least 4GB
HDD	1TB would be best
Lan Card	100 Mbps Ethernet
Mouse, Keyboard, Printer	any
Monitor	At least 10" LCD

Table 1 shows the hardware specification minimum requirement of the Admin Users to be able to maximize the use of the Web Application. It is advised that the Admin User must have a great specification due to one of its function, serving as the main Server of the Database. The development of the system is already based on this specification; thus, it is recommended that the Admin user will follow the same requirement, if not, a lower version may do but expect slower output. The admin user may also use the same hardware requirement as the Teacher and Student user if the purpose is only for viewing and modifying purpose.

Table 2: Hardware Requirement for Student and Teacher Users

Hardware	Recommended
Processor	Any capacity
Random Access Memory (RAM)	Any capacity
HDD	Any capacity
Lan Card	Any capacity
Mouse/keyboard	Any compatible WLAN/LAN/Data Connectivity
Monitor	Any LCD screen for better viewing

Table 2 shows the hardware requirement for Teacher and Student users if opt to use computer set which is very much applicable. The database of the proposed system was developed using MySQL. PHP language and MySQL collaborate; since, they are used in web-application development. According to W3 Schools, MySQL is used in high-profile and large-scale websites such as Google and YouTube; thus, the researcher took advantage of using MySQL as academe's database platform.

Table 3: Software Requirement for Development and Designing

Software	Recommended
Operating System	Windows 10 64-Bit
Programming Languages	PHP 5, CSS,
Designing	JQuery, Bootstrap
Database	MySQL

#### Designing

The System has a database consisting of 9 major tables for user, curriculum, performances, assessments, final grade, written works, section, attendance, and loading as shown in the Entity Relationship Diagram in Figure 4. A student has information needed in generating user account specifically created for students enrolled in a specific subject per class schedule. The student can have multiple subjects, so he may be included to multiple class records. The student has attendance in each class per subject basis.

For teachers, a teacher can handle subjects which have been pre-loaded to the account. Each subject has class record for monitoring. On the other hand, a given subject belongs to a specific curriculum where different percentages for subject type is given (core, applied, and specialized).

The curriculum is only managed by the Admin user for system's integrity and data flow security. Only on this end that all other activities start. Post-modification of data are available only at the Admin user's account interface. In doing such, the Admin user shall follow the protocol set by the institution as outside measures. This protocol is beyond the control of the system.



Fig 4: ERD

**System architecture:** Figure 5 shows the data flow of the System. A student is given a specific account to activate. Login details are pre-generated by the administrator for integrity purposes. Once details are verified, the system allows the student to view attendance and class record in a specific class. On the other hand, a teacher is given a user account as well. This account serves as the unique passage in monitoring the class record and student attendance. At the administrative side's users, there can be many admin users but functions are pre-identified such as editing of class record, printing and viewing of class standing.



Fig 5: Data Flow Diagram

#### **Functional Modules**

The system's main page consists of five (5) functional modules namely: Teachers module, Curriculum Module, Student Module, School Forms Module, and Account Module as shown in figure 5. Each module offers a unique collaboration in between data which is greatly needed to other modules.

#### List of Modules

- 1. Teacher Module: This is where the admin adds new faculty and staff members for them to access their electronic class records. This module also includes management tools at the Manage Teacher sub-module. In this platform, the administrator activates the added teacher which is later be used in the Online Registration. Initially when added, a teacher's account is at Pending Mode waiting for the admin side to activate the added teacher to continue using the web application.
- 2. Student Module: The Student Module allows the admin user to add and manage added students in the system. This platform is very important because students who are not in the system cannot, in anyway, register and enjoy the benefit of the system. It is advised that the admin user uses the mass upload form to lessen the time it takes on one by one encoding process. This part of the system also includes the activation of student account before registering into the Online Platform where viewing of Class Record and Class attendance is available for the students to see. This is similar to the teacher's account. The student account needs activation in the admin side for integrity and security of data purposes.
- **3.** School Forms Module: This module is developed to generate some necessary School Forms that is needed for submission. It contains sub-modules which include printing class record, school form 1, school form 2, class graphical report, top 10 reports and student's individual report as shown in figure 6 below. This function is only available on the admin user's side for data security and integrity.
- 4. Account Module: This module is developed to be the last resort on modifying Super users of the system. It is also the platform where user maintenance is available.

#### **Results and Discussion**

In implementing the software development life cycle model chosen, the researcher had made two iterations. The following assessments were analyzed and successfully altered:

#### **1st Iteration**

Upon Implementation of the designed hardware and software requirement, the generated output is not seemed to be the desired presentation. Initially, the output at the School Forms module only includes two reports, Class Records and Print School Form. As shown in figure 6 below, the proponent had to redesign the said module to fit the necessary output reports needed by the administrative side to satisfy the Deped's DO 88 S 2015 on Submission of Reports. The proponent must design desired generated reports. After redesigning all generated reports in accordance to the prescribed templates and appropriate output elements, analysis and risk assessment must have been done once again.



Fig 6: School Forms Addition of Sub-modules

In the first implementation, it has also observed that creation of adding students in the system one by one is a tedious task; thus, the proponent has added a platform where mass uploading has been considered. The proponent used the csv type of file to make the task better. Figure 7 below shows the actual platform.



Fig 7: Multiple Upload Platform for Student Data

#### 2nd Iteration

After the administrative staff has explored the system, the proponent considered putting the system on test under the teacher/faculty users' side. The teachers have observed the difficulty in creating Classroom Management under the seating management area; thus, the proponent changed the graphical User Interface of the Attendance Checking module. As shown in figure 8, the system automatically distributes the students name in a chair figure for determining where a student shall seat. The proponent used the student numbers for this iteration. This way, it is easier for the teachers to manage their students' seating arrangement.



Fig 8: Attendance Checking with Seating Arrangement Plan

Furthermore, it was also observed that the system has not considered showing student Class records in alphabetical manner and separating male and the female students. Because of this, the proponent redesigned the class record considering such request by the faculty members. Figure 9, 10, 11 and 12 show the actual class record platform for Written Works, Performance Task, Assessment and Final Grade respectively.

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S Attendance Checking 🛛 🖈 Daily A	ttendance	Lean	ner's Nam	es 🖌	<sup>°</sup> Written V	Vork's	La Perfo	mance	🔚 Ass	essment	t≢ Fin	al Grade		
Written Work's														
# Names	Gender	1	2	3	4	5	6	7	8	9	10	Total	PS%	WS%
HIGHEST POSSIBLE SCORE		10	10	10	0	0	0	0	0	0	0	30	100	25
1 JOMAR, ADOR	Male	10	9	10	0	0	0	0	0	0	0	29	97	24
2 CASHEY, CARLOS	Female	9	8	9	0	0	0	0	0	0	0	26	87	22
3 CRISTINE JOY, DUMANGAS	Female	7	8	10	0	0	0	0	0	0	0	25	83	21
4 EUSHABEN KAYE, TOLENTINO	Female	3	9	2	0	0	0	0	0	0	0	14	47	12
5 JENAE DELYN, SAN DIEGO	Female	5	7	2	0	0	0	0	0	0	0	14	47	12
6 JULIA LEE, BELTRAN	Female	10	9	10	0	0	0	0	0	0	0	29	97	24
7 MA.CRISELDA, VILLA	Female	10	6	10	0	0	0	0	0	0	0	26	87	22
8 MARI CHRIS , BALUYOT	Female	10	7	10	0	0	0	0	0	0	0	27	90	23
9 REJEAN, BUSTAMANTE	Female	10	7	10	0	0	0	0	0	0	0	27	90	23
10ZYLIYAAH JADE, EDNALAGA	Female	0	0	0	0	0	0	0	0	0	0	0	0	0

Fig 9: Written works Platform

Attendance Checking * Daily A	Ittendance	1 Lean	ner's Nam	es /	* Written V	/ork's	La Perfo	mance	Ass	essment	≉Fi	nal Grade		
Performance Task's														
# Names	Gender	1	2	3	4	5	6	7	8	9	10	Total	PS%	WS
HIGHEST POSSIBLE SCORE		50	20	35	20	0	0	0	0	0	0	125.00	100	50
1 JOMAR, ADOR	Male	50	20	35	20	0	0	0	0	0	0	125	100	50
2 CASHEY, CARLOS	Female	45	20	30	15	0	0	0	0	0	0	110	88	44
3 CRISTINE JOY, DUMANGAS	Female	44	20	25	15	0	0	0	0	0	0	104	83	42
4 EUSHABEN KAYE, TOLENTINO	Female	46	20	20	10	0	0	0	0	0	0	96	77	39
5 JENAE DELYN, SAN DIEGO	Female	50	20	15	5	0	0	0	0	0	0	90	72	36
6 JULIA LEE, BELTRAN	Female	50	20	15	20	0	0	0	0	0	0	105	84	42
7 MA CRISELDA, VILLA	Female	25	20	10	20	0	0	0	0	0	0	75	60	30
8 MARI CHRIS , BALUYOT	Female	20	20	10	15	0	0	0	0	0	0	65	52	26
9 REJEAN, BUSTAMANTE	Female	2	20	5	3 \$	0	0	0	0	0	0	30	24	12
10ZYLIYAAH JADE, EDNALAGA	Female	0	0	0	0	0	0	0	0	0	0	0	0.00	0.00

Fig 10: Performance task Platform

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3 Attendance Checking 💦 🖈 Dait	y Attendance	Learner's Names	XWritten Work's	Performance	E Assessment	🖻 Final Grade
		Qu	arterly Asses	sment		
# Names	Gender	Score	PS%	WS	%	
HIGHEST POSSIBLE SCORE		100	100	25		
1 JOMAR, ADOR	Male	98	98	25		
2 CASHEY, CARLOS	Female	78	78	20		
3 CRISTINE JOY, DUMANGAS	Female	90	90	23		
4 EUSHABEN KAYE, TOLENTING	) Female	90	90	23		
5 JENAE DELYN, SAN DIEGO	Female	88	88	22		
6 JULIA LEE, BELTRAN	Female	85	85	21		
7 MA.CRISELDA, VILLA	Female	88	88	22		
8 MARI CHRIS , BALUYOT	Female	98	98	25		
9 REJEAN, BUSTAMANTE	Female	75	75	19		
10ZYLIYAAH JADE, EDNALAGA	Female	0	0	0		

Fig 11: Assessment Record Platform

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C	Atten	dance Checking	★ Daily Attendance	Learn	er's Names	X Written Work's	Performance	Assessment	🖈 Final Grade				
						Final Grade	•						
	*		Names	Gender	Written %	Performance %	Assessment %	Initial Grade %	Final Grade %	Remark			
	1	JOMAR, ADOR		Male	24	50	25	99	99	PASSED			
	2	CASHEY, CARL	os	Female	22	44	20	86	91	PASSED			
	3	CRISTINE JOY,	DUMANGAS	Female	21	42	23	86	91	PASSED			
	4	EUSHABEN KAY	YE, TOLENTINO	Female	12	39	23	74	78	PASSED			
	5	JENAE DELYN,	SAN DIEGO	Female	12	36	22	70	81	PASSED			
	6	JULIA LEE, BEL	TRAN	Female	24	42	21	87	92	PASSED			
	7	MA.CRISELDA,	VILLA	Female	22	30	22	74	78	PASSED			
	8	MARI CHRIS, B	ALUYOT	Female	23	26	25	74	78	PASSED			
	9	REJEAN, BUST	AMANTE	Female	23	12	19	54	73	FAILED			
	10	ZYLIYAAH JADE	, EDNALAGA	Female	0	0	0	0	0	INC			
						PRINT GRADE 🖨	1						
						SUBMIT TO ADMIN	*						

Fig 12: Final Grade Record Platform

After the verbal assessment of the proponent and the faculty members, the faculty requested that printing of Final Grade may consider to be available on their end. It has been requested so that before submission of final grades, the teachers can show their classes the status of their academic performance for further remedial or completion of missed

activities. Once Final grade is submitted, modification will only be available at the admin user's side alone. The proponent considered showing the actual date when the sheet is printed and also the signature area for the teacher handling the subject. Figure 13 shows the actual printable sheet for the final grade.

//18/20	78/2018												
	Final Grade												
Tea	cher: BERNADETTE DE CASTRO												
Sub	ject: HUM111												
Sec	tion: BM1MA												
#	Names	Gender	Written %	Performance %	Assessment %	Initial Grade %	Final Grade %	Remark					
1	JOMAR, ADOR	Male	24	50	25	99	99	PASSED					
2	CASHEY, CARLOS	Female	22	44	20	86	91	PASSED					
3	CRISTINE JOY, DUMANGAS	Female	21	42	23	86	91	PASSED					
4	EUSHABEN KAYE, TOLENTINO	Female	12	39	23	74	78	PASSED					
5	JENAE DELYN, SAN DIEGO	Female	12	36	22	70	81	PASSED					
6	JULIA LEE, BELTRAN	Female	24	42	21	87	92	PASSED					
7	MA.CRISELDA, VILLA	Female	22	30	22	74	78	PASSED					
8	MARI CHRIS , BALUYOT	Female	23	26	25	74	78	PASSED					
9	REJEAN, BUSTAMANTE	Female	23	12	19	54	73	FAILED					
10	ZYLIYAAH JADE, EDNALAGA	Female	0	0	0	0	0	INC					

Signature over printed name

Fig 13: Generated Printable Output for a Class Final Grade

#### **3rd Iteration**

As part of the system evaluation, the proponent presented the proposed system to the thesis adviser. Upon evaluation, both parties agreed that it would be a great help on the administrative part in terms of class evaluation, individual student assessment and teacher's class standing evaluation if analytical interpretation of data is deemed present in the system; thus, the proponent designed a graphical interpretation of data for individual and class standing evaluation. Figure 14 and 15 show a graphical representation for both individual and class standings per learning area. Because it was also thought of that it would help teachers determine the top students per learning area, the proponent added a printable Top 10 report at the admin side. Figure 16 shows the actual output generated for the top 10 students leading in a learning area.



Fig 14: Class Standing Graphical Interpretation



Fig 15: Students' Individual Standing in Graphical Form

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Fig 16: Class Top 10 Generated Output

### **Final Testing**

Part of the evaluation if a project works properly in accordance to the desired functions was through initial deployment. The researcher had first to test that the scope has been achieved, all necessary data have been cautiously considered, and desired functions worked (Manual Testing: Web Application testing, 2018).

There are several Testing Tools available over the Internet to properly assess if a system achieved its goal. The proponent used the ISO 25010 Software Quality Model to further assist in the proper assessment of eClaReMo's overall performance.

**Scoring:** Responses to the questionnaire will be interpreted using the hereunder scale:

Scale	Verbal Interpretation
5.00 - 6.00	Strongly Agree
4.00 - 4.99	Agree
3.00 - 3.99	Moderately Agree
2.00 - 2.99	Disagree
1.00 – 1.99	Strongly Disagree

For validity and reliability, the proponent constructed two (2) sets of Survey Questionnaires guided by ISO 25010. The two sets of survey questionnaires were made for admin and faculty, and students, respectively.

Table 4 shows that the Functional Completeness of the proposed system has evaluated by the majority of the Admin Staff by 40% with a weighted mean of 5.4 which corresponds to be Strongly Agree while the Functional Correctness of the proposed system is rated to be Strongly Agree and Moderately Agree by 40% of the respondents while 20% rated it to be Disagree with a rated mean of 3.6 which corresponds to Agree. On the other hand, the Functional; Appropriateness is rated 40% Moderately Agree and 60% Strongly Agree respectively that results to a weighted mean of 5.2 and is rated to be Strongly Agree.

Based on the results, it is clearly shown that eClaReMo has been rated as functionally sustainable when it comes to the completeness of the required task. It provides appropriate result with accuracy, and the functions of the system accomplish the desired task and objective being set during the design proper.

	Ratings											
Criteria	5		4		3		2		1			
	N=5	%	N=5	%	N=5	%	N=5	%	N=5	%		
Functional Completeness – Functionality covers the required tasks	3	60	1	20	1	20						
Functional Correctness – System provides the appropriate results with accuracy	2	40			2	40	1	20				
Functional Appropriateness – System functions accomplish the desired tasks and objectives	2	40			3	60						

Table 4: Survey form results for admin staff in terms of functional sustainability

Table 5 shows the results of the Performance efficiency of the system evaluated by the admin staff. Under the Time Behavior criterion, the system has been evaluated by 60% of the admin staff with a weighted mean of 3.6 that results to be Agree. On the other hand, the Resource Utilization and Capacity has been evaluated 40% and 60% respectively by the admin staff both with weighted mean of 5.2., and is rated to be Strongly Agree.

These results show that the performance Efficiency of the system was rated as Strongly Agreed in terms of acceptability in response and processing time, capacity in terms of internet limitations (e.g. speed, database size, processing time etc.). The system was also rated to be agreeable in terms of resources utilization such as paperless and fast as a requirement of the admin users in the previous detailing of designs.

					Rati	ngs				
Criteria	5	5		4		3		2		
	N=5	%	N=5	96	N=5	%	N=5	%	N=5	%
Time Behavior – Response and processing time is at acceptable rate when performing specific functionality	2	40	2	40	1	20				
Resource Utilization – Amounts and types of resources used by the system, when performing its functions, meet requirement of the user	2	40	3	60						
Capacity – Limitations like internet speed, size of database and processing time do not affect the overall performance of the system	2	40	3	60						

Table 6 shows the results in the evaluation of the admin users in terms of Compatibility. Results show that the system has been majority evaluated in terms of Co-existence and Interoperability to be 20% and 80% respectively by the respondents and are both with weighted mean of 5.2 which is rated to be Strongly Agree. As a result, the majority of the

admin users strongly agreed that eClaReMo works well with different platforms such as handheld devices environment. As being proposed, the existing enrolment system of the organization is certain to works well with the current class record system.

Table 6: Survey form results for admin staff in terms of functional sustainability

	Ratings										
Criteria	5		4		3		2		1		
	N=5	%	N=5	%	N=5	%	N=5	96	N=5	%	
Co-existence – The system works well with different platforms like different operating system and web browser	1	20	4	80							
Interoperability - System works well when exchanging information with different units of the organization	1	20	4	80							

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Table 7 shows the Appropriateness Recognizability of the proposed system evaluated by the majority of the admin staff. The result is 20% of the respondents which has a weighted mean of 2.0 and is rated to be Disagree. While in the Learnability and operability criteria, the proposed system is evaluated by 80% of the respondents with a weighted mean of 5.2 and is rated to be Strongly Agree. On the other hand, the User Error Protection of the proposed system has been rated by the respondents with 40%, 20% and 40% respectively. The weighted mean of 3.6 which corresponds to a descriptive rating of Agree while in the

User Interface Aesthetics, the admin staff evaluated the system to be 40% Strongly Agree, 40% Agree, and 20% Moderately Agree which corresponds to 3.6 weighted mean. Lastly, Accessibility of the proposed system has been evaluated to be Strongly Agree and Moderately Agree that corresponds to 80% and 20% of the respondents with a weighted mean of 5.2 and is rated to be Strongly Agree. With these results, the admin staff evaluation shows that the

majority find the proposed system to be usable in terms of how user friendly the system is.

	Ratings											
Criteria	5	5			3		2		1			
	N=5	%	N=5	%	N=5	96	N=5	%	N=5	%		
Appropriateness Recognizability – Manuals, tutorials, demonstration and other documentation for the use of the system are appropriately provided	1	20	1	20	1	20	1	20	1	20		
Learnability - Use of the system is easily learned by the intended users	3	60	2	40								
Operability – Functions of the systems are designed to be easily acceptable for users	4	80	1	20								
User Error Protection – System protects users against making errors	2	40			1	20	2	40				
User Interface Aesthetics – User interface like its color and icons enables pleasing and satisfying interaction for the users	2	40	2	40	1	20						
Accessibility - System can be accessed by intended users either by internet or intranet	4	80			1	20						

Table 7: Survey	form result	for admin	staff in t	terms of	f usability
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Table 8 shows the results in the Maturity criteria of the proposed system which was evaluated to be 4%, 20% and 40% by the respondents respectively that corresponds in between Strongly Agree and Moderately Agree with a weighted mean of 3.6. It only shows that the Admin staff rated the proposed system with Agree in terms of Maturity. As per Availability, the proposed system has been evaluated by 80% of the respondents with Strongly Agree and 20% of the respondents with moderately Agree. On the other hand, Fault Tolerance has been evaluated with 40% of the respondents to Strongly Agree and Disagree, and 20% of the

respondents with Moderately Agree. The Recoverability have been rated with 60% by the respondents as Strongly Agree, and 20% of the respondents as Agree and Moderately Agree. All criteria have a weighted mean of 6.2 which corresponds to Agree.

These results show that the respondents agree that eClaReMo's Usability has been put in test and passed the evaluation even in times of non-normal condition, its availability to users at any time, how the proposed system users can handles the system and software faults, and how the system will be in times of interruptions.

					Rati	ngs				
Criteria	5		4		3		2		1	
	N=5	%	N=5	%	N=5	%	N=5	96	N=5	%
Maturity - System component meet the needs for reliability under normal operation	2	40	1	20	2	40				
Availability – System components are operational and accessible when require for use	4	80			1	20				
Fault Tolerance – System components operate as intended despite the presence of hardware and software faults	2	40			1	20	2	40		
Recoverability – In the event of an interruption or failure, the system can recover the data directly affected and re-establish its normal state	3	60	1	20	1	20				

Table 8: Survey form result for admin staff in terms reliability

Table 9 shows the Confidentiality and Integrity survey results of the system. They were evaluated by the Admin staff by 80% and 20% of the respondents respectively. The weighted mean rating is 5.2 that correspond to the result that

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the system has provided the admin user a Strongly Agreeable platform which is secure in nature. Allowing only those who have been labeled as authorized users can access to all other data inside the system.

	Ratings										
Criteria	5		4		3		2		1		
	N=5	%	N=5	%	N=5	%	N=5	%	N=5	%	
Confidentiality – System ensures that data are accessible only to those authorized users	4	80			1	20					
Integrity – System prevents unauthorized access to, or modification of, computer programs or data	4	80			1	20					

**Table 9:** Survey form result for admin staff in terms of security

Table 10 shows the results of the survey in terms of the system's Maintainability which has four criteria: Reusability, Analyzability, Modifiability and Testability. The Reusability criteria has been rated to be 40% of the respondents to be Strongly agree and 60% of the respondents to be Agree. At the Analyzability criterion, the 80% of the admin staff rated it to be Strongly Agree and

Agree. While the Modifiability and Testability has been rated of 80% of the Admin staff to be Strongly Agree and Moderately Agree. All criteria have a weighted mean of 5.2 which only shows that the proposed system offers the Admin staff a system that is strongly agreed Maintainable in terms of sharing of data and with effective and efficient error diagnosis.

Table 10: Survey form result for admin staff in terms of maintainability

					Rati	ngs				
Criteria	5		4	4			2		1	
	N=5	%	N=5	96	N=5	%	N=5	96	N=5	%
Reusability – Data from another parts of the system are easily shared with other units or entities	2	40	3	60						
Analyzability – Errors or failures of the system is easily diagnosed and mechanism to determine cause of failure are easily identified	2	40	2	40	1	20				
Modifiability – System can be effectively and efficiently modified without introducing defects or degrading existing quality	2	40	1	20	2	40				
Testability – Effectiveness and efficiency which test criteria can be establish for the system and tests can be performed to determine whether those criteria have been met	2	40	1	20	2	40				

Table 11 shows that the Adaptability of the system was evaluated with 60% and 40% rating that corresponds to Strongly Agree and Agree respectively. While the Replaceability criteria had rated to be 80% of the admin staff with a weighted mean of 5.2 and is considered to be Strongly Agree.

These results show that under Portability, the admin users strongly agreed that eClaReMo will surely give them effective and efficient class record monitoring system that is highly adaptable to evolving software and hardware environment, and it can actually replace another system being used inside the organization.

Table 11: Survey form result for admin staff in terms of portability

	Ratings										
Criteria	5	5		4			2		1		
	N=5	%	N=5	96	N=5	%	N=5	%	N=5	96	
Adaptability – System can effectively and efficiently be adapted for different or evolving hardware, software or other operational or usage environments	3	60	2	40							
Replaceability – System can replace another software for same purpose in the same environment	4	80			1	20					

The system has undergone initial deployment test by the Faculty Staff as well. This is to ensure that the system is equipped with modules which tasks are set to give teachers a platform where they can manage and monitor class records. The system, therefore, shall provide teachers a platform for managing and monitoring of class subject's class records effectively and accurately.

Table 12 shows the Functional Completeness and Functional Correctness of the proposed system. As shown in

the table, the system was evaluated by 63% of the Faculty Staff with a weighted mean of 5.3 which corresponds to Strongly Agree. On the other hand, the Functional Appropriateness is rated by 54.54% of the Faculty Staff that results in a weighted mean of 5.04 and is rated to be Strongly Agree.

The results show that the system offer the Faculty staff a class record monitoring system that is highly sustainable in terms of functionality requirements and appropriateness.

Table 12: Survey form result for admin staff in terms of functional sustainability
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	Ratings											
Criteria		5	4		3		2		1			
	N=5	%	N=5	96	N=5	%	N=5	%	N=5	%		
Functional Completeness – Functionality covers the required tasks	4	36.36	7	63.63								
Functional Correctness – System provides the appropriate results with accuracy	4	36.36	7	63.63								
Functional Appropriateness – System functions accomplish the desired tasks and objectives	6	54.54	5	45.45								

Table 13 shows the results of the Performance efficiency of the system evaluated by the faculty staff. Under the Time Behavior and Resource Utilization criterion, the system has been evaluated to be both Agree with a weighted mean of 5.90. On the other hand, the Capacity has been evaluated to be Strongly Agree and Agree by 63.63% and 36.36% of the respondents and is rated to be Strongly Agree with weighted mean of 5.55 rated to be Strongly agree. Based on these results, the respondents strongly agree that the system can be considered performance efficient in terms of the response time rate and processing speed performance.

Table 13: Survey form results for faculty staff in terms of performance efficiency

				R	latings	÷				
Criteria		5		4			2		1	
	N=5	96	N=5	%	N=5	%	N=5	96	N=5	%
Time Behavior - Response and processing time is at acceptable rate when performing specific functionality	7	63.63	4	36.36						
Resource Utilization – Amounts and types of resources used by the system, when performing its functions, meet requirement of the user	7	63.63	4	36.36						
Capacity - Limitations like internet speed, size of database and processing time do not affect the overall performance of the system	5	45.45	6	54.54						

Table 14 shows the results in the evaluation of the faculty members in terms of Compatibility. The results show that the system has been majority evaluated by 63.63% of the Faculty members in terms of Co-existence with a weighted mean of 3.91 rated to be Moderately Agree while in the Interoperability criterion, 63.63% of the faculty member

rated it Agreeable. As a result, the majority of the faculty members strongly agreed that eClaReMo works well with different platforms such as handheld devices environment. As being used, the existing enrolment system of the organization works well with the class record system.

	Table 14:	Survey form	result for faculty staff in ter	ms of compatibility
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	Ratings											
Criteria		5		4		3	2		1			
	N=5	%	N=5	96	N=5	%	N=5	96	N=5	%		
Co-existence – The system works well with different platforms like different operating system and web browser	3	27.27	5	45.45	3	27.27						
Interoperability – System works well when exchanging information with different units of the organization	3	27.27	7	63.63	1	9.09						

Table 15 shows the Appropriateness Recognizability of the proposed system. As shown in the table, 45.45% of the faculty members evaluated the system to be Agreeable. While in the Learnability criteria, the proposed system was evaluated by 63.63% of the faculty member with a weighted mean of 5.90 to be Strongly Agreeable. On the other hand, the User Error Protection of the proposed system has been rated the same with Operability by 45.45% of the respondents with a weighted mean of 3.18 which corresponds to a descriptive rating of Moderately Agree

while in the User Interface Aesthetics, 54.54% of the faculty members evaluated the system with to 5.64 weighted mean which corresponds to Strongly Agree. Lastly, Accessibility of the proposed system has been evaluated by 63.63% of the respondents to be Strongly Agree with a weighted mean of 5.91.

Based on the results, the system is said to be usable in terms of functional learnability, acceptable system design, error protection ability, and accessibility.

					Ratin	gs	_			
Criteria		5		4		3	2		1	
	N=5	96	N=5	%	N=5	96	N=5	%	N=5	%
Appropriateness Recognisability – Manuals, tutorials, demonstration and other documentation for the use of the system are appropriately provided	3	27.27	5	45.45	3	27.27				
Learnability – Use of the system is easily learned by the intended users	7	63.63	4	36.36						
Operability – Functions of the systems are designed to be easily acceptable for users	5	45.45	3	27.27	3	27.27				
User Error Protection – System protects users against making errors	5	45.45	3	27.27	3	27.27				
User Interface Aesthetics – User interface like its color and icons enables pleasing and satisfying interaction for the users	6	54.54	4	36.36	1	9.09				
Accessibility – System can be accessed by intended users either by internet or intranet	7	63.63	4	36.36						

#### Table 15: Survey form results for faculty staff in terms usability

Table 16 shows the results in the Maturity criteria of the proposed system which have been evaluated by 54.54% of the faculty members with a weighted mean of 5.55 rated to be Strongly Agree. As per Availability, the proposed system has been evaluated by 54.54% of the respondents and is rated to be Strongly. On the other hand, Fault Tolerance and

Recoverability have been evaluated the same. All criteria have a weighted mean average of 5.24 which corresponds to Strongly Agree. With such result, it clearly shows the proposed system is highly reliable in terms of availability, fault tolerance, recoverability, and maturity.

Idble 23: SURVET FORM RESULT FOR FACULIT STAFF IN TERMS OF RELIABILITY											
					Ratin	5					
Criteria		5		4		3	2		1		
	N=5	96	N=5	96	N=5	96	N=5	%	N=5	%	
Maturity – System component meet the needs for reliability under normal operation	6	54.54	5	45.45							
Availability – System components are operational and accessible when require for use	6	54.54	4	36.36	1	9.09					
Fault Tolerance – System components operate as intended despite the presence of hardware and software faults	1	9.09	б	54.54	4	36.36					
Recoverability – In the event of an interruption or failure, the system can recover the data directly affected and re- establish its normal state	6	54.54	2	18.18	3	27.27					

Table 17 shows the Confidentiality and Integrity of the system. 54.54% of the faculty members with a weighted mean average of 5.54 rated the system to be Strongly agree. Given such rated mean average, faculty members rated the

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system strongly agreeable in providing a platform that is secure. Thus, only authorized users have access to all other data inside the system.

					Kanng	5				
Criteria		5		4	3		2		1	
	N=5	%	N=5	%	N=5	%	N=5	%	N=5	%
Confidentiality - System ensures that data are accessible only to those authorized users	6	54.54	3	27.27	2	18.18				
Integrity – System prevents unauthorized access to, or modification of, computer programs or data	6	54.54	6	54.54	1	9.09				

Table 17:	Survey form	result for	faculty staff	in terms	of security

Table 18 shows the results of the survey in terms of the systems Maintainability. It has four criteria: the Reusability, Analyzability, Modifiability and Testability. The Reusability, analyzability and modifiability criteria have been rated by the faculty staff. 54.54% of the respondents rated these criteria as Strongly agree with a rated mean of 5.54. At the Analyzability criterion, 80% of the faculty staff rated with 40% of the respondents as Strongly Agree, 40%

of the respondents are Agree, and 20% of them responded to Moderately Agree. While Testability have been rated 63.63% of the respondents to be Moderately Agree. All criteria has a weighted mean average between 5.18 and 5.54 rated to be strongly agree which only shows that the proposed system had offered the faculty members a system with a platform highly Maintainable in terms of sharing of data and with effective and efficient error diagnosis.

Table 18: Survey form result for faculty staff in terms of maintainability

					Ratin	gs.				
Criteria		5		4		3	2		1	
	N=5	%	N=5	%	N=5	96	N=5	%	N=5	%
Reusability – Data from another parts of the system are easily shared with other units or entities	6	54.54	4	36.36	1	9.09				
Analyzability – Errors or failures of the system is easily diagnosed and mechanism to determine cause of failure are easily identified	6	54.54	3	27.27	2	18.18				
Modifiability – System can be effectively and efficiently modified without introducing defects or degrading existing quality	6	54.54	5	45.45						
Testability – Effectiveness and efficiency which test criteria can be establish for the system and tests can be performed to determine whether those criteria have been met	7	63.63	4	36.36						

Table 19 shows that the Adaptability and Replaceability of the system. The system was evaluated by 54.54 of the respondents with a weighted mean of 5.54 which is considered to be Strongly Agree.

These results show that in terms of Portability, the faculty

member users strongly agreed that eClaReMo will surely give them effective and efficient class record monitoring system that is highly adaptable to evolving software and hardware environment, and it can actually replace another system being used inside the organization.

					Ratin	gs	Ratings											
Criteria	5			4		3	2		1									
	N=5	%	N=5	96	N=5	%	N=5	%	N=5	%								
Adaptability - System can effectively and efficiently be adapted for different or evolving hardware, software or other operational or usage environments	6	54.54	3	27.27	2	18.18												
Replaceability – System can replace another software for same purpose in the same environment	6	54.54	4	36.36	1	9.09												

Table 19: Survey form result for faculty staff in terms of portability

Table 20 shows that the Functional Completeness of the proposed system. As shown in the table, the system was evaluated by 63.51% of the respondents with a weighted mean of 5.06 which correspond to Strongly Agree while the Functional Correctness of the proposed system is rated by 54.05% of the respondents to be Moderately Agree with a rated mean of 3.94. On the other hand, the Functional Appropriateness is rated BY 45.96% of the student population with a weighted mean of 3.35 to be Moderately Agreeable.

Based on the results, the students evaluation for the proposed system in terms of Functional Sustainability resulted to have a weighted mean average of 4.17 which is considered to be agreeable rating. This only shows that the system gives the students appropriate module functions that best suit their needs. This appropriateness covers the task of viewing of student grades and performance, with accuracy. Thus, one of the desired objectives of the system was achieved.

Table 20: Survey form result for students in terms of functional sustainability

		Ratings											
Criteria	5			4		3	3	2	1				
	N=5	96	N=5	96	N=5	96	N=5	%	N=5	%			
Functional Completeness - Functionality covers the required tasks	94	63.51	44	29.73	8	5.41	2	1.35					
Functional Correctness – System provides the appropriate results with accuracy	80	54.05	40	27.03	18	12.16			10	6.76			
Functional Appropriateness – System functions accomplish the desired tasks and objectives	68	45.96	26	17.57	42	28.38	9	6.08	3	2.03			

Table 21 shows the results of the Performance efficiency of the system evaluated by the students. Under all criteria, the system was rated by 55.41%, 52.70% and 41.89% of the student population with a weighted mean of 3.76, 3.87 and

3.23 respectively. With such results, the systems performance efficiency is rated to be moderately agree in terms of processing response time and internet speed limitation for the student's side.

Table 21: Survey form result for	security in terms of	of performance	efficiency
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					Kati	ngs				
Criteria	5			4		3	:	2	1	1
	N=5	96	N=5	%	N=5	%	N=5	%	N=5	%
Time Behavior – Response and processing time is at acceptable rate when performing specific functionality	82	55.41	31	20.95	18	12.16	3	2.03	4	2.70
Resource Utilization - Amounts and types of resources used by the system, when performing its functions, meet requirement of the user	78	52.70	32	21.62	34	22.97	2	1.35	2	1.35
Capacity - Limitations like internet speed, size of database and processing time do not affect the overall performance of the system	62	41.89	46	31.08	30	20.27	3	2.03	7	4.73

Table 22 shows the results of the Compatibility of the proposed system evaluated by the students. Under the Co-existence, it is rated by 49.32% of the student population

with a weighted mean of 3.13 to be Moderately agree. Students find the proposed system working well in different operating system and web browser in a moderate manner.

Table 22: Survey form result for students in terms of compatibility

		Ratings										
Criteria	5			4	3		2		1			
	N=5	%	N=5	%	N=5	%	N=5	%	N=5	%		
Co-existence – The system works well with different platforms like different operating system and web browser	73	49.32	29	19.59	23	15.54	1	.68	1	.68		

Table 23 shows the result of the Usability of the proposed system evaluated by the students. Under Learnability, Operability, and Accessibility criteria, is rated by 52.70%, 42.57% and 60.81% of the student population with a weighted mean of 3.42, 3.41 and 3.96 respectively to be Moderately agree while in the User Interface Aesthetics criterion, the weighted mean is 5.21 and is rated to be

Strongly Agree. Students strongly agree that the proposed system is high in aesthetic appeal and is usable in terms of learnability and operability. These only mean that the students find the proposed system to be easy to learn, and they can operate by their own without help from anyone in the organization.

Table 23: Survey form result for students in terms of Usability

		Ratings											
Criteria		5		4		3	2	2	1	L			
	N=5	%	N=5	%	N=5	%	N=5	%	N=5	%			
Learnability – Use of the													
system is easily learned by	78	52.70	24	16.22	24	16.22	6	4.05	6	4.05			
the intended users													
Operability - Functions													
of the systems are	62	42.57	21	14.10	52	25 01			11	7.42			
designed to be easily	05	42.57	21	14.19	35	55.61				7.45			
acceptable for users													
User Interface Aesthetics													
<ul> <li>User interface like its</li> </ul>													
color and icons enables	112	75.68	24	16.22	10	6.76	8	5.41					
pleasing and satisfying													
interaction for the users													
Accessibility - System													
can be accessed by	00	60.01		6.00	11	7.42	~	4.72	12	0.70			
intended users either by	90	00.81	7	0.08	11	7.45	· ·	7.75	12	0./0			
internet or intranet													

Table 24 shows the results of the evaluation of the student users in terms of the Security of the proposed system. Under these criteria, the Confidentiality and Integrity of data are being evaluated. Under the Confidentiality criterion, 79.73% of the student population with a weighted mean of 5.59 rated the proposed system to be Strongly Agree while under Integrity criteria, 72.30% of the student population with the weighted mean is 5.65 rated the proposed system to be Strongly Agree. With the weighted mean average of 5.62 and rated to be strongly agree, this only signifies that the Students find the proposed system to be of high confidentiality in terms of ensuring the accessibility of the data which are only available to those entitled to. It also shows that the students strongly agree that the proposed system was designed with data integrity which prevents unauthorized access to or modification of anyone inside the organization.

Table 24: Survey form result for students in terms of security

Criteria	Ratings									
	5		4		3		2		1	
	N=5	%	N=5	96	N=5	%	N=5	%	N=5	96
Confidentiality - System ensures that data are accessible only to those authorized users	118	79.73	18	12.16	8	5.41			4	2.70
Integrity – System prevents unauthorized access to, or modification of, computer programs or data	107	72.30	22	14.87	12	8.11	3	2.03	4	2.70

Table 25 shows the results of the Portability of the proposed system evaluated by the students. Under the Replaceability criterion, it is rated by 78.38% of the student population with a weighted mean of 5.52 to be Strongly Agree. These results clearly show that the Students strongly agree that the

proposed system can replace another system or software of the same purpose. This only means that the students find the proposed system highly recommended to be used in the future.

Table 25: Survey	form result	for students	in terms	of portability
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Criteria	Ratings									
	5		4		3		2		1	
	N=5	%	N=5	96	N=5	%	N=5	%	N=5	%
Replaceability - System can replace another software for same purpose in the same environment	116	78.38	19	12.84	11	7.43	1	0.68	1	0.68

### Conclusion

In the final analysis, the researcher, with the assistance of the ISO 25010 or Software Quality Model Survey form, the overall performance achieved by eClaReMo are the following:

- a. In the Admin Side, the system's was rated strongly agree in terms of Performance Efficiency. This only means that the system's performance met their requirement in terms of time behavior, resource utilization and capacity. Furthermore, the admin staff also rated the system to be functionally sustainable when it comes to completeness, correctness and appropriates of its modules. Such results to 80% of the respondents strongly agree that the system is indeed can co-exist and can be interoperatively use as replacement for their regular manual class record monitoring routine. This is proved in the usability survey result of strongly agree in terms of recognizability, learnability, operability, accessibility and user interface criteria.
- In the Faculty staff survey, the system was rated was b. rated highly sustainale in terms of functionality requirement and appropriateness. 80% of the respondents strongly agree that the system can be considered performance efficient in terms of processing speed performance. 63.63% of the faculty member agree that eClaRemo works well with with different platforms. The system is said to be usable in terms of functional learnability, acceptabe system interface, error protection ability, and accessibility. 54.54% of the faculty member strongly agree that the system is highly reliable in terms of availabilty, fault tolerance, recoverability and maturity. This is proved with a mean average of 5.54 which is agreeable in providing secure platform.
- c. In the students side, the system was evaluated with a mean average of 4.17 with an agreeable rating in terms of functional sustainability and appropriateness. This only shows that the proposed system had provide that students appropriate modules that suites their needs best.

With all the objectives met, the system has satisfied the need of the Senior High School teachers. The system now lessens their burden in dealing with the difficulties encountered in the use of manual system which includes but not limited to the student attendance checking, secured and reliable Class Record data sheets, and is easy to use and non-timeconsuming class monitoring maintenances.

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