

**DEVELOPMENT OF MEDICAL ALERT BUTTON SYSTEM TO  
IMPROVE CLASSROOM EMERGENCY RESPONSE AT  
ATEC TECHNOLOGICAL COLLEGE INC.**

A Thesis Study Presented to the Faculty Members

of Senior High School,

ATEC Technological College Inc.

At Sta. Rita, Guiguinto, Bulacan

In Partial Fulfillment of the Requirements for

Research Capstone

Fernandez, Jomarie S.

Villamil, Jaime F.

Cabigao, Jean Gabrielle S.

Cunanan, Nativity Rose C.

De Guzman, Jejomar Prince E.

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# ATEC TECHNOLOGICAL COLLEGE

JIH Bldg., Sta. Rita, Guiguinto, Bulacan  
 atec\_college@yahoo.com / atec\_trainingcenter@yahoo.com  
 (044) 794-0542 / 306-1404

## APPROVAL SHEET

In partial fulfillment of the requirements for the Academic Track with specialization in SCIENCE, TECHNOLOGY, ENGINEERING & MATHEMATICS (STEM), this thesis entitled **Development of Medical Alert Button System to Improve Classroom Emergency Response at ATEC Technological College** which was prepared and submitted by MR. JOMARIE FERNANDEZ, MR. JAIME VILLAMIL, MS. JEAN CABIGAO, MR. JEJOMAR PRINCE DE GUZMAN, MS. NATIVITY ROSE CUNANAN is hereby recommended for approval and acceptance.

**ANALYN V. HERNANDEZ**

Research Capstone Teacher

Approved in partial fulfillment of the requirements for the Academic Track specialization in SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS (STEM) by the Oral Examination Committee.

Panelist

Panelist

Accepted in partial fulfillment of the requirements for Academic Track with specialization in SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS (STEM).

Date:

**MS. JANET D. BONGAT**

Academic Head

**ATEC TECHNOLOGICAL COLLEGE, INC.****Certificate of Originality**

We hereby declare that this submission is my own work and that, to the best of our knowledge and belief, it contains no material previously published or written by another person, nor material which relates to substantial events, except where due to acknowledgement is made in the thesis.

Any contribution made to the research by colleagues, with whom researchers have worked or elsewhere, during our candidature, is fully acknowledged. We also declare that the intellectual content of this thesis is the product of my own work, except to the extent that assistance from others in the project's design and conception or in style, presentation and linguistic expression is acknowledged.

Researcher/s

Date: \_\_\_\_\_

Attested by:

**ANALYN V. HERNANDEZ**

Research Capstone Adviser

Date: \_\_\_\_\_

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## ABSTRACT

This study focuses on the design, development, and evaluation of a Web-Based Medical Emergency Alert Button System intended to improve the response time to medical emergencies in school classrooms. The system provides a simple and accessible alert mechanism that enables teachers and students to send emergency medical alerts to the school clinic and faculty members and designated staff through a centralized web platform. The study used a quantitative research method which combined survey questionnaires with system testing to evaluate the system's usability and reliability and operational capability during emergency communication. Findings indicate that the majority of respondents perceive the system as easy to use, reliable, and effective in reducing response delays compared to traditional methods such as phone calls or verbal reporting. The results demonstrate that a web-based medical emergency alert system implementation leads to better emergency preparedness and better school personnel coordination and better school safety in educational institutions. **Keywords:** *medical emergency alert system, web-based system, school safety, emergency response, classroom emergencies*

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## **CHAPTER I**

### **THE PROBLEM AND ITS SETTING**

#### **Introduction and Background of the Study**

The primary mission of educational institutions is to protect the health and safety of their students and faculty members. The classroom environment requires immediate medical help for unexpected accidents and sudden dizziness, asthma attacks, allergic reactions, seizure events and other medical emergencies. Emergency situations require fast response systems that must operate efficiently because these systems protect people from deteriorating health conditions while also creating life-threatening medical situations. The conventional methods that schools use to request assistance remain operational because schools currently use telephone calls, leaving the classroom to look for help, or sending a student to the school clinic or faculty to connect with help. The procedures create considerable delays because emergency response personnel must travel from their distant locations to handle emergencies which depend on their ability to communicate with emergency responders.

Emergency response systems that experience delays will cause worsened medical conditions which lead to increased danger for patients. The technological progress brings new solutions which now deliver faster and more efficient methods to solve existing issues. According to Nwufoh,

Olanrewaju, and Akanbi (2022), web-based emergency alert systems are effective in providing real-time notifications and improving response time during critical situations. The Medical Emergency Alert Button System provides classrooms with an advanced emergency response solution through a compact and easy-to-use alert system. The system allows instant emergency notification to designated offices and the school clinic and authorized faculty members through a single button press which removes the need for extensive emergency procedures. The system provides a user-friendly experience which maintains reliable performance under high-pressure situations.

Researchers developed a web-based Medical Emergency Alert Button System which implements dedicated buttons to handle various medical emergency situations. The system will be accessed through a tablet device installed on the third floor of the school, positioned at the center of the hallway wall to ensure high visibility and accessibility. The tablet connects to a wired speaker system which covers the faculty office area and the school clinic space because these locations function as the primary alert receiving stations. The speaker system delivers an audio alert when an emergency button gets pressed to inform faculty members and medical personnel about the situation, which helps them to respond more quickly and effectively. The primary objective of this study is to develop and evaluate the effectiveness of the system in reducing emergency response

time, improving communication among school staff, and enhancing overall safety within the school environment.

### **Statement of the Problem**

This research aims to determine the effectiveness of a dedicated medical alert button system in reducing response times and improving student safety during health-related emergencies.

#### **Specific (Minor) Problems:**

1. What challenges do students and teachers face when reporting classroom medical emergencies such as fainting, asthma attacks, or injuries?
2. What benefits does a digital alert system provide in terms of communication and response speed compared to traditional methods?
3. What is the effectiveness of the alert button in improving response time and communication during simulated emergency situations?
4. What is the efficiency of the system's design in accurately identifying the specific type of medical emergency without verbal explanation?
5. What is the user-friendliness of the device for students and teachers when operating it during high-pressure, real-world situations?

## **Significance of the Study**

The research project called Development of a Medical Alert Button System to Improve Classroom Emergency Response is quite crucial to different parties involved in the educational process. By doing so, it would not only raise the level of safety but also the efficiency and the preparedness in schools.

**Students:** The faster emergency response provided by this system leads to fewer complications and, thus, gives students a more secure environment in which to learn. Having immediate help available can be crucial for life, particularly with students who have chronic illnesses.

**Teachers:** The Medical Alert Button System gives teachers a very fast and dependable method of calling for help in emergencies without having to exit the room. These de-stresses the teachers and allows them to concentrate on the provision of the initial care and the upkeep of order in the classroom.

**School Nurses and Medical Personnel:** The system makes it possible for the school health staff to get instant notifications, thus allowing them to react quickly and also to get ready with the right medical interventions before being on the spot.

**School Administrators:** This project helps school managements in revising their policies on safety and emergency preparedness. The system

might easily be a tool for communication, quickly reduce the response time, and showcase the school's priority on student welfare.

**Parents and Guardians:** The presence of an effective emergency alert system in school boosts parents' confidence in the institution's capability to safeguard their children and to deal with medical emergencies in a responsible manner.

**Future Researchers and Developers:** This research project can be cited in the future as a basis for further studies and technological advancements revolving around the topics of school safety systems, emergency response technologies, and health-related innovations in educational institutions. To sum up, a Medical Alert Button System has been developed which actually helps to make a place

**Researchers:** this brings new insights about composting and waste handling. It finds a place as part of discovering better doings for protecting the environment.

## **Scope and Delimitations**

This study focuses on the development and evaluation of a web-based Medical Emergency Alert Button System intended to improve response time to medical emergencies occurring in classroom settings. The scope of the study includes the system's design, development,

implementation, and basic testing in selected classrooms of one school, utilizing a tablet installed on the third-floor hallway that allows users to activate specific medical emergency buttons, which then send immediate alerts through a wired speaker installed in the faculty office or school clinic to notify designated school personnel such as teachers, nurses, and administrators. The study evaluates the system's effectiveness in terms of response time, usability, reliability, and clarity of alerts based on system testing and feedback from selected users. However, the study is limited to medical emergencies within classrooms and does not cover other emergency situations such as fires, security threats, or natural disasters; it is confined to a single school and does not account for differences in infrastructure or policies of other institutions; it does not include coordination with external emergency service providers; and it excludes considerations related to long-term maintenance, large-scale implementation, scalability, and cost analysis. Furthermore, the findings are based on a limited number of classrooms and participants, which may affect the generalizability of the results.

## **Hypothesis**

To determine whether the implementation of a medical alert button system has a significant effect on improving emergency response in

classrooms, the researchers formulated the null and alternative hypotheses to guide the predictions of the study.

**Null Hypothesis ( $H_0$ ):** The implementation of a medical alert button system has no significant effect on the response time and effectiveness of handling medical emergencies in the classroom.

**Alternative Hypothesis ( $H_1$ ):** The implementation of a medical alert button system has a significant effect on the response time and effectiveness of handling medical emergencies in the classroom.



## **CHAPTER II**

### **LITERATURE REVIEW**

This chapter elaborates on the diverse and relevant literature and studies which are related to the medical emergency alert button systems. This part is crucial as it underpins the current research by putting forth pertinent information from prior research and thus rendering the study more trustworthy, besides, it is a way for the readers to have an in-depth view of the medical emergency alert technologies and their use case.

#### **Literature Review**

#### **Medical Emergency Alert Systems in Schools**

Emergency alert systems in schools are designed to quickly notify staff and responders during emergencies, including medical incidents in classrooms. The unified mass notification system enables school administrators to deliver instant alerts through multiple communication channels which include SMS and email and mobile apps and web platforms. Critical situations see improved communication which leads to faster response times according to EdTech Magazine (2025). The school nurse and faculty members and administrators receive emergency alerts through real-time notifications which enable immediate emergency response.

## **Usability and Effectiveness of Emergency Alert Devices**

Emergency alert systems in modern times use web-based platforms along with cloud computing and integrated communication technologies to achieve better system reliability. School emergency systems that use web interfaces allow administrators to trigger alerts centrally which then reach all relevant personnel immediately EdTech Magazine 2025. The system proves valuable for school buildings that require immediate connection between classrooms and school clinics and faculty offices.

Research demonstrates that multiple communication channels in mass notification systems enhance both campus safety and emergency preparedness efforts Crises Control 2025. The systems enable school personnel to issue alerts through web-based dashboards which guarantee message delivery even when one communication channel becomes inoperable.

## **Technology Integration in Alert Systems**

Current emergency alert systems operate with their web-based platforms and cloud computing capabilities and their integrated communication systems to achieve better operational performance. The web-based emergency system of schools enables their administrators to initiate emergency alerts which will instantly notify all necessary staff members (EdTech Magazine, 2025). The system proves valuable for

educational institutions which require fast response times between their classroom areas and school health facilities and teacher work areas.

Research indicates that using various communication methods for mass notification systems enhances both campus security and emergency response capabilities (Crises Control, 2025). The systems enable school personnel to issue emergency alerts through web-based control panels which guarantee message delivery even when one communication method fails.

## **Synthesis**

The literature and studies between 2020 and 2024 make it very clear that medical emergency alert button systems have the best impact on the response efficiency during the medical emergencies. The researchers stress the fact that the button alert devices enable sending emergency signals very fast, in a reliable and user-friendly manner, especially in occasions when it is not possible to communicate verbally or use a mobile phone. Lersilp et al. (2020) showed that users view the emergency alert devices as easy to use and effective, which points out the necessity of simplicity in the design of emergency systems.

Moreover, research on panic buttons and medical alarm systems (Wikipedia, 2024) shows that these devices have already gained a strong foothold in the patient care and safety areas as they can instantly alert the caregivers or attendants thus significantly reducing the waiting time for

help. Moreover, technological progress has played an essential role in upping the capabilities and dependability of medical emergency alert systems. Experiments on IoT-based and GSM-powered alert buttons (Mallapur et al., 2022) indicate that the merging of communication modules allows for the sending of emergency alerts even without being connected to the internet, thus making these systems applicable in educational institutions. The article by Centegix (2023) indicates that the presence of wearable and stationary emergency buttons in schools has resulted in quicker responses and better coordination amongst the staff in case of emergencies. Even though there are some limitations concerning the upkeep of devices and the joining of systems, the literature remains unanimous in recognizing the efficacy of medical emergency alert button systems in cutting down response time and heightening safety levels. The results obtained from this research naturally prompt and support the establishment of a classroom-based medical emergency alert button system to boost readiness and emergency response at ATEC.

## CHAPTER III

### RESEARCH METHODOLOGY

#### Research Methods

This chapter discusses the research methods used in the development of the **Web-Based Medical Emergency Alert Button System**. It presents the materials, preparation, and procedures involved in creating the prototype and the actual system. The researchers developed **one (1) prototype** and **one (1) actual system** to demonstrate how medical emergencies can be reported quickly through a web-based interface and how alerts can be delivered to medical staff.

#### Prototype Materials

The following materials were used in developing the prototype of the Web-Based Medical Emergency Alert Button System together with their purposes:

1. **Laptop/Computer** – Used for developing and testing the website.
2. **Internet Connection** – Used for system access and communication.
3. **Web Browser** – Used to display and test the website.
4. **Code Editor** – Used for writing and editing the website code.
5. **HTML** – Used to create the structure of the website.

6. **CSS** – Used to design the layout and buttons.
  7. **JavaScript** – Used to handle button functions and alert actions.
  8. **PHP** – Used for processing alert requests.
  9. **Database (MySQL)** – Used to store emergency alert records.
  10. **Tablet** – Used as a temporary monitor for displaying the website.
  11. **Cardboard** – Used to create the base body or casing of the monitor.
- 

#### **A. Gathering of Materials and Equipment for the Prototype**

The researchers prepared the necessary software tools and devices needed for the prototype. The laptop, tablet, and internet connection were provided by the researchers. Web development tools and programming languages used in the study were open-source and freely available online. Cardboard materials were used to design a simple monitor stand for demonstration purposes.

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#### **B. Preparation for the Prototype**

The following preparations were conducted prior to developing the prototype:

- Planning the system layout and emergency process

- Designing buttons for different medical conditions such as asthma, fainting, and others
  - Setting up the database for recording alerts
  - Preparing the tablet and cardboard casing to act as a monitor
  - Testing website accessibility on the tablet
- 

### **C. Process of Making the Prototype**

The following procedures illustrate the development of the prototype system:

1. Design the website interface using HTML and CSS.
  2. Create emergency buttons for different types of sickness.
  3. Program button actions using JavaScript.
  4. Develop server-side processing using PHP.
  5. Create a database to store emergency alert details.
  6. Display the website on a tablet used as a monitor.
  7. Construct a simple monitor casing using cardboard.
  8. Test the prototype to ensure alerts are properly generated.
- 

### **Actual System**

## **Materials**

The following materials were used in developing the actual Web-Based Medical Emergency Alert Button System together with their purposes:

1. **Tablet (Monitor Device)** – Displays the website with emergency buttons.
2. **Cardboard Casing** – Serves as the body of the monitor device.
3. **Web-Based Application** – Contains the emergency buttons and alert system.
4. **Web Hosting Server** – Hosts the live website.
5. **Database Server** – Stores emergency alert records.
6. **Speaker Device** – Produces an alarm sound to notify medical staff.
7. **Computer or Tablet (Faculty Device)** – Receives alerts and connects to the speaker.
8. **Internet Connection** – Enables communication between devices.

### **A. Gathering of Materials and Equipment for the Actual System**

The researchers gathered all necessary materials required for the actual system. The tablet and speaker were provided by the researchers, while the cardboard materials were sourced locally. Web hosting and



database services were acquired online. The faculty alert device was prepared to receive notifications and activate the speaker when an emergency alert is sent.

### **B. Preparation for the Actual System**

The following preparations were made before deploying the actual system:

1. Finalizing the website design and emergency buttons.
2. Hosting the website on a live server.
3. Configuring the database for alert logging.
4. Setting up the tablet as a fixed monitor.
5. Connecting the faculty device to an external speaker.
6. Testing sound alerts and system response.

### **C. Process of Making the Actual System**

The following procedures illustrate the development of the actual system:

1. Finalize and upload the web-based system to the hosting server.
2. Install the tablet in a cardboard-based monitor casing.

3. Display the emergency alert website on the monitor.
4. Allow students to press the appropriate button during emergencies.
5. Send alert data to the database and faculty device.
6. Activate the speaker to alarm medical staff upon receiving an alert.
7. Monitor and record emergency alerts.
8. Test the system to ensure timely notification and proper operation.

## **Research Design**

This research will make use of an experimental research design. The method is a quantitative one and it evaluates the efficiency of a medical emergency alert button system in speeding up the classroom emergency response. Besides, an experimental study will be conducted by the researchers in this design. The researchers will come up with a medical emergency alert button system and put it into use in simulations of classroom medical emergency situations. Data will be gathered through observation and surveys and the perspectives of teachers and staff will be understood and their experiences with the system evaluated. In this study, the purpose of the experiment is to find out how much the medical emergency alert button system rates against the traditional emergency response methods that is how effective it is.

## **Research Respondents**

The non-probability purposive sampling method will be used to select the most appropriate participants to evaluate the Medical Alert Button System. This method is chosen because the study needs the opinion of people who are directly involved in managing classrooms and emergency response procedures.

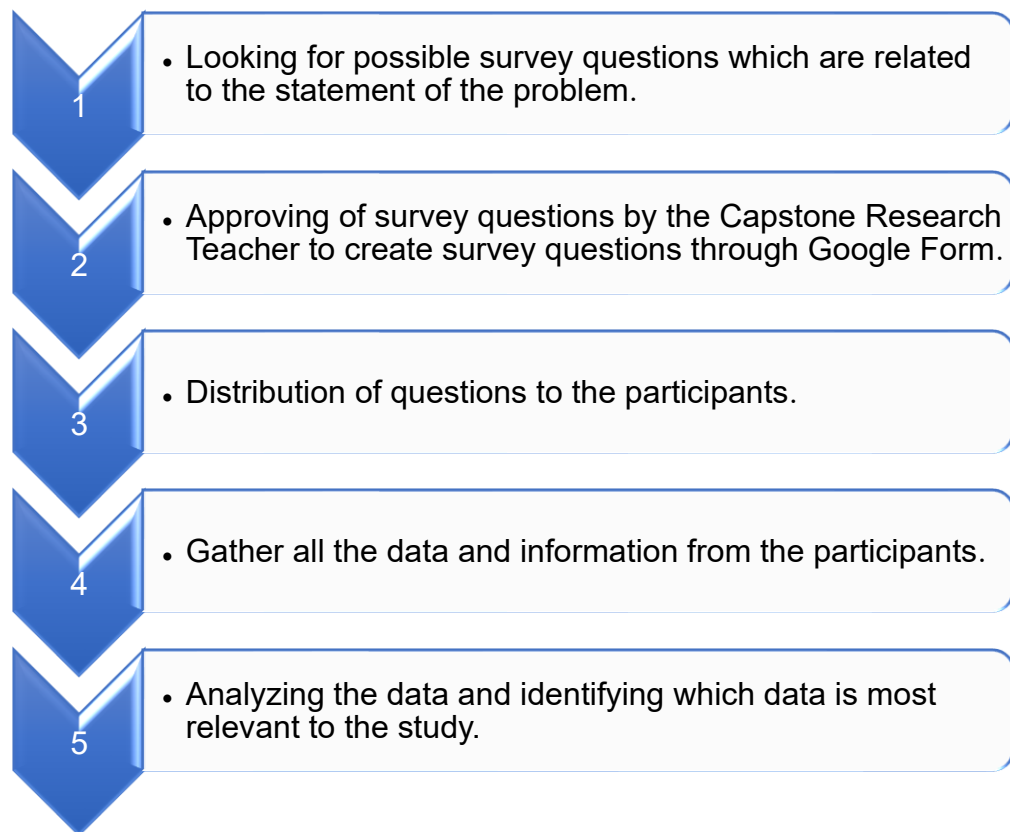
There will be a total of 60 respondents, all of whom will be drawn from ATEC Technological College Inc. at Sta. Rita, Guiguinto, Bulacan, and will comprise of classroom teachers, school nurses, and students. The researchers have specifically chosen these groups because they are the main users who would either initiate or respond to a medical alert, thus their opinions are vital for assessing the system's efficiency in a real academic environment. The participants will be restricted to those individuals who are currently working at the institution and have the professional experience that allows them to provide informed feedback on school safety and response times.

The researchers think that by concentrating on these key stakeholders, they will be able to obtain very good data on the usability and reliability of the device during a medical emergency that is high-stress. The actual number of participants will depend on how many classrooms are fully staffed and the availability of medical personnel during the pilot stage. To maintain ethical practices, all participants will be requested to sign an

informed consent form, which will ensure that they are fully aware of the study's aims and that their information will be kept strictly confidential.

### **Data Gathering Procedure**

This part indicates the step-by-step process of data gathering for this research study. It demonstrates the procedure of gathering, observing, and analyzing the data gathered to support the claim of this research study.



***Figure 3.1: Data Gathering Procedure***

The diagram above illustrates the step-by-step process of gathering data, which also includes observing, collecting, and analyzing the data. The

researcher's first step was to look for possible questions related to the problem statement. After the survey questions were prepared, they were clarified and approved by the research teacher. The researchers will then create survey questions using an online Google Form. Once the survey is created, it will be distributed to the selected participants via chat. The researchers will gather all the data and information provided by the chosen participants. Lastly, the information that has been gathered will be analyzed by the researchers.

### **Statistical Treatment of the Data**

Statistical treatment of data is a process used to convert raw data into something interpretable as stated by Vishak V. (2024). The data to be gathered in this study will be subjected to the following statistical treatment:

#### **1. Frequency and Percentage**

Frequency and percentage distribution will be used to determine the number and proportion of respondents who selected each response option in the survey questionnaire. This method will be applied to analyze the respondents' demographic profile (such as age, role, and experience) as well as their responses regarding the system's usability, effectiveness, and reliability. The percentage will be computed using the formula:

$$P = f/N (100)$$

where:

P = percentage of respondents per category

F = frequency of each response

N = total number of respondents

## **CHAPTER IV**

### **Analysis, Presentation and Interpretation of Data**

#### **Data Analysis**

This study utilized a quantitative research approach and employed a non-probability purposive sampling method to gather data from respondents who were familiar with the Web-Based Medical Emergency Alert Button System. Data were collected through Google Forms, which allowed automated computation and ensured an organized and accurate analysis of the responses. The gathered data were presented using pie charts and tables to clearly illustrate the results.

To analyze the demographic profile of the respondents, particularly their section or grade level, the frequency and percentage distribution were used to identify the number of respondents per section. This statistical treatment helped determine which sections were most represented in the study and ensured that the data reflected the views of the intended respondents.

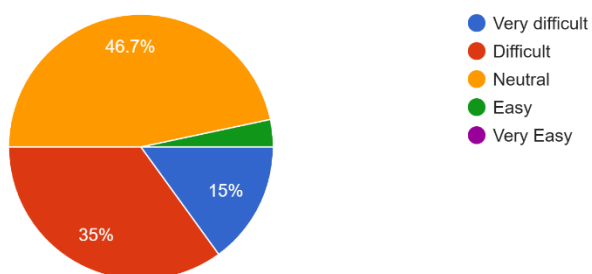
The analysis of the survey responses provided meaningful insights into the respondents' perceptions of the usability, effectiveness, and responsiveness of the medical emergency alert button system. The results served as the basis for interpreting how the system supports faster emergency reporting and improves communication between students and medical staff within the school environment.

## Data Presentation and Interpretation

The charts below that had been gathered through Google Forms by surveys represents the following:

### 1. How challenging is it to communicate the type of medical emergency without a dedicated alert system?

How challenging is it to communicate the type of medical emergency without a dedicated alert system?  
60 responses



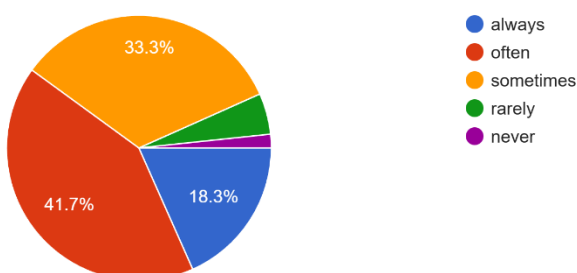
**Figure 4.1: How Challenging**

For the first question, 46.7% (28 respondents out of 60) answered Neutral; 35% (21 respondents) answered Difficult; and 15% (9 respondents) answered Very difficult. This revealed that most of the respondents find it challenging or are uncertain about communicating a medical emergency without a dedicated system.

## 2. How often do you experience difficulty in alerting teachers or staff during a classroom medical emergency?

How often do you experience difficulty in alerting teachers or staff during a classroom medical emergency?

60 responses



**Figure 4.2: Difficulty Alerting**

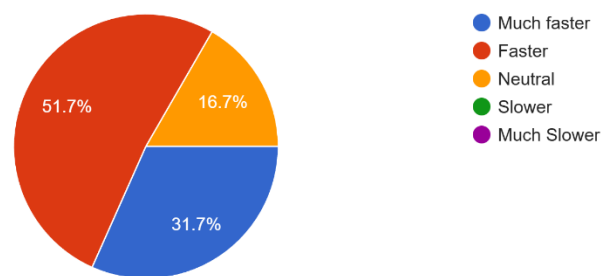
Regarding question number 2, 41.7% (25 respondents out of 60) answered Often; 33.3% (20 respondents) answered Sometimes; and 18.3% (11 respondents) answered Always. This indicated that a large majority of the participants frequently encounter difficulties when trying to alert staff during a crisis.



3. **How much faster do you think a digital alert system could notify teachers or staff during an emergency compared to traditional methods?**

How much faster do you think a digital alert system could notify teachers or staff during an emergency compared to traditional methods?

60 responses



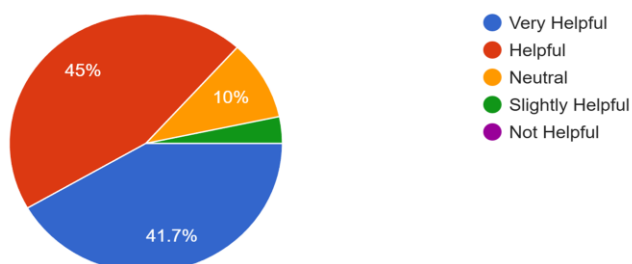
**Figure 4.3: Faster/Improvement**

Based on question number 3, 51.7% (31 respondents out of 60) answered Faster; 31.7% (19 respondents) answered Much faster; and 16.7% (10 respondents) answered Neutral. This confirmed that the respondents believe a digital alert system would drastically improve response speeds compared to current methods.

#### 4. How helpful do you believe a digital alert system would be in ensuring timely response to emergencies?

How helpful do you believe a digital alert system would be in ensuring timely response to emergencies?

60 responses



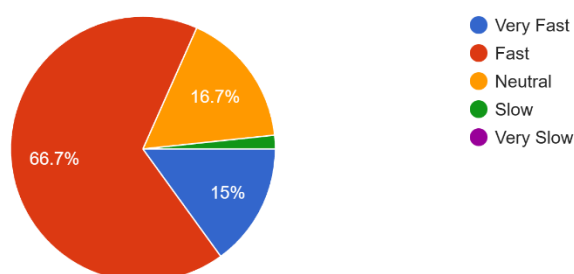
**Figure 4.4: Helpfulness**

When asked question number 4, 45% (27 respondents out of 60) answered Helpful; 41.7% (25 respondents) answered Very helpful; and 10% (6 respondents) answered Neutral. These results showed that the system is perceived as a valuable tool for ensuring timely emergency assistance.

#### 5. During the simulation, how quickly were teachers or staff able to respond to an emergency alert using the button system?

During the simulation, how quickly were teachers or staff able to respond to an emergency alert using the button system?

60 responses



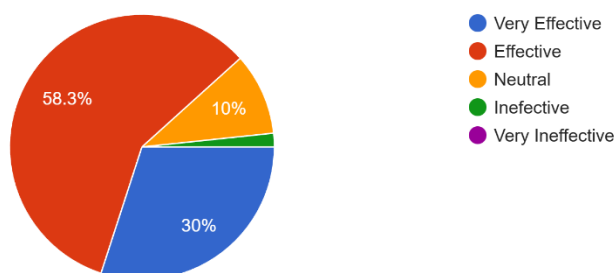
**Figure 4.5: Response Time**

Based on question number 5, 66.7% (40 respondents out of 60) answered Fast; 16.7% (10 respondents) answered Neutral; and 15% (9 respondents) answered Very fast. This demonstrated that the button system effectively facilitated a rapid response from staff during the simulation.

**6. How effective was the alert button in improving communication compared to traditional verbal or manual reporting methods?**

How effective was the alert button in improving communication compared to traditional verbal or manual reporting methods?

60 responses

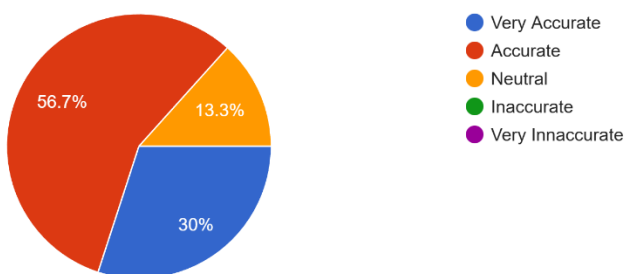


**Figure 4.6: Effectiveness**

In question number 6, 58.3% (35 respondents out of 60) answered Effective; 30% (18 respondents) answered Very effective; and 10% (6 respondents) answered Neutral. This highlighted that the alert button is a more efficient communication method than traditional verbal reporting.

**7. How accurately did the alert button system indicate the type of medical emergency during the test?**

How accurately did the alert button system indicate the type of medical emergency during the test?  
60 responses

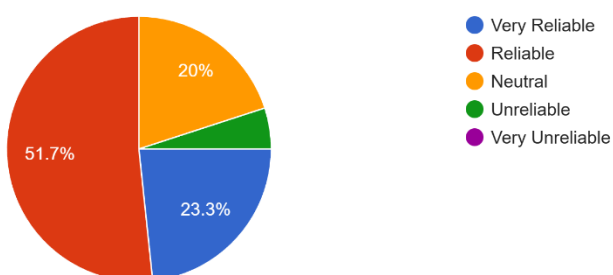


**Figure 4.10: Accuracy**

In question number 7, 56.7% (34 respondents out of 60) answered Accurate; 30% (18 respondents) answered Very accurate; and 13.3% (8 respondents) answered Neutral. These findings reflected high confidence in the system's ability to correctly identify the type of medical emergency.

#### **8. How reliable do you think the system is in distinguishing different types of medical emergencies without verbal input?**

How reliable do you think the system is in distinguishing different types of medical emergencies without verbal input?  
60 responses



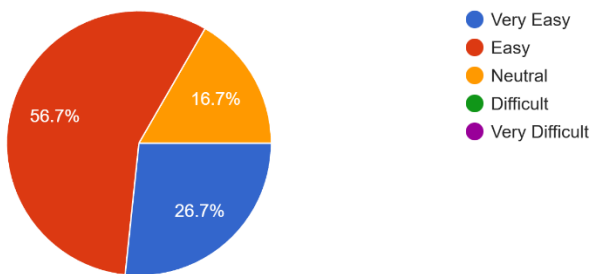
**Figure 4.11: Reliability**

Regarding question number 8, 51.7% (31 respondents out of 60) answered Reliable; 23.3% (14 respondents) answered Very reliable; and

20% (12 respondents) answered Neutral. This showed that the participants trust the system to function correctly even in situations where they cannot speak. In question number 9, 56.7% (34 respondents out of 60) answered Easy; 26.7% (16 respondents) answered Very easy; and 16.7% (10 respondents) answered Neutral. This revealed that the majority of users found the alert button design to be intuitive and simple to operate.

#### **9. How easy was it to understand and operate the alert button during the simulation?**

How easy was it to understand and operate the alert button during the simulation?  
60 responses

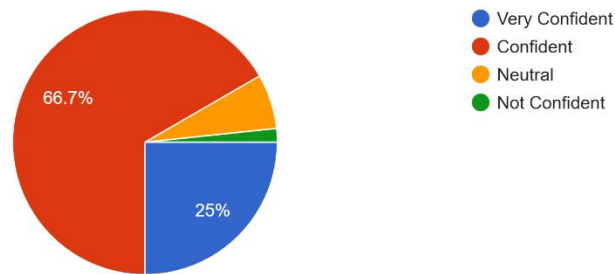


**Figure 4.12: Simplicity**

In question number 9, 56.7% (34 respondents out of 60) answered Easy; 26.7% (16 respondents) answered Very easy; and 16.7% (10 respondents) answered Neutral. This revealed that the majority of users found the alert button design to be intuitive and simple to operate.

#### **10. How confident are you that you could use the alert button correctly in a real classroom emergency?**

How confident are you that you could use the alert button correctly in a real classroom emergency?  
60 responses



**Figure 4.13: Confidence of Users**

For question number 10, 66.7% (40 respondents out of 60) answered Confident; 25% (15 respondents) answered Very confident; and a few answered Neutral. This concluded that the respondents feel fully prepared to utilize the system during a real classroom emergency.

The Medical Emergency Alert Button System was evaluated through a survey which included 60 participants. The results show that most participants find it challenging or uncertain to communicate a medical emergency without a dedicated system, with 46.7% answering Neutral and 35% answering Difficult. The study found that 41.7% of participants experienced crisis alerting issues because staff members needed help while 33.3% of participants experienced these issues at times. The majority believed that digital alert systems would make response times better because 51.7% chose Faster and 31.7% chose Much faster. The system was also perceived as helpful, with 45% rating it Helpful and 41.7% rating

it Very helpful. The simulation results showed that 66.7% of respondents believed the system allowed staff to react quickly while 15% of respondents experienced the response time as Very fast. The alert button received positive ratings from participants, who found it effective and efficient because 58.3% of participants considered it Effective and 30% of participants rated it Very effective. The system was considered reliable by 51.7% of respondents and very reliable by 23.3%, indicating trust in its functionality even when users cannot speak. The system turned out to be easy to use for most users, because 56.7% of users found it Easy and 26.7% of users found it Very easy. The system received strong emergency use confidence from respondents, because 66.7% of participants stated they were Confident and 25% of participants said they were Very confident. Overall, the survey results suggest that the Medical Emergency Alert Button System is seen as an effective, reliable, and user-friendly solution for improving emergency response in classrooms.

## **CHAPTER V**

### **Summary, Conclusion and Recommendations**

#### **Summary**

The Medical Emergency Alert Button System aims to improve safety and emergency response within classrooms by providing a fast, reliable, and user-friendly alert mechanism. The system operates through a web interface which requires a tablet device to function that is located in the third floor hallway and connects through wired speakers to the faculty office and school clinic. The button allows users to contact designated school staff members which include the school nurse and teachers inside the faculty for immediate medical assistance. The study involved 60 participants who evaluated the system through surveys and simulation testing. The results show that most respondents face challenges when communicating medical emergencies using traditional methods and believe that a digital alert system would significantly improve response time. The system received positive user feedback because it provided useful functions which operated with high accuracy and system reliability while remaining simple to operate and most users reported they could handle emergency situations with it. The Medical



Emergency Alert Button System enables schools to conduct quicker emergency responses which maintain efficient organizational procedures according to the study findings.

## **Findings**

Based on the survey results of 60 respondents, the study revealed that the existing method of reporting medical emergencies is often challenging and can be improved. The system enables participants to communicate emergency situations but many participants reported difficulties or uncertainties in using this system. The majority reported that they face difficulties which prevent them from properly notifying staff during emergency situations. The web-based alert button system allowed respondents to improve response time because most users selected either the "Faster" or "Much faster" options. The system provided essential emergency assistance which the users found to be useful and beneficial for their needs. The system enabled rapid staff response together with efficient communication according to respondents who took part in the simulation. The system correctly identified emergency types according to most participants who found it reliable and easy to use. The majority of respondents expressed confidence in operating the system during actual classroom emergency situations which indicates that users accepted the system and showed potential for using it in practical situations.

## **Conclusion**

The web-based Medical Emergency Alert Button System shows effective classroom emergency response improvement. The system succeeds in delivering immediate alerts to school staff through its tablet interface and wired speaker system which eliminates delays that occur with standard reporting procedures. The system received positive feedback from participants who considered it easy to use and dependable because it functioned precisely as expected which creates higher chances of its usage in educational institutions. The system enables faster communication which results in better response coordination that protects student and teacher safety during medical emergencies.

## **Recommendations**

**Students** - Students are encouraged to use the Medical Emergency Alert Button System during classroom emergencies to quickly notify school staff and ensure faster medical response. Regular practice and awareness training will help students become more confident in using the system.

**Teachers and School Staff** - School personnel should support the implementation of the system by monitoring alerts promptly and responding immediately during emergencies. They should also participate in training sessions to understand how the system works and how to act quickly when an alert is received.

**School Administration** - School administrators should consider installing the system in key locations, such as hallways and classrooms, and provide proper training for staff and students. The system can be used as part of the school's emergency preparedness plan to improve overall safety.

**School Clinic** - The school clinic should maintain the alert system and ensure that the wired speaker and tablet are always functioning properly. Regular testing and maintenance are recommended to ensure reliability during emergencies.

**Researchers** - Future researchers may expand the study by testing the system in more classrooms and different schools to validate its effectiveness. Additional research could also explore integrating the system with external emergency services and improving system features such as notification methods, user interface, and scalability.

## Bibliography

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LINK:

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LINK:

[https://www.researchgate.net/publication/390123321\\_ENHANCING\\_SCHOOL\\_SAFETY\\_AND\\_SECURITY\\_DEVELOPING\\_AND\\_IMPLEMENTING\\_EFFECTIVE\\_PROTOCOLS\\_FOR\\_A\\_SECURED\\_LEARNING\\_ENVIRONMENT](https://www.researchgate.net/publication/390123321_ENHANCING_SCHOOL_SAFETY_AND_SECURITY_DEVELOPING_AND_IMPLEMENTING_EFFECTIVE_PROTOCOLS_FOR_A_SECURED_LEARNING_ENVIRONMENT)

## Appendixes

### Parents Permit/Consent

#### Parent/Guardian Permission

**Parent or Guardian's Name:** Ferna S. Fernandez

**Address:** #526 Casbah Sta. Rita Guiguinto Bulacan

**Parent/Guardian's Phone Number(s):** 09972632018

As a parent/guardian of Jomarie S. Fernandez, I am aware that my son/daughter must complete a Senior Capstone Project.

For the project, my son/daughter has chosen to:

develop a Medical Emergency Alert Button System. This project is intended to provide a quick and reliable way to report medical emergencies, reduce response time, and improve safety through timely communication within the school or community.

I have read the *Menu of Options for College & Career Ready Demonstrations* manual and have reviewed it with my child. He/she has my permission to complete a Capstone Project on the topic listed above.

**Parent/Guardian Signature:**

**Date:** 01-19-2026

**Parent/Guardian Permission**

**Parent or Guardian's Name:** Annabie Cabigao

**Address:** #314 purok 5 Daisy St. Sumapang Bata Malolos Bulacan

**Parent/Guardian's Phone Number(s):** 09541805007

As a parent/guardian of Jean Gabrielle S. Cabigao, I am aware that my son/daughter must complete a Senior Capstone Project.

For the project, my son/daughter has chosen to:

develop a Medical Emergency Alert Button System. This project is intended to provide a quick and reliable way to report medical emergencies, reduce response time, and improve safety through timely communication within the school or community.

I have read the *Menu of Options for College & Career Ready Demonstrations* manual and have reviewed it with my child. He/she has my permission to complete a Capstone Project on the topic listed above.

**Parent or Guardian's Name:** Annicia C. Domingo

**Address:** 375 Sto. Nino Bungahan City of Malolos Bulacan

**Parent/Guardian's Phone Number(s):** 09367221069

As a parent/guardian of Andrea Nicole A. Domingo, I am aware that my son/daughter must complete a Senior Capstone Project.

For the project, my son/daughter has chosen to:

develop a Medical Emergency Alert Button System. This project is intended to provide a quick and reliable way to report medical emergencies, reduce response time, and improve safety through timely communication within the school or community.

I have read the *Menu of Options for College & Career Ready Demonstrations* manual and have reviewed it with my child. He/she has my permission to complete a Capstone Project on the topic listed above.

**Parent/Guardian Signature:**

**Date:** 01-07-2025

**Parent or Guardian's Name:** Michelle Mioten Carisma

**Address:** 149 Main Street Purok 3, Pritil, Guiguinto, Bulacan

**Parent/Guardian's Phone Number(s):** 09777963444

As a parent/guardian of Nativity Rose C. Cunanan, I am aware that my son/daughter must complete a Senior Capstone Project.

For the project, my son/daughter has chosen to:

develop a Medical Emergency Alert Button System. This project is intended to provide a quick and reliable way to report medical emergencies, reduce response time, and improve safety through timely communication within the school or community.

I have read the *Menu of Options for College & Career Ready Demonstrations* manual and have reviewed it with my child. He/she has my permission to complete a Capstone Project on the topic listed above.

**Parent/Guardian Signature:**

**Date:** 01-19-2026



**Parent or Guardian's Name:** Reynalyn Galang

**Address:** Rocka Village, Phase 5 Annex, Chico Street 2731 Tabang Plaridel, Bulacan

**Parent/Guardian's Phone Number(s):** 09229271915

As a parent/guardian of Jejomar Prince E. De Guzman, I am aware that my son/daughter must complete a Senior Capstone Project.

For the project, my son/daughter has chosen to:

develop a Medical Emergency Alert Button System. This project is intended to provide a quick and reliable way to report medical emergencies, reduce response time, and improve safety through timely communication within the school or community.

I have read the *Menu of Options for College & Career Ready Demonstrations* manual and have reviewed it with my child. He/she has my permission to complete a Capstone Project on the topic listed above.

**Parent or Guardian's Name:** Geraldine F. Villamil

**Address:** #058, Ilangilang St., Ligas, Malolos, Bulacan Bulacan

**Parent/Guardian's Phone Number(s):** 09912429917

As a parent/guardian of Jaime F. Villamil, I am aware that my son/daughter must complete a Senior Capstone Project.

For the project, my son/daughter has chosen to:

develop a Medical Emergency Alert Button System. This project is intended to provide a quick and reliable way to report medical emergencies, reduce response time, and improve safety through timely communication within the school or community.

I have read the *Menu of Options for College & Career Ready Demonstrations* manual and have reviewed it with my child. He/she has my permission to complete a Capstone Project on the topic listed above.

**Parent/Guardian Signature:**

**Date:** 01-19-2026

**Parent or Guardian's Name:** Renato Quintano Villarante

**Address:** 3770 St Ignatius Rocka Phase 7 Tabang Plaridel Bulacan

**Parent/Guardian's Phone Number(s):** 09666300406

As a parent/guardian of Khing Rennier P. Villarante, I am aware that my son/daughter must complete a Senior Capstone Project.

For the project, my son/daughter has chosen to:

develop a Medical Emergency Alert Button System. This project is intended to provide a quick and reliable way to report medical emergencies, reduce response time, and improve safety through timely communication within the school or community.

I have read the *Menu of Options for College & Career Ready Demonstrations* manual and have reviewed it with my child. He/she has my permission to complete a Capstone Project on the topic listed above.

**Parent/Guardian Signature:**

**Date:** 01-19-2026

**Parent or Guardian's Name:** Emelyn Versoza Dalisay

**Address:** 628 Old Cagayan Valley Rd Taal Pulilan Bulacan Bulacan

**Parent/Guardian's Phone Number(s):** 09757655249

As a parent/guardian of Kalvin Luis Dalisay, I am aware that my son/daughter must complete a Senior Capstone Project.

For the project, my son/daughter has chosen to:

develop a Medical Emergency Alert Button System. This project is intended to provide a quick and reliable way to report medical emergencies, reduce response time, and improve safety through timely communication within the school or community.

I have read the *Menu of Options for College & Career Ready Demonstrations* manual and have reviewed it with my child. He/she has my permission to complete a Capstone Project on the topic listed above.

**Parent/Guardian Signature:**

**Date:** 01-19-2026

**Mentor Information****Capstone Mentor Name:** Analyn V. Hernandez

(Capstone mentor cannot be an immediate family member and must be over 21 years of age.)

**Phone:** 09153140790**Email:** analynhernandez@gmail.com**Occupation:** Teacher**Name of Business/Company:** ATEC Technological College, Inc.**Address:** 495 Sta. Rita, Guiguinto Bulacan**Mentor Responsibilities**

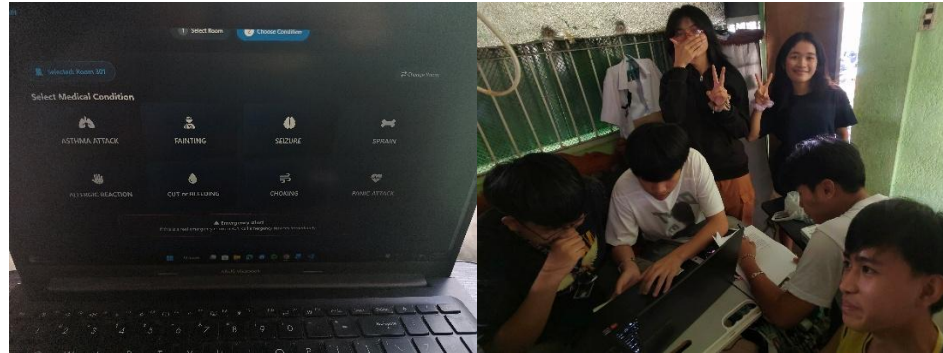
- Mentors are expected to verify a minimum of 25 hours of fieldwork on the Capstone Project Log Form.
- Mentors must evaluate and verify the completed project by signing the Capstone Project Log Form.

**Mentor Signature:** Analyn V. Hernandez**Date:** 01-19-2026

## Pictures of Procedure

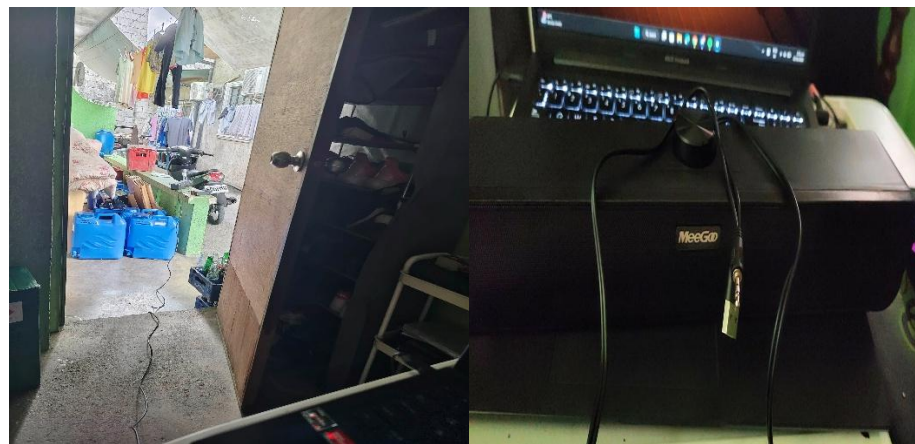
### DAY 1-3

#### Making of the website



### DAY 4

#### Testing of the wires of the wired speaker



**DAY 5**



## Personal Profile

### OBJECTIVE

Developed and evaluated a medical emergency alert button system designed to improve the speed, accuracy, and reliability of classroom medical emergency responses. Assessed the system's effectiveness in supporting teachers and school staff during real-time medical emergencies at ATEC.

### Educational Background

**Atec Technological College Inc. Sta Rita, Guiguinto, Bulacan**  
SY 2024 - 2026

**Felizardo C. Lipana National High School**  
SY 2020-2022

**Sta. Rita Guiguinto Bulacan**  
SY 2014-2020

### Skill and Interest

- Adaptability
- Problem-solving
- Active listening to music
- Playing Online Games
- Singing
- Academics

# FERNANDEZ, JOMARIE S.

## Senior High School Student

### Achievement

With High Honors - SY 2024-2025  
With High Honors - SY 2023-2024  
With Honors - SY 2019-2020  
2nd place Araling Panlipunan Quiz Bee (2019)  
1st Place Math Quiz bee (G9-2023)  
2nd Place Jazzchant (G9-2023)

### Language

- English
- Filipino

### Reach Me At



526, Sta. Rita Guiguinto,  
Bulacan



09605625739



fernandezjomarie7@gmail.com





## Personal Profile

### OBJECTIVE

Vroom Broom is an innovative cleaning machine that is activated through manpower that requires no electricity, gas nor battery

This machine can easily clean a household with just a push!

## Education Background

- Sumapang Bata Elementary School
- Malolos City High School Bungahan
- ATEC Technological College Inc.

## Skill and Interest

- Drawing
- Singing
- Dancing

# CABIGAO, JEAN GABRIELLE

## Senior High School Student

### Achievement

- With honors (Grade 11)

### Language

- English
- Filipino

### Reach Me At



314, Purok 5 Daisy,  
Sumapang bata Malolos,  
Bulacan



09126575358



jeangabriellecabigao@gmail.com



## Personal Profile

### OBJECTIVE

Contributed to the development and testing of a medical emergency alert button system aimed at strengthening classroom emergency response and notification efficiency. Supported the evaluation of system reliability and its role in improving coordination between students, teachers, and school staff during medical emergencies.

### Education Background

• **ATEC Technological College Inc.**  
**Sta. Rita, Guiguinto**

**2024 - 2025**

• **Malolos City High School Bungahan (MCHSB)**

**2020-2024**

• **Ligas Elementary School (SRES)**

**2014 - 2020**

### Skill and Interest

- Drawing
- Painting
- Reading
- Writing

# VILLAMIL, JAIME

## Senior High School Student

### Achievement

- With honors (G11)
- With honors (G12)
- With honors (JHS)
- Mr. Intrams (G11)
- Mr. United Nations (G10)
- Bronze Place English Quiz Bee (G10)

### Language

- English
- Filipino

### Reach Me At



058, Ilanglang St., Ligas,  
Malolos, Bulacan, Philippines



09912429917



villamiljaime2023@gmail.c9m



## Personal Profile

### OBJECTIVE

To obtain a position where I can apply my experience in developing medical button system to maintain a safe, organized, and responsive environment. I aim to use my skills in problem-solving and systematic monitoring to ensure the well-being of all individuals within the facility.

## Education Background

- **ATEC Technological College Inc.**  
**Sta. Rita, Guiguinto**  
**2023 - 2026**
- **Felizardo C. Lipana National High School**  
**2018-2023**
- **Pritil Elementary School**  
**2012 - 2018**

## Skill and Interest

- Problem - Solving
- Attention to detail
- Adaptability
- Basic Editing
- Drawing

# CUNANAN, NATIVITY ROSE

## Senior High School Student


## Achievement

- With Honors (Gr11)
- With Honors (Gr10)
- Wity Honors (Gr9)


## Language

- English
- Filipino

## Reach Me At

 149 Main Street Purok 3, Pritil,  
Guiguinto, Bulacan

 096648237  
46

 nativityrosecunanan@g  
mail.com



## Personal Profile

### OBJECTIVE

Designed and implemented a medical emergency alert button system to enhance timely communication and response during classroom medical emergencies. Evaluated the system's functionality and contribution to improving emergency preparedness among teachers and school staff at ATEC.

## Education Background

- ATEC Technological College Inc.  
Sta. Rita, Guiguinto

2023 - 2025

- Jaime J. Vistan National High School

2018-2023

- Garita Elementary School

2014 - 2020

## Skill and Interest

- Singing
- Dancing
- Writing

# DE GUZMAN, PRINCE JEPOY

## Senior High School Student

### STEM STRAND

### Achievement

- With honors (G11)
- With honors (G9-10)

### Language

- English
- Filipino

### Reach Me At



Rocka Complex Chico Street  
Ph5 Annex 2731 Tabang  
Plaridel Bulacan



09233770361



jejomarprincededeguzman@gmail.com