Chapter III

METHODOLOGY

Introduction

This chapter presents the research method. It focuses on the method used in conducting this research which covers research design, research locale, sample and sampling techniques, respondents of the study, research instruments, data gathering procedures, and statistical analysis of data.

Research Method

The researchers used experimental research with a quantitative approach in this study. The researchers used an experimental research design to determine the effectiveness of automated earthquake alarms. The primary subjects of this study were Mayapyap National High School Senior High School students. Purposive sampling was used to select them.

This study used the pretest-posttest model. The pre-earthquake drill was conducted at the first quarter of the National Simultaneous Earthquake Drill and the post-earthquake drill was done on the second drill of the said activity.

To establish the difference of the two groups of respondents in the pretest-posttest model, t-test was used.

Research Design

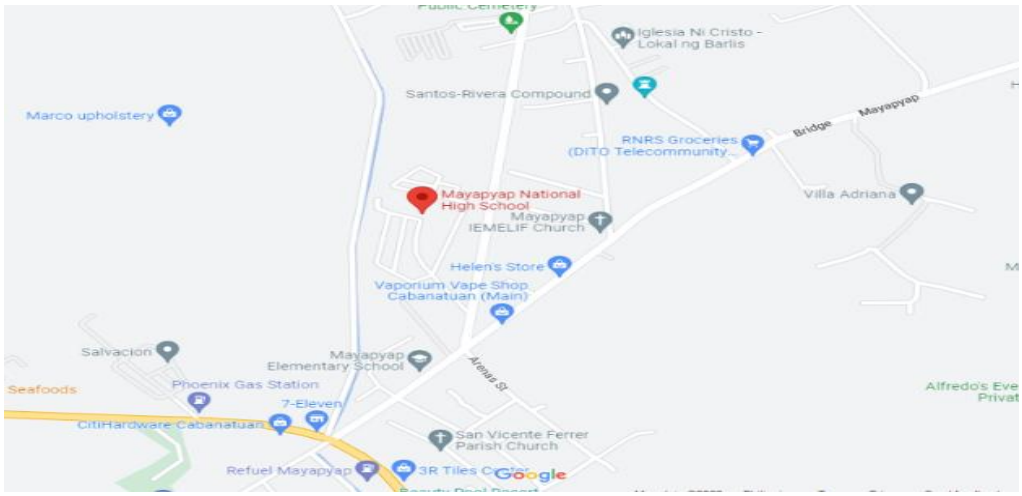
The experimental design of research was used in this study. The researcher used the pretest-posttest model to collect the necessary data for the study.

The experimental design of research was the most appropriate method to use because the study was concerned with the effectiveness of automated earthquake alarm on Senior High School students in Mayapyap National High School. According to Creswell (2012: 294), "an experimental design is the traditional approach to conducting quantitative research".

Research Locale

The study was conducted at Mayapyap National High School, a DepEd managed urban public school in Cabanatuan City. This school offers two tracks: academic and technical vocational. The academic track includes Science, Technology, Engineering, Mathematics (STEM), Humanities and Social Sciences (HUMSS), and Accountancy, Business,

and Management (ABM). It is located at GXF4+W2Q, Mayapyap Norte, Cabanatuan City, Nueva Ecija



Sample and Sampling Techniques

The respondents were chosen using purposive sampling. Purposive sampling is used to select respondents that are most likely to yield appropriate and useful information (Kelly, 2010).

Establishing the Comparability of the Two Groups

Like in all experimental researches, there is a need to establish the comparability of the two groups being studied. The groups must be parallel to ensure that any advantage in the performance of the experimental group is caused by the manipulated variables.

The researcher used the following variables to create these two equal groups: commonly used earthquake press alarm for Grade 11 students and an automated earthquake alarm drill for Grade 12 students. The group of Grade 11 students had difficulty detecting the incoming earthquake, whereas the Grade 12 students' group was more aware of the incoming earthquake and quickly catches up.

Determining the Control and Experimental Groups

The researcher used two grade levels: Grade 11 and Grade 12. The Grade 12 level was assigned by the researcher as the experimental group because it is the group with the greater number of students. The researchers in the independent level helped the students in fear and lack of awareness to improve their preparedness, especially during an earthquake. The Grade 11 level was the control group who continued with the traditional way.

Respondents of the Study

Senior High School students of Mayapyap National High School were the main subjects of this study. In this study, the researcher used an inclusion criterion including those who are enrolled in Grade 11 and Grade 12 during the academic year 2022-2023.

Research Instruments

There were three instruments used in this study: the pretest-posttest model, pressed alarm, and the automated earthquake alarm.

The pretest-posttest model was an awareness test given by the researcher which was validated.

The grade levels which were not involved in the study took the same earthquake drill test to check its reliability.

The material used in doing an earthquake drill included pressed alarm and the automated earthquake alarm.

Data Gathering Procedures

This experimental study took place from the fourth week of October 2022 to the third week of January 2023.

During the actual experiment, the control group was subjected to the traditional way which is pressed alarm.

In the experimental group, the automated earthquake alarm was used.

To find out how much the students gained from the experiment, the first quarter of the National Simultaneous

Earthquake Drill and the post-earthquake drill was done on the second drill of the said activity.

To find out whether they have gained knowledge from both traditional and experimental, the students' pretest and posttest scores were compared.

Eliminating the Contaminating Factors

To eliminate some contaminating factors that may affect the result of the experiment, the class schedule and the rooms of the two groups were made adjacent with each other. The table that follows shows the schedule of the two groups.

Table 1. Earthquake Drill schedule of the Two Groups

Group	Day	Time	Room
Grade 11	Thursday	9:35-10:25	07
Grade 12	Monday	9:35-10:25	06

Statistical Analysis of Data

To establish the comparability of the two groups using the first quarter of the National Simultaneous Earthquake Drill, t-test was used.

To establish the difference of the two groups of respondents in the pre-earthquake drill-post-earthquake drill model, t-test was also used.

Chapter IV

PRESENTATION, INTERPRETATION, AND ANALYSIS OF DATA

Introduction

This chapter presents the data in textual, tabular and graphical forms which were interpreted and analyzed by the researchers. Tables, figures and graphs were backed up with interpretation to answer the statement of the problem and to decide whether the hypothesis is accepted or rejected.

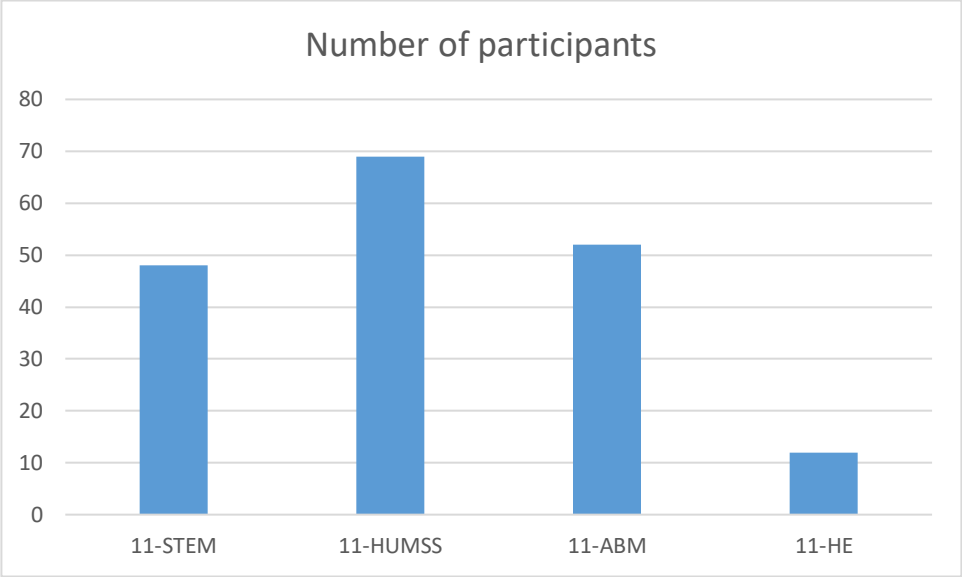
Interpretation of Data Gathered

1. Number of participants in earthquake drill before the Intervention

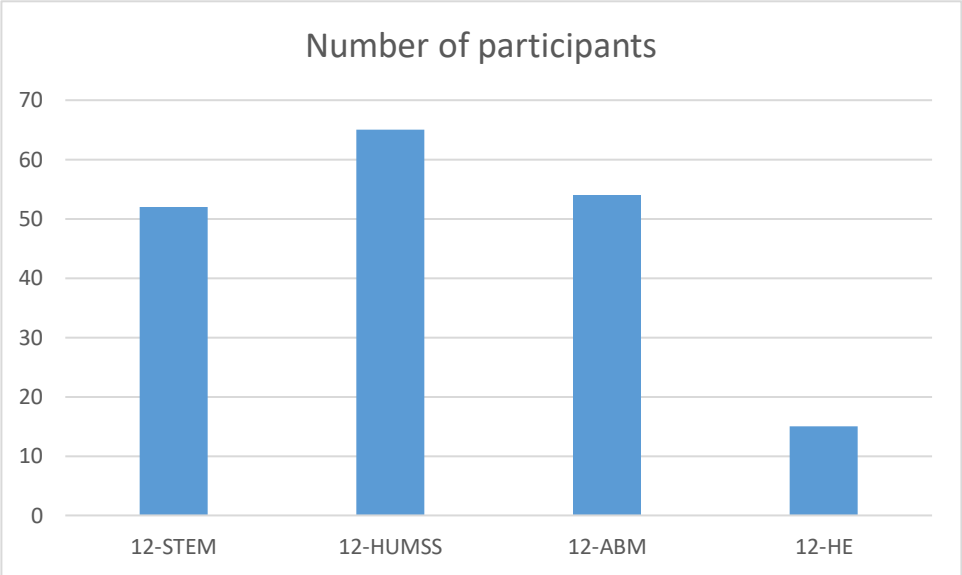
The numbers of participants in the control and experimental group before the intervention is presented in Table 1.

Table 1. Number of participants attended the drill in the Control and Experimental Group before the Intervention

Control group



Experimental Group



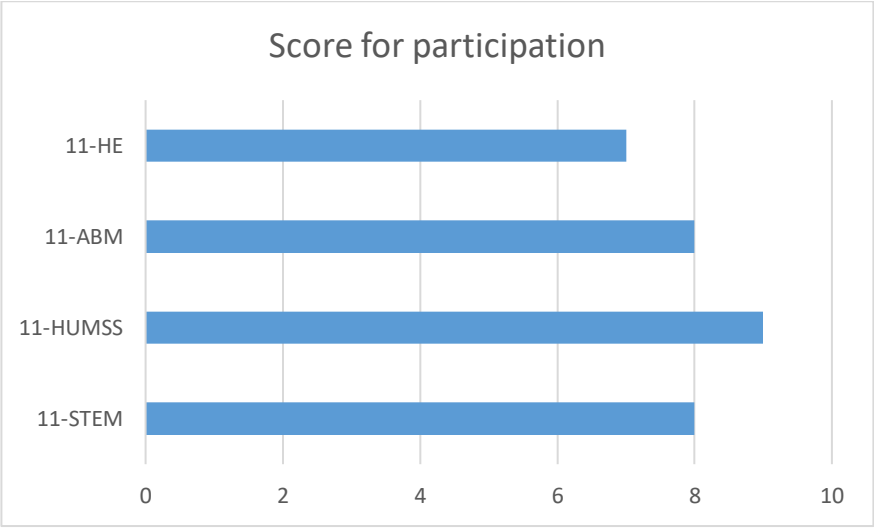
As shown in the table, HUMSS had the highest number of student participants in the National Disaster Risk Reduction and Management Council (NDRRMC) earthquake drill while the HE has the lowest participants.

The data show that the number of students who participate in the Earthquake drill in the control and experimental groups is nearly the same, with HE having the fewest and HUMMS having the most in both groups.

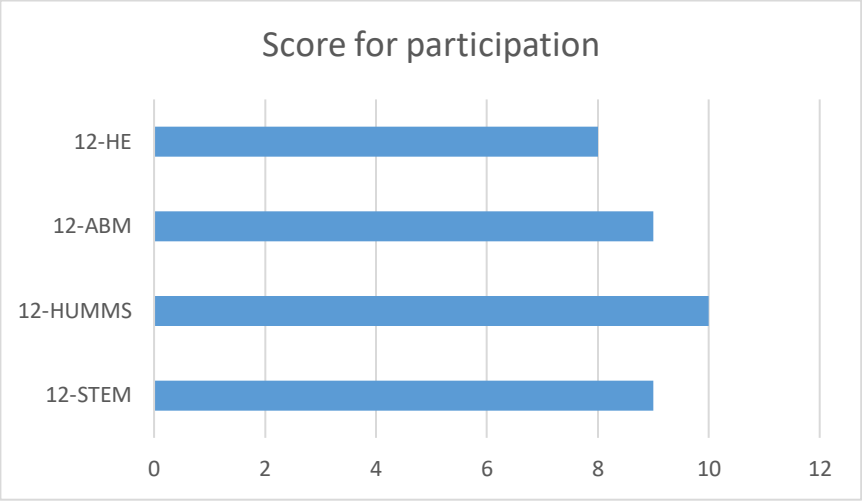
Table 2 presents the frequency distribution of the scores of the experimental and control group before having automated alarm drill.

Table 2. Scores of the Experimental and Control Group before the intervention

Control Group



Experimental Group



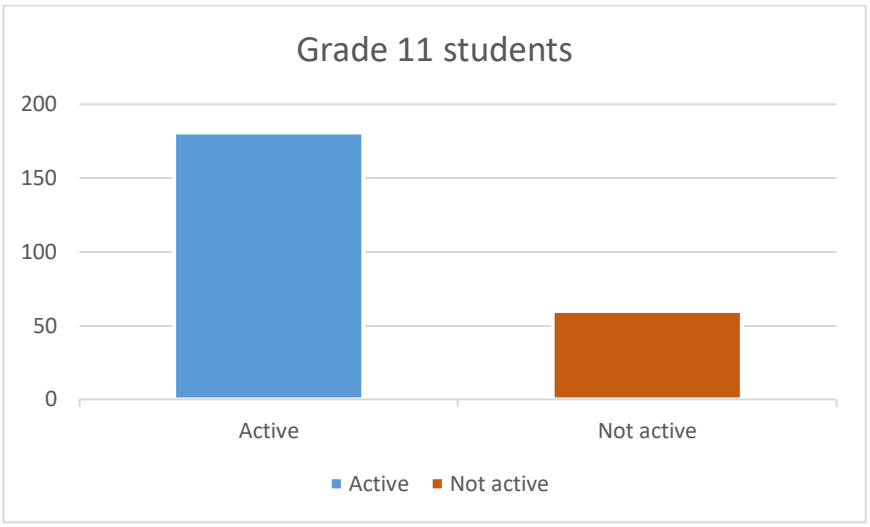
As shown in the table, before the automated earthquake drill, HUMSS students obtained 9, HE with 7, ABM with 8, and STEM with 8 in control group while in the experimental group, HUMSS students obtained 10, HE with 8, ABM with 9, and STEM with 9

The result showed that HUMMS students has the highest score for participation while HE has the lowest. Students' active participation and engagement in their education has an elective affinity with neo-liberal trends, while being an important factor in quality measurements. Such trends can be connected to marketisation, focusing on performance, individualization, competition and successful student achievements for future employability (Carey, 2013;Zepke, 2015, 2018).

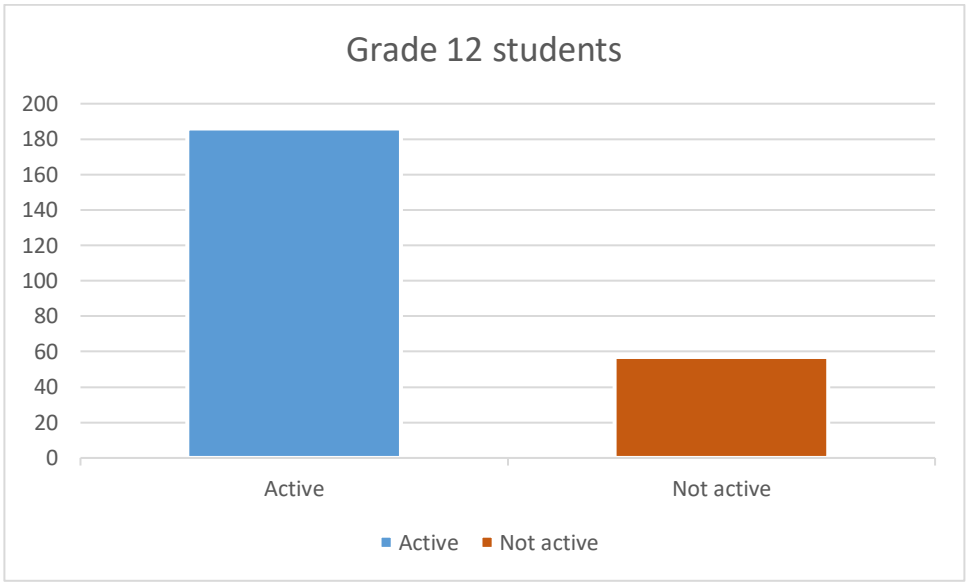
Table 3 shows activeness of students in earthquake drill of the experimental and control group before the intervention.

Table 3. Activeness of the Experimental and Control Group before the Intervention

Control Group



Experimental Group



As shown in the graph, there are 181 students that are active and 60 not active in control group while 186 active and 57 not active in the experimental group.

It shows that there are almost 75 percents of students participated in control group and almost 77 percent in experimental group. It appears that the majority of the students are actively participating in the earthquake drill.

2. Difference of the Two Groups before the Experiment

Table 4. Difference in the General Average of the Control and Experimental Group

	Control Group	Experimental Group
Mean	45.25	46.5
Variance	574.25	473.6666667
Observations	4	4
Pearson Correlation	0.99225533	
Hypothesized Mean Difference	0	
df	3	
t Stat	-0.695608344	
P(T<=t) one-tail	0.268358322	
t Critical one-tail	2.353363435	
P(T<=t) two-tail	0.536716645	
t Critical two-tail	3.182446305	

The mean of the general average of the control group was 45.25 and 46.5 for the experimental group. The computed

t- value was .69 which was less than 3.18. It means that there is no significant difference in the number of participants of the control and experimental group.

This shows that both control groups and experimental groups needs more participation in the upcoming drill.

Table 5. T-Table for the Pre-test Scores of the Control and Experimental Groups

	Control Group	Experimental Group
Mean	8	9
Variance	2.909090909	1.454545455
Observations	12	12
Pearson Correlation	0.618718434	
Hypothesized Mean Difference	0	
D f	11	
t Stat	-2.569046516	
P(T<=t) one-tail	0.013047341	
t Critical one-tail	1.795884819	
P(T<=t) two-tail	0.026094682	
t Critical two-tail	2.20098516	

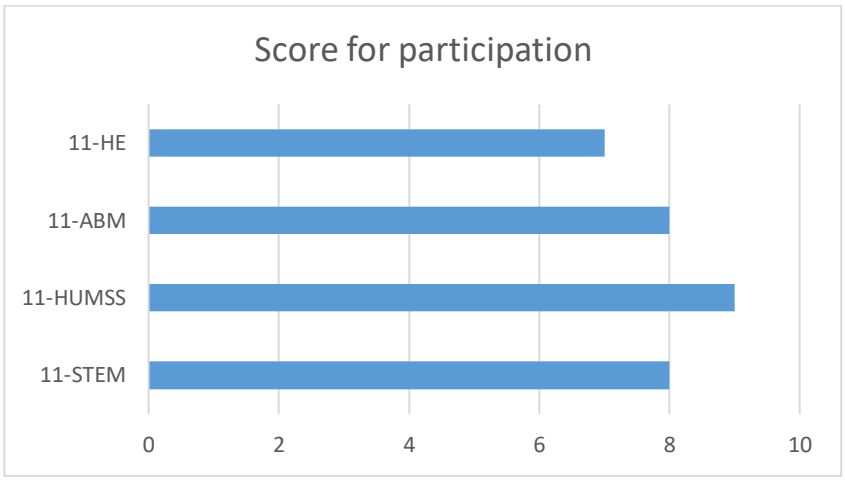
The mean score of the control group was 8 and 9 for the experimental group. The computed t-value 2.56 was greater than the critical 2.20. Which means that there was a significant difference in the pretest results of the experimental and control groups.

The results of the conducted pretest in control and experimental group show that there was a difference

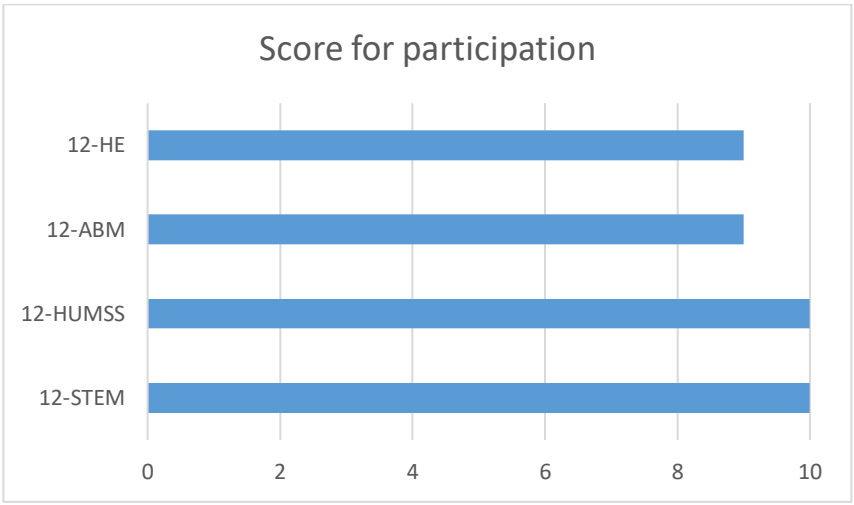
3. Performance of the Students after the Intervention

Table 6. Posttest Scores for participation of the Control and Experimental

Control Group



Experimental

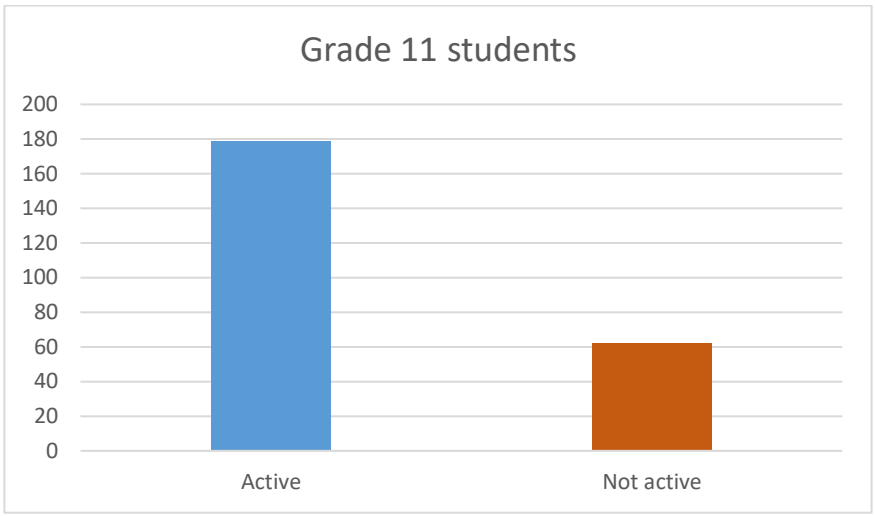


After the intervention, a pre-earthquake drill was conducted and it showed that in experimental group, Both HUMSS AND STEM got a perfect score of 10 and both HE and ABM got a 9 score

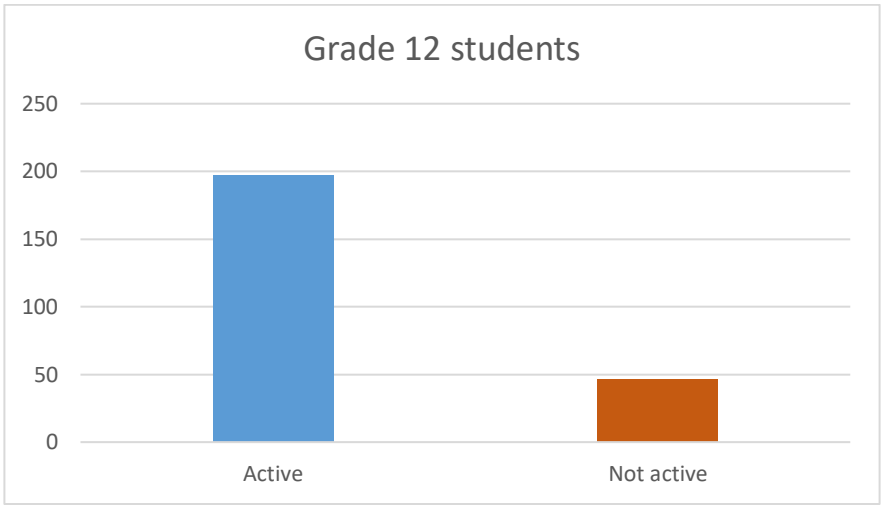
Findings show that there are great changes on the results of the posttest compared to the results of their pre-test, a lot of members of the experimental group obtained high scores while in the control group showed that their scores did not even change or differ from their scores in the pretest. This only shows that automated earthquake drill alarm helps a lot in boosting their awareness and activeness in participating earthquake drill.

Table 7. Activeness of the Experimental and Control Group after intervention

Control Group



Experimental Group



The results show that the control group has a small decrease in their activeness level by.8%, whereas the

experimental group has a huge increase, from 186 to 197 active students and 57 to 46 inactive students.

It shows that the automated earthquake alarm drill has a significant impact on their willingness to participate in the drill; it encourages many students to participate more frequently as a result of the excitement they are experiencing.

4. Difference of the Two Groups after the Experiment

Table 8. T-table of the Posttests Scores of the Control and Experimental Group

	Control Group	*Experimental Group*
Mean	8	9.5
Variance	2.909090909	0.272727273
Observations	12	12
Pearson Correlation	-0.102062073	
Hypothesized Mean Difference	0	
df	11	
t Stat	-2.833200845	
P(T<=t) one-tail	0.008139337	
t Critical one-tail	1.795884819	
P(T<=t) two-tail	0.016278674	
t Critical two-tail	2.20098516	

The mean score of the control group in the posttest was 8 and 9.5 for the experimental group. The computed t –stat value 2.8 was greater than the critical value 2.2.

This means that there is significant difference in the posttest scores of the experimental and control groups in favor of the experimental group.