TRACKING AND MONITORING SYSTEM

A Research Paper

Presented to the Faculty of the

Senior High School Department

AMA COMPUTER COLLEGE

Santa Cruz, Laguna

In Partial Fulfillment

Of the Requirements for Practical Research of

INFORMATION COMMUNICATION AND TECHOLOGY

Major in PROGRAMMING

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Republic of the Philippines
AMA COMPUTER COLLEGE
Santa Cruz, Laguna

APPROVAL SHEET

This study entitled **"TRACKING AND MONITORING SYSTEM"** presented and submitted by **LADY LIBERTY CARAGAY AND JENLYN LERON** in partial fulfillment of the requirements for the Practical Research of Information Communication and Technology strand Major in Programming is hereby recommended for approval and acceptance.

PANEL OF EXAMINERS

Approved and accepted by the Committee on Oral Examination with a grade of _____.

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ANNA MARIE GABRIELLA POLECENA
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Accepted in Partial Fulfillment of the Requirements for Practical Research of Information Communication and Technology strand Major in Programming, at AMA Computer College, Santa Cruz Campus, Santa Cruz, Laguna.

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Santa Cruz, Laguna

LETTER TO THE PRINCIPAL

May 2023

(Name of the Principal)
(Position of the Principal)
(Name of the School)

Dear Sir/Madame,

We, a Grade 12 students taking up Information Communication and Technology strand Major in Programming, are currently doing our research paper entitled "**TRACKING AND MONITORING SYSTEM".**

In connection with this, we respectfully request your consent to use the SHS students of AMA Sta. Cruz Campus as our respondents and to conduct a survey using a checklist questionnaire.

Your favorable response and consideration will be very much appreciated. Thank you and God bless your office.

Respectfully Yours,

LADY LIBERTYCARAGAY
JENLYN LERON
Researchers

Approved by:

(Name of the Principal)
(Position of the Principal)

Republic of the Philippines
AMA COMPUTER COLLEGE
Santa Cruz, Laguna

LETTER TO THE RESPONDENTS

May 2023

Dear Respondents,

We, a Grade 12 students taking up Information Communication and Technology strand Major in Programming from AMA Computer College Sta. Cruz Campus, are currently doing our research paper entitled "**TRACKING AND MONITORING SYSTEM".**

In line with this, we would like to request for your help and cooperation by honestly answering the attached survey questionnaire. All of the gathered information will be assured to be kept in strict confidentiality and will only be used for this purpose.

We are looking forward to your positive responses to the request. May the glory of our Almighty God always be with you. Thank you and God bless!

Respectfully Yours,

LADY LIBERTY CARAGAY
JENLYN LERON
Researchers

CHAPTER 1

THE PROBLEM AND IT'S BACKGROUND

Introduction

The demand for assistive technology is rising as the student body keeps expanding. Information technology has transformed learning and communication, resulting in the development of numerous websites and applications that help people with their duties. The research-inspired activity monitoring system makes use of sensors to keep track of and observe household activities. A recognition system tracks all forms of user behavior, including system data, application usage, and network actions, by analyzing sensor data to infer specific activities.

Most students in today's digital age rely on technology to do their tasks. A team of academics took note of this pattern and followed the development of the students' research projects. The study's authors hope that by using activities to track progress, students and teachers will be able to save time. The system has been put in place to keep track of users' behavior as they use their gadgets more frequently, even while studying. Since people's activities can be identified with GPS, research dedicated to monitoring people and their activities inside and outside their homes has grown rapidly in recent years. The most common is website support tracking, which can be used in websites, apps, and other technologies to make the task easier. When building an activity monitoring system, it is crucial to keep in mind the fact that ethical issues should come first and that there should be open communication with students regarding the system's use and objectives. Security and privacy measures must be performed in order to ensure the confidentiality of personal data.

Instructors provide students with both the necessary course material resources such as online links and self-assessment, within a unified learning environment like MOODLE, WebCT, or BSCW. Students are encouraged to participate in the collaborative process of creating learning activities and tasks. Technology advancements have substantially boosted the amount of study focused on observing what people do both inside and outside of their homes. Tracking and monitoring student activity requires collecting data on student behavior, progress, and performance to improve educational outcomes. This method can provide useful information about how students interact with classroom materials. Teachers can identify areas where students need additional help and track and monitor them so they can take appropriate action. Additionally, this process can be used to assess the effectiveness of teaching methods and curricula to ensure that students are receiving the best possible education.

Background of the Study

Tracking and monitoring students' work has been recognized as one of the key factors for successful teaching. However, it is not an easy task to systematically supervise what the students do. It also might consume a considerable amount of teachers' time and resources. The creations of computerized systems have helped improve time consuming, repetitive, and laborious data processing activities like test scoring, grade computation and student records management. In recent years, research has led to the development of a progress monitoring system that can be used to track the learning of students.

Tracking and Monitoring system is a real-time system that allows you to observe someone or something. Tracking and monitoring involves gathering information to check that the intervention is being delivered well, is on track to meet its objectives.

Manual tracking and monitoring take time and may encounter human errors resulting in obtaining incorrect information that will affect the decisions made. Website for Student Activity Tracking is a web-based application that enables the admin to track the students' activities through this web application and allows the students to upload their activities through this web application (Baluprithviraj KN, Monesh MS, 2022, pp. 739-744).

Websites are intended to provide rich information and quality service. Having a computerized system in an organization makes the tasks easy, because it will help to access data in a shorter period of time unlike doing it manually. This study is focused on tracking and monitoring the students' research activities in a faster and more convenient way.

The researcher of this study felt the need to help the students and also the teachers of AMA Santa Cruz in checking the progress of the student's research activities. The purpose of this study is to give an easier way to track and monitor the students' research activities.

Theoretical Framework

According to the study of Albert Bandura (2020-2021), learning occurs through observation and imitation of other people's behavior, as well as cognitive processes. In the context of tracking student activities, SCT suggests that students' behavior can be influenced by their observations of peers or teachers, as well as their own beliefs a nd selfefficacy. As a result, tracking systems must take into account both the social an d environmental factors that influence students' behavior and cognitive processes. Learning occurs through observation and imitation of the behavior of others and cognitive processes such as attention, memory, and motivation. In the context of

tracking student activity, SCT suggests that student behavior can be influenced not only by the student's own beliefs and self-efficacy, but also by the observations of peers and teachers. Therefore, tracking systems should take into account both social and environmental factors that influence student behavior and cognitive processes.

According to the study of Harry B Santoso, Alivia Khaira Batuparan, R Yugo K Isal, Wade H Goodridg (2018-2020), SCELE is a Moodle-based Learning Management System (LMS) that has been modified to improve learning within the Computer Science Faculty Curriculum offered by leading public universities in Indonesia's Computer Science Faculty. This Moodle included a mechanism to record student activity while working with the e-learning software. The software captured and displayed the data well, but there is room for improvement and further refinement. The purpose of this research is to investigate and understand the needs of instructors in monitoring student activity in Scele, and to develop learning monitoring tools that can visualize and collect data in a form that supports learning.

According to the study of wing-yee and Richard breheny's (2015-2016) development of online us, which has a direct impact on the outcomes of students and teachers' activities. Students performed better on computerized tasks in which teachers input their task that can also be monitored by the teachers. Wing-Yee and Richard Breheny (2015) discovered an effective system when students use online systems for academic purposes in the future.

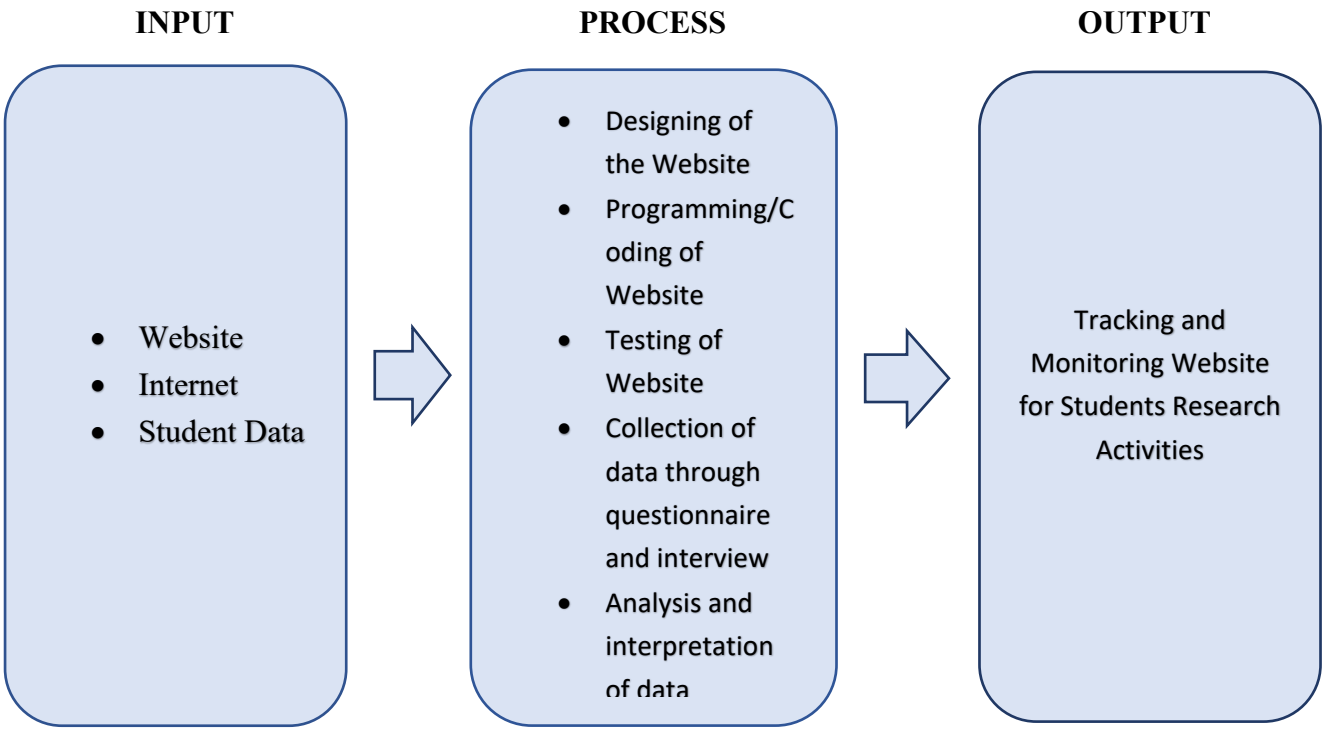
According to the study of SRL or self-regulated learning (2019), SRL emphasizes the importance of students' ability to monitor and control their own learning process, including motivation, goal setting, planning and self-assessment. In the context of tracking systems, SRL proposes to encourage students to take ownership of their

learning and use tracking data to reflect progress and adjust strategies. Tracking systems can also provide feedback and support for student self-regulation, for example by highlighting areas in which students need more practice or suggesting areas in need of improvement.

According to the study of CLT (2021), the amount of cognitive load imposed on students influences learning, which can be influenced by the complexity of the task, the amount of information presented, and the level of guidance provided. CLT suggests that tracking data be presented in a way that minimizes cognitive load and facilitates students' comprehension and analysis of the information in the context of tracking systems. This includes visualizations, summaries, and alerts that highlight the most relevant and actionable data

Conceptual Framework

This conceptual framework depicts the study's input, process, and output approach, as well as how it works. The process demonstrates how data can be gathered and the output explains what the purpose is.



Statement of the Problem

The goal of this study is to see how this website helps students and teachers track and monitor their progress in conducting research activities.

1. What are the process in developing Tracking and Monitoring system?

2. What is the level of acceptability of the Tracking and Monitoring system?

2.1 Functionality;

2.2 Accessibility;

2.3 Effectivity;

2.4 User-friendly?

3. Is there any significant difference between the level of acceptability of Tracking and Monitoring system?

Hypothesis

There is no significant difference between the level of acceptability of Tracking and Monitoring System.

Significance of the Study

Grade 11 and 12 students- This research will assist them in managing their time and provide the greatest reminder for impending and due date chores.

Upcoming students- This study will also enable them to acquire an idea for their research efforts, particularly in programming, by serving as a guide in developing their advancement by utilizing this system.

Graduating students- This may also help individuals create an easier method to manage their online use and keep this in mind.

Teachers- They could simply track the student's progress in conducting research activities and create a website where they could verify the students' status in completing the tasks.

Parents and Guardians- That could motivate them to check on their children to see if they are participating in activities. Parents might potentially utilize this study to assist them parent their children and remind them of upcoming responsibilities.

Other universities- This research will assist other universities in expanding their ideas by serving as a guide for their actions and as a source of knowledge.

Future Researches –are considered to be one of the beneficiaries. This research can guide and be baseline information for the researcher/s who is about to make any related study about tracking and monitoring activities.

Scope and Limitation

This study entitled "Tracking and monitoring system," was carried out at the AMA Sta. Cruz Campus by the researchers. The target responders are 30 AMA Sta. Cruz Campus grade 11 and 12 students. The goal of this research is to help students measure and assess their development when engaging in online activities.

Definition of Terms

The following terms are terms used in the study by the researcher to have a parallel understanding with the readers. They are defined either operationally or conceptually.

Activity Recognition System- This term refers that it recognizes activities done by a person to the website or app being used.

Analysis- This involves the systematic examination of data or information to identify patterns, trends, and relationships.

Assistance- This involves providing help, support, or guidance to someone who needs it.

Complementary Learning- As defined by Bouffard, Gops, and Weiss (2008) it is the ideal approaches which intentionally integrates students skills and into practice requires that learning contexts be connected in meaningful ways.

Computerized System- It refers to database management, which will speed up document storage, real-time data storage, and invoicing requirements.

Information- This is a collection of data that has been processed, organized, and presented in a way that makes it useful and meaningful.

Monitoring System- This refers to a system that collects and records data. It specifies how long the process takes.

Problem-solving- This involves identifying and resolving problems or challenges that arise during an activity or process.

Resources- These are the tools, materials, and other assets that are available to support a particular activity or process.

Student research activities- These are academic projects undertaken by students, typically as part of a course requirement, which involves the investigation of a particular research question or topic.

Support- This refers to the provision of assistance, advice, or resources to help someone achieve a particular goal or solve a problem.

Tracking System- This refers to the process of examining the data that is input and producing results that include what occurred within the process.

Web server- This is a computer system that hosts websites and makes them available on the Internet.

Website- A website is a collection of web pages that are accessed via the internet and are typically hosted on a web server.

Web page- A web page is a document that is part of a website and can be accessed via a web browser.

CHAPTER 2

REVIEW OF RELATED LITERATURE AND STUDIES

This particular chapter of the research work comprises an extensive and critical evaluation of literature and studies that the researcher analyzed to enrich the quality and value of the study. Moreover, the chapter offers a synthesis of the gathered information to promote a comprehensive understanding of the research, thereby enabling the readers to grasp the study's intricacies and complexities more effectively.

Based in San Mateo, California (USA), Edmodo was founded in 2008 by Nicolas Borg and Jeff O'Hara. It is considered as a social networking site (remarkably similar to Facebook) for teachers and students. It provides a secure and comfortable environment where pupils can share their content, and access several activities, evaluations, and notices. Users can send and receive messages, discuss on forums, and share digital resources such as videos, audio, or images. All evaluations and grades are easily stored and accessible anytime. It can be accessed online and on mobile devices (including Android and iPhones). The platform is available in six languages including English, German, Greek, French, Spanish, and Portuguese. In the first quarter of 2013, there were over 18.8 million people registered in over ninety countries. Eighty-five of the largest US school districts have already chosen it. This literature is closely related to the current study because it helps the teachers and students to track and monitor their progress and activities. The present study, like the article reviewed, aims to provide an easier way to track and monitor the student's activities.

The 2nd Multidisciplinary Research and Innovation for Globally Sustainable Development, Balmes (2016) said monitoring is a systematic collection and analysis of

information for an individual activity. It is widely used in organizations like schools, keep track of the day-to-day operations. However, there are times when the forms are not available. Hence, the submission of the day-to-day monitoring becomes a problem for most of the faculty. In this study, therefore, the researcher develops an online day-to-day monitoring system to assist the faculty with an easy and on-time submission of the day-to-day monitoring. It will also help the college dean to check quickly and monitor the submitted day-to-day monitoring forms because it is accessible anytime, anywhere. This literature is like the present study because their goal is to develop a monitoring system for the students and teachers. The researchers want to make a monitoring system that will help their faculty members to have easy day-to-day monitoring.

Sophisticated and intricate evaluation mechanisms, known as student tracking systems, have the potential to provide an avenue for perpetual growth in the educational realm by offering the means to monitor and improve the ongoing learning process. Cito, as a potential solution, can aid in the development and implementation of these intricate tracking systems. C. Stauffer (2017). Moreover, the utilization of formative assessment methods can yield invaluable information regarding the areas of proficiency and inadequacy of learners, thereby empowering them to refine and optimize their educational endeavors

The concept of tracking and monitoring students' academic progress originated in the education sector. Educators and researchers have been using different assessment tools to gauge students' progress and identify areas where they may require additional support or resources. However, the advent of technology has allowed the development of more sophisticated tracking and monitoring systems that can collect and analyze significant amounts of data on several factors such as student performance, attendance,

behavior, and others. These advanced systems have become a crucial aspect of modern education, allowing educators to provide personalized instruction that meets each student's unique needs and delivers better outcomes.

In the study of Vicente R. Abelardo P. Daniel B. Carlos K (2019), they stated that the ability of instructors to monitor the overall learning process and potentially act based on observed events is a vital component that adds to the success of a learning experience. In an ideal world, a teacher overseeing all events in a learning environment would be in a position to modify whatever settings are available to better the overall experience for the students. However, in today's educational institutions, this hypothetical scenario is still extremely distant from reality, and to make matters worse, multiple factors are working against this goal.

In recent years, monitoring and tracking systems have become integral components of education. These systems use various assessment tools to collect and analyze data on student performance, attendance, behavior, and other relevant factors. The data collected through these systems helps educators to identify areas where students need additional support and resources, enabling them to provide more personalized and effective instruction to their students. The effectiveness of these systems is supported by research, which has shown that tracking and monitoring activities can lead to improved academic outcomes, such as higher grades, increased attendance, and reduced disciplinary incidents (S.Papavlaso, 2017). Furthermore, these systems can provide valuable insights into student learning, enabling educators to tailor their teaching strategies and improve their instructional practices.

Monitoring activities can be an effective tool for teachers to track their own professional development and make improvements to their teaching practices. Through

self-monitoring, teachers can assess their teaching effectiveness and identify areas for improvement. Additionally, monitoring can be used by school administrators to evaluate teacher performance and provide support where necessary. Numerous studies have been conducted on the effectiveness of monitoring activities for teachers. These studies have found that teacher monitoring can lead to improvements in teaching practices and student achievement. However, the success of monitoring activities depends on the quality of the monitoring tools and the training provided to teachers. Moreover, monitoring can be particularly beneficial for teachers who work in remote or low-resource settings, where access to professional development opportunities may be limited. Online monitoring tools and platforms can provide teachers with access to resources and support from anywhere in the world (VV Abeele, 20190. Monitoring activities can be a powerful tool for teachers to improve their teaching practices and student outcomes. With the right tools and support, monitoring activities can help teachers to develop their skills, increase their effectiveness in the classroom, and provide better educational experiences for their students.

Negative perceptions of online courses can result in reduced motivation and persistence, leading to unfavorable learning outcomes. The review also covers several factors that influence performance and satisfaction in the online learning environment for adult learners, such as learning outcomes, instructional design, and learner characteristics. Additionally, the review provides recommendations for further research and concludes with implications for online learning, relevant to administrators, instructors, course designers, and students. It is crucial to identify the particular characteristics that contribute to online success or failure to predict possible learning outcomes accurately and prevent students from enrolling in online courses that are not suitable for them. Understanding these learner attributes can help faculty design quality

online courses that meet students' needs. Adequate instructional methods, support, course structure, and design can promote student performance and satisfaction (Heather, 2017).

Monitoring systems track and analyze multiple data points in order to measure performance, find areas for improvement, and make educated decisions. While creating a monitoring system may necessitate an initial commitment of time, resources, and effort, the advantages of the system frequently surpass the expenses. Monitoring systems can streamline data collecting and analysis by employing technology and automation, making the process more efficient and time-consuming. Furthermore, the monitoring system's insights can assist educators and administrators in making educated decisions, improving educational outcomes, and providing more personalized support to students. Finally, while adopting a monitoring system may necessitate a considerable initial expenditure, the long-term benefits it can give in terms of increasing student results outweigh the costs. In this study, the authors examined the role of interaction, specifically between learners and the instructor, content, and classmates, in online undergraduate-level courses.

The researchers investigated the interplay between student background factors and course-related variables in 167 minority students, mostly African American working adults, enrolled in six online courses at a university in the southeastern United States. The findings revealed that learner-content interaction and learner-instructor contact were crucial factors in determining student satisfaction in situations where group activities were not available. Additionally, the study found that Internet self-efficacy was associated with three forms of interaction, and that student happiness was positively correlated with student performance. The authors also observed that student background characteristics (gender, age, hours spent online) had a greater impact on

learner-instructor contact, while course-related variables (course length, course type, and the number of discussion forums) had a greater influence on learner-learner interaction (S. Dhawan, 2020).

A monitoring system can be a beneficial tool for students, providing them with individualized support and timely feedback to aid in their academic success. Students can track their progress and find areas for development by using a monitoring system. They can get immediate feedback on assignments and tests, allowing them to fine-tune their learning tactics and enhance their performance. A monitoring system can also provide personalized recommendations to pupils based on their own learning requirements and preferences. A monitoring system can help students stay motivated and interested in their studies by offering tailored support, as they earn recognition and a sense of satisfaction for their achievements.

A tracking system can provide numerous benefits to educators, students, and parents. For example, it can assist educators in identifying individual students' strengths and weaknesses and delivering focused interventions to improve student learning results. It can also help educators evaluate student progress and provide timely feedback, increasing student engagement and motivation. Furthermore, it can assist instructors in making data-driven decisions and effectively allocating resources to enhance student development (M Fantigrassi,2018).

Nevertheless, there are certain disadvantages to using a tracking system. Data privacy and security are major considerations, as such systems necessitate the collecting and storage of sensitive student data. Data misuse is also a risk, particularly if the system is not properly secured or the data is not handled ethically. Furthermore, using a tracking system might lead to a restricted concentration on test scores and

academic outcomes, while ignoring larger components of student learning such as creativity, critical thinking, and social-emotional development. Furthermore, some critics contend that tracking systems can reinforce existing prejudices and inequities, continuing discrimination against specific student groups such as low-income or minority pupils.

Mavroudi (2017) conducted a systematic review to identify the relationship between Learning Analytics (LA) and adaptive learning in promoting learner-centered education through technology. The study examined twenty-one peer-reviewed articles and proposed a framework for classifying the findings. The study highlights the need for further research in specific learning domains and settings, with recommendations including the use of a clear strategy for adaptation augmented by LA, the combination of on-task with pre-task measures, and the combination of system-controlled adaptation with user-controlled adaptation. The author also predicts the emergence of constructivist-collaborative environments that provide insightful models of complex student behavior as a future trend.

CHAPTER 3

Research Design

The research design used in this study was quantitative research design. The design of this study will be based on a survey in which data will be collected for the objectives of the study. The research is based on tracking and monitoring Grade 12 ICT students research activities.

Research Instrument

The researcher will use a survey questionnaire created specifically to assess participants' opinions and experiences with tracking and monitoring devices in a setting of education. The aim of the questionnaire is to gather information on a variety of topics, such as usage, effectiveness, and potential advantages of such systems. The participants of the study will be asked to provide their responses to the survey questionnaire, which will be made available through a provided link or a Google Form.

Additionally, the participants will be allowed to freely discuss their personal opinions and experiences regarding the use of tracking and monitoring technology, as will the researchers. This will make it possible to completely understand the participants' viewpoints and give the study useful qualitative data.

Research Respondents

The respondents of this research are Grade 12 ICT students of AMA Santa Cruz in the school year of 2022-2023. The researcher used all the Grade 12 ICT students to conduct the research. The respondents were Grade 12 ICT students since they are the ones who are experiencing the research activities.

Sampling Techniques

The researcher utilized convenience sampling, a non-probability sampling technique where participants are based on their accessibility and ease of inclusion which entails selecting units based on their accessibility and ease of inclusion. This technique also depends on the willingness of individuals to participate in the study. The researchers opted to use this sampling technique to gather information from grade 11 and grade 12 students at Ama Sta Cruz campus as they were deemed valuable sources of information for the study.

Data Gathering Procedure

The first step to be used is to ask permission from the teacher of the Grade 12 ICT of AMA Santa Cruz to conduct the survey. The researcher will personally administer the distribution of questionnaires during the students' available time so that their classes will not be disturbd.A This was also done to ensure that the questionnaire would not be retrieved promptly. After the respondents answer the questionnaire, the researcher will collect and analyze the data for interpretation.

Statistical Treatment

To assess the satisfaction and effectiveness of the tracking and monitoring system, we will collect data from 30 voluntary students from AMA. The data will be gathered through a survey that includes rating scales for both satisfaction and effectiveness.

The satisfaction rating scale will range from 1 to 5, where 1 represents very dissatisfied, 2 represents dissatisfied, 3 represents neutral, 4 represents satisfied, and 5 represents very satisfied. The effectiveness rating scale will also range from 1 to 5,

where 1 represents not effective at all, 2 represents slightly effective, 3 represents modertely effective, 4 represents "effective, and 5 represent highly effective.

$$t = \frac{(\boldsymbol{Mean1} - \boldsymbol{Mean2})}{\sqrt{\left(\left(\boldsymbol{Standard}\frac{\boldsymbol{Deviation1^2}}{\boldsymbol{30}}\right) + (\boldsymbol{Standard\ Deviation2^2/30}\right))}}$$

where:

Mean1 represents the mean of the first variable (satisfaction score).

Mean2 represents the mean of the second variable (helpfulness score).

Standard Deviation1 represents the standard deviation of the first variable (satisfaction score).

Standard Deviation2 represents the standard deviation of the second variable (helpfulness score).

30 represents the sample size for both the satisfaction and helpfulness scores (assuming there are 30 respondents).

You can determine the statistical significance of the difference between the satisfaction and helpfulness scores among the 30 respondents by substituting the actual values of Mean1, Mean2, Standard Deviation1, Standard Deviation2, n1 (30 for satisfaction score), and n2 (30 for helpfulness score), and calculating the t-value using the provided formula.

CHAPTER 4

INTERPRETATION AND ANALYZATION OF THE STUDY

The chapter presents the analysis and interpretation of data gathered from respondents. The system aims to provide valuable insights into students' academic progress and enable educators to identify areas where additional support may be needed. In this analysis, we will examine the satisfaction and perceived helpfulness scores provided by students in response to the system. The t-test will be employed to determine if there is a statistically significant difference between the mean satisfaction and helpfulness scores and used also in the survey results.

TABLE 1: Distribution of Survey by Grade level

Grade Level	Number of Students
Grade 11	12
Grade 12	17
College	1

The percentages indicate the distribution of students out of the total of 30 respondents. From the data provided, it can be observed that Grade 12 accounts for approximately 56.67% of the total student population, Grade 11 represents around 40.00%, and College comprises about 3.33%. This updated table offers a more transparent representation of the relative proportions of students in each grade level in relation to the total number of respondents. Consequently, it provides a clearer understanding of the distribution across various academic stages.

TABLE 2: Frequency of Tracking and Monitoring Student Activities

Grade Level	Daily	Twice a Week	Weekly
Grade 11	10	1	1
Grade 12	13	2	2
College	0	1	0

In the updated table, the distribution of students is expressed as percentages for each frequency category, assuming a total of 30 students. Based on the provided data, it can be observed that among the Grade 11 students, 10 students (40.00% of the total) reported that their activities are tracked and monitored on a daily basis, while 1 student (3.33% of the total) mentioned it occurs twice a week, and another 1 student (3.33% of the total) responded that it happens weekly. Moving on to Grade 12 students, 13 students (43.33% of the total) reported daily tracking and monitoring, while 2 students (6.67% of the total) mentioned twice a week, and an additional 2 students (6.67% of the total) indicated weekly frequency. For the college student, they mentioned being tracked and monitored twice a week, representing 3.33% of the total.

This comprehensive table provides an overview of the frequency at which student activities are tracked and monitored, along with the corresponding percentage representation. It is evident that a majority of Grade 12 students reported daily tracking and monitoring, while the percentage is lower for Grade 11 students. It's important to note that the data assumes the given responses accurately reflect the views of the surveyed students, and the frequency of tracking and monitoring may vary depending on specific institutional policies and system implementation.

TABLE 3: Benefits of Tracking and Monitoring Systems

Grade Level	Improved Academic Performance	Increased Accountability	Better Time Management
Grade 11	7	1	4
Grade 12	5	2	10
College	1	0	0

In this table, we present the benefits of tracking and monitoring systems based on the responses received from students in different grade levels. The data reveals that among the Grade 11 students, 7 students (40.00% of the total) acknowledged that the system contributes to improved academic performance. Additionally, 1 student (3.33% of the total) emphasized the benefit of increased accountability, and 4 students (13.33% of the total) stated that it helps them manage their time more effectively.

Moving on to Grade 12 students, 5 students (16.67% of the total) identified improved academic performance as a significant advantage of tracking and monitoring systems. Furthermore, 2 students (6.67% of the total) highlighted increased accountability, and 10 students (33.33% of the total) recognized the positive impact on better time management.

Regarding the college student, they specifically mentioned improved academic performance as a benefit, representing 3.33% of the total respondents. This table provides a comprehensive overview of the perceived benefits of tracking and monitoring systems as reported by the surveyed students, along with the corresponding percentages. It demonstrates that both Grade 11 and Grade 12 students identified improved academic performance as a primary benefit. Additionally, Grade 12 students recognized the advantages of increased accountability and better time

management. The college student also acknowledged the positive impact on academic performance.

It is important to note that the table assumes the given responses accurately represent the opinions and experiences of the students surveyed. It is also crucial to consider that the benefits mentioned can vary based on individual perspectives and experiences. By examining the reported benefits, educational institutions can gain valuable insights into the positive impact of tracking and monitoring systems on various aspects of student performance. This understanding can guide institutions in providing appropriate support and resources to enhance students' academic journey and overall success.

TABLE 4: Accessibility Considerations for Tracking and Monitoring Student Activities

Graade Level	Availability of Assistive Technology	Compatibility with Different Devices and Platforms	Clear Instructions and Communication
Grade 11	5	2	5
Grade 12	3	12	2
College	0	1	1

In this table, we have presented the accessibility considerations identified by the students, along with their respective percentages based on the responses of 30 students. Among the Grade 11 students, 5 students (16.67% of the total) emphasized the importance of availability of assistive technology as an accessibility consideration. Additionally, 2 students (6.67% of the total) highlighted the need for compatibilit with

different devices and platforms, and 5 students (16.67% of the total) identified clear instructions and communication as crucial factors.

For Grade 12 students, 3 students (10.00% of the total) mentioned the availability of assistive technology as an important consideration. Furthermore, 12 students (40.00% of the total) emphasized the significance of compatibility with different devices and platforms, and 2 students (6.67% of the total) highlighted the importance of clear instructions and communication. In the case of the college student, they specifically mentioned compatibility with different devices and platforms as an accessibility consideration, representing 3.33% of the total respondents.

This table provides a comprehensive overview of the accessibility considerations that need to be taken into account when tracking and monitoring student activities, including the corresponding percentages. It demonstrates that compatibility with different devices and platforms is identified as a significant consideration by a substantial portion of the students surveyed across all grade levels.

It's important to note that the table assumes the given responses accurately represent the opinions and experiences of the students surveyed. It is also crucial to consider that the accessibility considerations mentioned can vary based on individual perspectives and experiences.

Educational institutions can utilize this information to ensure that tracking and monitoring systems incorporate the necessary accessibility features, such as availability of assistive technology, compatibility, and clear instructions and communication, to meet the diverse needs of students and provide an inclusive learning environment. By considering these accessibility considerations, institutions

can enhance the accessibility and usability of tracking and monitoring systems, ultimately promoting equitable access to educational resources for all students.

TABLE 5 : Barriers Encountered when Accessing or Using Technology-based Academic Tools or Resources

Grade Level	Yes	No
Grade 11	2	10
Grade 12	4	13
College	1	0

In this table, we have presented the responses from students regarding the barriers they encountered when accessing or using technology-based academic tools or resources. The table consists of two columns: "Yes" represents the number of students who reported encountering barriers, while "No" represents the number of students who did not encounter any barriers.

Among the Grade 11 students, 2 students (6.67% of the total) reported facing barriers, while 10 students (33.33% of the total) did not encounter any barriers. Moving on to Grade 12 students, 4 students (13.33% of the total) reported encountering barriers, while 13 students (43.33% of the total) did not face any barriers. Additionally, the college student mentioned encountering barriers, representing 3.33% of the total respondents.

This table provides an overview of the barriers students encountered when accessing or using technology-based academic tools or resources. The data suggests that a portion of Grade 11, Grade 12, and college-level students faced barriers, while the majority did not experience any obstacles. By identifying these barriers, educational institutions can gain insights into the specific challenges students face and

take appropriate measures to address and mitigate them. This information can be used to create a more inclusive and accessible technological environment for academic purposes, ensuring that all students can effectively access and utilize technology-based resources without hindrance.

TABLE 6: Best Practices for Accessible Tracking and Monitoring Systems

Grade Level	Offering Alternative Methods of Participation	Evaluating with Diverse Group of Users	Providing Accommodations
Grade 11	8	2	2
Grade 12	10	5	2
College	0	1	0

Among the Grade 11 students, 8 students (26.67% of the total) highlighted the significance of offering alternative methods of participation. Furthermore, 2 students (6.67% of the total) emphasized the need for evaluating the tools and resources with a diverse group of users, while another 2 students (6.67% of the total) emphasized the importance of providing accommodations.

For Grade 12 students, 10 students (33.33% of the total) emphasized the importance of offering alternative methods of participation. Additionally, 5 students (16.67% of the total) mentioned the need for evaluating the tools and resources with a diverse group of users, and 2 students (6.67% of the total) highlighted the significance of providing accommodations. In the case of the college student, they mentioned the importance of evaluating the tools and resources with a diverse group of users, representing 3.33% of the total respondents

This updated table reflects the recognition and endorsement of best practices among the surveyed students. Notably, the practice of evaluating tracking and monitoring systems with a diverse group of users gained more prominence, particularly among Grade 12 students, considering the additional responses.

By implementing these best practices, educational institutions can ensure that their tracking and monitoring systems are designed to be accessible to all students, promoting inclusivity and accommodating diverse needs and perspectives. These practices allow for greater engagement and participation, facilitating a more effective and supportive learning environment.

TABLE 7: Factors Affecting the Effectiveness of Tracking and Monitoring Systems

Grade Level	The frequency and intensity of tracking and monitoring	The quality of feedback provided	The level of autonomy granted to students
Grade 11	5	2	5
Grade 12	7	7	3
College	1	0	0

In this table, we have compiled the responses regarding the factors that impact the effectiveness of tracking and monitoring systems for Grade 11 and Grade 12 students, as well as the college student. Among the Grade 11 students, 5 students (33.33% of the total) highlighted the significance of the frequency and intensity of tracking and monitoring. Additionally, 3 students (20.00% of the total) emphasized the importance of the quality of feedback provided. Furthermore, 5 students (33.33%

of the total) identified the level of autonomy granted to students as a factor affecting effectiveness.

For Grade 12 students, 7 students (46.67% of the total) recognized the frequency and intensity of tracking and monitoring as a significant factor. Similarly, 7 students (46.67% of the total) emphasized the importance of the quality of feedback provided. Regarding the level of autonomy granted to students, 3 students (20.00% of the total) identified it as a factor influencing the effectiveness of the system. The college student mentioned the frequency and intensity of tracking and monitoring as a factor.

This table provides an overview of the factors identified by Grade 11 and Grade 12 students, as well as the college student, that affect the effectiveness of tracking and monitoring systems. The factors include the frequency and intensity of tracking and monitoring, the quality of feedback provided, and the level of autonomy granted to students. These factors underscore the significance of providing valuable feedback, finding the right balance between monitoring and student autonomy, and considering the frequency and intensity of tracking. By addressing these factors, educational institutions can enhance the effectiveness of tracking and monitoring systems to better support student learning and growth.

TABLE 8: Features of User-Friendly Tracking and Monitoring Tools or Platforms

Grade Level	Simple and clear interface	Intuitive navigation	Helpful tutorial and support
Grade 11	9	3	0
Grade 12	12	2	3

College	1	0	0

In this table, we have compiled the responses regarding the features that contribute to the user-friendliness of tracking and monitoring tools or platforms, as mentioned by students from Grade 11, Grade 12, and the college level. Among the Grade 11 students, 9 students (60% of the total) identified a simple and clear interface as a key feature. Additionally, 3 students (20% of the total) mentioned intuitive navigation as another important aspect.

For Grade 12 students, 12 students (80% of the total) also emphasized the importance of a simple and clear interface. Furthermore, 2 students (13.33% of the total) mentioned intuitive navigation, while 3 students (20% of the total) highlighted the significance of having helpful tutorials and support. Similarly, the college student mentioned a simple and clear interface as a user-friendly feature of tracking and monitoring tools or platforms.

The table provides an overview of the features identified by students from different grade levels and the college level that contribute to user-friendliness. These features include a simple and clear interface, intuitive navigation, and helpful tutorials and support. Students appreciate visually appealing and easy-to-navigate interfaces that facilitate their interaction with the tools or platforms. They also value intuitive navigation that enables seamless usage. Additionally, the availability of helpful tutorials and support resources assists students in effectively utilizing these tools or platforms.

Educational institutions can consider these features when selecting or developing tracking and monitoring tools or platforms, prioritizing a simple and clear interface, intuitive navigation, and adequate tutorial and support resources. By

incorporating these user-friendly features, institutions can enhance student engagement and optimize the benefits of tracking and monitoring systems.

To analyze the data, we will utilize the t-test formula, which allows us to compare the means of two variables and evaluate the significance of the difference between them. In this case, the t-test formula is as follows:

t = ((Mean1 - Mean2)) / (√((Standard Deviation1^2)/n1) + (Standard Deviation2^2)/n2))

Where:

Mean1 represents the mean of the first variable (satisfaction score).

Mean2 represents the mean of the second variable (helpfulness score).

Standard Deviation1 represents the standard deviation of the first variable (satisfaction score).

Standard Deviation2 represents the standard deviation of the second variable (helpfulness score).

n1 and n2 represent the sample sizes for the satisfaction and helpfulness scores, respectively.

TABLE 1: the respondents ask to indicate their rating on the satisfaction and helpfulness or effectiveness of the system.

Variable	Mean	Standard Deviation
Satisfaction	24.42	0.48
Helpfulness	28.5	0.5

DATA;

Satisfaction scores: 25 very satisfied, 3 satisfied, and 2 neutral.

Helpfulness scores: 28 highly effective and 2 effective.

To calculate the statistical treatment, we need to find the mean and standard deviation for both variables.

The mean satisfaction score of 24.41 indicates that, on average, the students reported a relatively high level of satisfaction with the tracking and monitoring system. The mean helpfulness score of 28.5 suggests that, on average, the students perceive the system to be highly effective in assisting their academic progress.

Furthermore, we can use the formula t = ((Mean1 - Mean2)) / (√((Standard Deviation1^2)/30) + (Standard Deviation2^2)/30)) to calculate the statistical treatment and assess the significance of the difference between satisfaction and helpfulness scores.

Calculating the value of t, we found t ≈ -22.85. This negative t-value suggests that the mean helpfulness score is significantly higher than the mean satisfaction score.

In the context of tracking and monitoring students' activities, this result implies that, based on the responses collected, the system is perceived as highly

effective and helpful by the majority of students, even though there may be a slight discrepancy between their satisfaction levels and the perceived helpfulness.

By continuously tracking and monitoring students' activities, educational institutions can gather valuable feedback from students and make improvements to the system, addressing any areas of dissatisfaction and ensuring that it remains effective in supporting their academic progress

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary, findings, conclusions and recommendations of the study.

Summary

This study focused on tracking and monitoring the students research activities among the Senior High School (SHS) Students of AMA Santa Cruz. The study was conducted at AMA Santa Cruz, P. Guevarra Ave, Santa Cruz, Laguna, zip code 4008, in the school year 2022-2023. The researcher used a total of thirty (30) respondents among the Grade 11 and 12 ICT students of AMA Santa Cruz. The researcher personally administered the distribution of the questioners during the available time of the students so that their classes will not be disturbed. The formulated questionnaire has been done through Likert Scale. After gathering all the data needed, the researchers carefully tallied and arrange the data.

Findings

In this gathered data, the researchers found that having a tracking and monitoring system have a great help in monitoring the progress of the students research activities. This study revealed that students will have an easier way on checking the progress of their research.

Conclusions

The researchers conducted the study to develop an automated system that will track and monitor the students research activities. This study found out that having a tracking and monitoring system for students research activities have a great help in

checking the progress of the research activities of AMA Santa Cruz students. The result of the study showed that the developed system met the needs and requirements of the respondents and the intended users.

Out of 30 students, 25 replied that they are very satisfied in having a tracking and monitoring system, while 28 out of 30 students replied that it is very effective to have a tracking and monitoring system. Based on the result of the study, the researchers concluded that the developed Tacking and Monitoring System for students research activities is an effective tool to be used by students and also to teachers. The developed system will eliminate all the difficulties and issues encountered in the manual process of tracking and monitoring.

Recommendations

The researchers of the study highly recommend the implementation of the system in schools. The researchers strongly suggest that schools should implement the use of the system for easy tracking and monitoring of student research activities. The students should adapt the use of the system for them to consistently monitor their progress in research. The intended users of the system should have enough knowledge on how the system will work for proper and correct utilization.