

# Comparison of Mathematics Learning Results with Alfa Zone Conditioning and without Alfa Zone Conditioning in Class VIII Students

\*Tirta Nirmala<sup>1</sup>

<sup>1</sup> *Mathematics Education Master's Program, Universitas Negeri Makassar, Makassar, Indonesia*  
*\*Email: tirtanirmala26@gmail.com*

## ABSTRACT

This study compares mathematics learning outcomes with alpha zone conditioning and without alpha zone conditioning in class VIII MTsN 1 Jeneponto. This study aims to compare two groups with different treatments. The type of research is quasi-experimental; the research design is a non-equivalent control design. The population is all students of class VIII MTsN 1 Jeneponto totaling 140 students. The sampling technique is purposive sampling. The samples were Class VIII D as the experimental class as many as 28 students with treatment and 28 students in class VIII C as the control class without treatment. The instrument used was a multiple-choice test. Data analysis techniques are descriptive statistics and inferential statistics. Hypothesis testing is the Independent sample t-test. The results of descriptive statistics obtained that the average value of the experimental class mathematics learning outcomes was 81.57 while the control class's average mathematics learning outcomes were 65.8. Based on the results of inferential statistics, hypothesis testing of mathematics learning outcomes using the Independent sample t-test shows that  $\text{Sig} < 0.000 < 0.05$ , meaning that there is a difference in the average value of mathematics learning outcomes for experimental class students and the control class. It can be concluded that there are differences in learning outcomes of mathematics with alpha zone conditioning and without alpha zone conditioning in class VIII MTsN 1 Jeneponto.

**Keywords:** *Mathematics Learning Outcomes, Alpha Zone.*

## 1. INTRODUCTION

Education is a very important part of human life to improve the quality of himself. The level of education is human welfare. The goals of national education are closely related to the learning process; some of the problems faced in the world of education are the weakness of the learning process [1]. With the weakness of the learning process, it will be challenging to achieve the national education goals. Learning processes can be represented as a sequence of conceptions developed by students during instruction [2].

One of the learning processes is the process of learning mathematics. Mathematics is one of the

subjects that most students find very difficult, unpleasant, and even boring. So that it can affect their learning outcomes. Several factors affect mathematics learning outcomes, one of the factors that influence student learning outcomes is internal (inside) and external (external) factors for students. Internal factors are divided into two, namely, fatigue factors and psychological factors (motivation). External factors are divided into family, school, and community [3].

To overcome this problem, the teacher conducts alpha zone conditioning during the learning process because the alpha zone can restore student learning focus to encourage students to obtain good learning outcomes.

Based on this, this paper aims to reveal the mathematics learning outcomes of students with alpha zone conditioning in class VIII students of MTsN 1 Jeneponto, Jeneponto Regency, find out students' mathematics learning outcomes without alpha zone conditioning in class VIII students of MTsN 1 Jeneponto, Jeneponto Regency, and find out Is there a difference in learning outcomes with and without alpha zone conditioning in class VIII MTsN 1 Jeneponto, Jeneponto Regency.

**2. LITERATURE REVIEW**

**2. 1. Alpha Zone**

*Alpha zone* is one of the brain waves with (frequency 7-13 Hz) alpha zone; brain wave conditions are understood as the brightest stage of the creative process of a person's brain. This condition is the best condition for learning because the neurons (nerve cells) are in harmony (balance). A person's nerve cells shoot electrical impulses simultaneously and rest simultaneously so that a balance arises, which results in a person's relaxed condition. This gives rise to efficiency in the neural pathways so that the conditions are very suitable for making suggestions [4].

*Alpha zone* is one of the brain waves that are very good for receiving learning. The use of the alpha zone at the beginning of learning or on the sidelines of learning or at the end of learning makes students enthusiastic about all forms of fun activities such as music and songs, fun stories, ice breaking, and brain gym because children will feel happy which is marked by a cheerful face. Smiled and laughed. This will make students happy to follow the lesson.

**2.2. Learning outcomes**

Learning outcomes are abilities obtained by individuals after the learning process takes place, which can provide behavioral changes in students' knowledge, understanding, attitudes, and skills to become better than before [5].

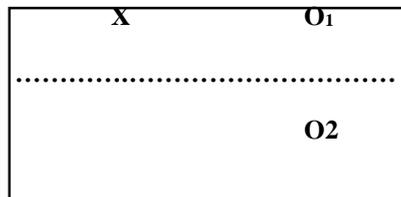
It can be concluded that learning outcomes or learning success is something that students achieve during the learning process, where the learning outcomes can know changes in student behavior.

**2.3. Number Pattern Material**

According to [6], the number pattern is an arrangement of numbers with a regular shape from one form to the next. The number pattern consists of two, namely the number sequence and the number series. The number sequence is further divided into two, namely, the arithmetic and geometric number sequence. The number series is also divided into two, namely the arithmetic series and geometric series.

**3. RESEARCH METHOD**

The approach in this study is quantitative. The type of research conducted is quasi-experimental, with the research design used in this study being a non-equivalent control design.



- X = Treatment with conditioning *alpha zone*
- O1 = Learning outcomes with alpha zone conditioning
- O2 = Learning outcomes without conditioning *alpha zone*

The design above shows that this design uses two groups, namely the experimental class and the control class. The experimental class is the class that gets the treatment that is given the alpha zone conditioning, while the control class is the control group that is without being given the alpha zone conditioning. In this design, neither the experimental group nor the control class was selected randomly (randomly). The implementation found that the experimental class was class VIII D with 28 students with alpha zone conditioning and class VIII C with 28 students without alpha zone conditioning. The difference in treatment will compare the analysis of research data using the independent sample t-test.

**4. RESEARCH RESULTS AND DISCUSSION**

This research was conducted in two classes where class 1 (experimental class) researchers provided alpha zone conditioning while class 2 (control class) researchers did not offer alpha zone conditioning. Then the researchers conducted research. Multiple-choice tests are carried out after the learning process is

complete. The following are the results of the mathematics learning outcomes test in the two groups.

**4. 1. Description of Mathematics Learning Outcomes with Conditioning Alpha Zone**

Based on the results of descriptive statistical analysis of mathematics learning outcomes in the experimental class, it is shown in the following table:

**Table 1.** Descriptive Statistics of Mathematics Learning Outcomes in the Experimental Class

Statistics	Statistical Value Learning outcomes
Number of Samples	28
Lowest Value	60
The highest score	95
Average value	81.57
Standard Deviation (SD)	7.84

The number of samples of this research data was 28 students, where the highest score of learning outcomes obtained in the experimental class (VIII D) was 95, while the lowest score was 60.

**Table 2.** Distribution of Frequency and Percentage Learning Outcomes in the Experiment class

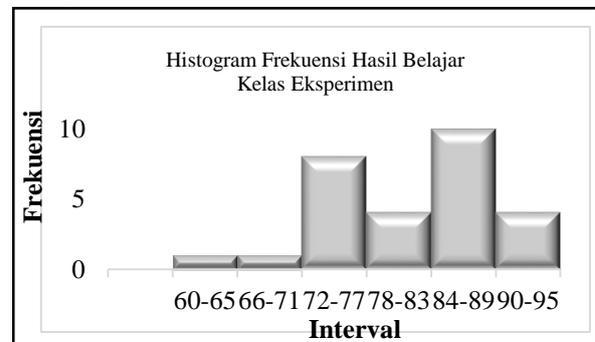
Interval	Middle value ( $X_1$ )	Frequen cy ( $f_1$ )	$f_1 \cdot X_1$	(%)
60-65	62.5	1	62.5	3.6
66-71	68.5	1	68.5	3.6
72-77	74.5	8	596	28.5
78-83	80.5	4	322	14.3
84-89	86.5	10	865	35.7
90-95	92.5	4	370	14.3
Amount	558	28	2284	100

Based on the frequency distribution table and the percentage of learning outcomes in the experimental

class, it shows that the highest frequency is 10 in the interval 84-89 with a percentage of 35.7%, while the lowest frequency is 1 in the interval 60-61 and 66-71 with a percentage of each. - 3.6% each, the product of the times the frequency and the mean is 2284 then divided by 28 students and obtained an average score of 81.57.

From the average value, the standard deviation of the experimental class research data, it is known that the data spread is 7.84, meaning that most of the data in the collection is plus and minus 7.84 from the average.

The presentation of learning outcomes in the experimental class can be seen in the following histogram:



**Figure 1.** Histogram Frekuensi Hasil Belajar Kelas Eksperimen

**4. 2. Description of Mathematics Learning Outcomes with Conditioning Alpha Zone**

Based on the results of descriptive statistical analysis of mathematics learning outcomes in the control class, it is shown in the following table:

**Table 3.** Descriptive Statistics of Mathematics Learning Outcomes in the Control Class

Statistics	Statistical Value Learning outcomes
Number of Samples	28
Lowest Value	40
The highest score	80
Average value	65.8
Standard Deviation (SD)	9.63

The number of samples of this research data was 28 students, where the highest score of learning outcomes obtained in the experimental class (VIII C) was 80, while the lowest score was 40.

Based on the frequency distribution in Table 4 and the percentage of learning outcomes in the experimental class, it shows that the highest frequency is 10 in the interval 68-74 with a percentage of 35.7%, while the lowest frequency is 1 in the interval 40-46 with a percentage of 3.6%. , the sum of the product of the frequencies and the mean is 1841, then divided by 28 students, and the average score is 65.8.

This average value can be calculated as the standard

**Table 4.** Distribution of Frequency and Percentage Learning Outcomes in the Control Class

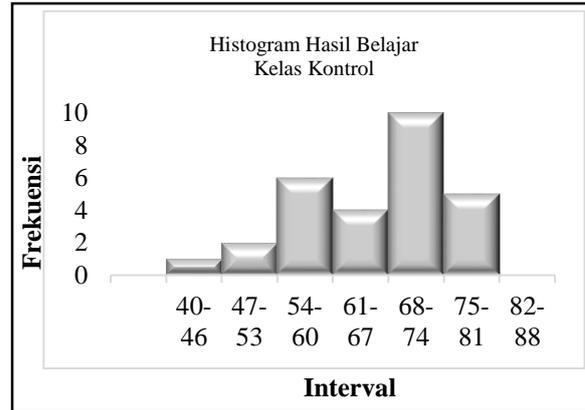
Interval	Middle value ( $x_i$ )	( $f_i$ )	$f_i \cdot X_i$	(%)
40-46	43	1	43	3.6
47-53	50	2	100	7.1
54-60	57	6	342	21.4
61-67	64	4	256	14.3
68-74	71	10	710	35.7
75-81	78	5	390	17.9
82-88	85	0	0	0
Amount	558	28	1841	100

deviation of the experimental class research data; it is known that the data spread is 9.63, meaning that most of the data in the collection is plus and minus 9.63 From the average.

The presentation of learning outcomes in the experimental class can be seen in the following histogram:

#### 4. 3. Comparison of Student Learning Outcomes with and without Alpha Zone Conditioning

The following is the prerequisite test results:



**Figure 2.** Frekuensi Hasil Belajar Kelas Kontrol

#### 4. 3. 1. Normality test

Normality testing aims to state whether the test scores for learning mathematics outcomes for each experimental class and control class from the population are normally distributed. Testing the normality of the data in this study using SPSS version 20 statistics through the test *Kolmogorov-Smirnoff*. This test is carried out to determine whether the data is normal or not; if the information is normally distributed, then  $sig > \alpha$ , and if the data is not normally distributed, then  $sig < \alpha$  where  $\alpha = 0.05$  (5%).

The normality test using the *Kolmogorov-Smirnoff* above obtained a significant value of 0.076 for experimental class learning outcomes while 0.051 for control class learning outcomes. Because the results obtained are greater than  $\alpha = 0.05$ , it can be concluded that the data is normally distributed.

#### 4.3.2 Homogeneity Test

Before testing the hypothesis, the homogeneity test is first carried out because this is a requirement for testing in inferential analysis. The homogeneity test aims to see whether the data in both classes come from a homogeneous population.

Homogeneity testing is carried out on the data before it is carried out learning outcomes of experimental and control classes, with a previously determined significance level of  $\alpha = 0.05$  (5%). If  $sig > \alpha$  then  $H_0$  is accepted, then the two data tested are homogeneous, and If  $sig < \alpha$  then  $H_0$  is rejected, then the two data tested are not homogeneous.

Based on the homogeneity test table, it is known that the significance value of the mathematics learning outcomes variable in the experimental class and

control class is 0.784. Because of the value of sig.  $0.784 > 0.05$ , then as the basis for decision making in the homogeneity test above, it can be concluded that the variance of the data on mathematics learning outcomes in the experimental class and control class students is the same or homogeneous

#### 4. 3. 3. Hypothesis testing

This hypothesis test is carried out to answer previous researchers' proposed hypothesis using test analysis *independent sample t-test*. The proposed hypothesis is whether there is a difference in mathematics learning outcomes with conditioning *alpha zone* and without conditioning *alpha zone* in class VIII MTsN 1 Jeneponto, Jeneponto Regency.

Based on the hypothesis, the analytical technique used in answering the hypothesis is the analytical technique *independent sample t-test*.

Based on the output *Program IBM SPSS*, Levene's test value obtained is F of 0.076 with a significance of 0.784. The value obtained is greater than the significance level = 0.05, while the t-count value is 6.466, greater than the t-table value of 1.674 with a significance of 0.000. This significance value is smaller than 0.05 (sig.  $> 0.05$ ), so it can be concluded that there are differences in learning outcomes of mathematics with alpha zone conditioning and without alpha zone conditioning in class VIII MTsN 1 Jeneponto, Jeneponto Regency.

Based on the results of inferential statistical tests, it can be concluded that there are differences in learning outcomes of mathematics with alpha zone conditioning and without alpha zone conditioning in class VIII students of SMPN 1 Taroang, Jeneponto Regency.

Based on observations and analysis results, it was found that alpha zone conditioning learning can be used as a strategy to condition the atmosphere in the classroom, this is due to 1) alpha zone conditioning can affect student learning outcomes because students are more focused on learning in the classroom with a pleasant atmosphere. Relax and have fun. 2) alpha zone conditioning makes students not feel bored in class. When students feel bored, the teacher immediately provides alpha zone conditioning, be it brain gym, ice-breaking, or other alpha zone conditioning. 3) alpha zone conditioning is used by looking at the class situation; if the class is not

controlled, the alpha zone is used, making students focus on the teacher.

Particularly, using the alpha zone in the apperception will make the students ready to receive the knowledge [7]. Relevantly, [8] states that apperception is expected to stimulate students' learning motivation.

Based on summary learning outcomes, the independent sample t-test is known that the average learning outcomes of the experimental class are greater than the control class. From the table, it is known that t-count  $>$  t-table is  $6.466 > 1.674$ , and the significance value is less than 0.05, so it can be concluded that there are differences in student learning outcomes given the alpha zone conditioning and students who were not given the alpha zone conditioning.

This can happen because the alpha zone conditioning is one of the best brain waves to receive learning, the use of the alpha zone at the beginning of learning and on the sidelines of learning or at the end of learning makes students enthusiastic about all forms of activities they do, and the provision of this alpha zone requires students remain active and happy in the classroom, because students who feel happy in participating in the learning process, their learning outcomes also increase.

Based on the research results above, there are differences in learning outcomes of mathematics with alpha zone conditioning and without alpha zone conditioning in class VIII students of MTsN 1 Jeneponto, Jeneponto Regency.

## 5. CONCLUSION

Based on the results of research and discussion in this study, several conclusions were obtained from the results of learning mathematics for class VIII students at MTsN 1 Jeneponto, Jeneponto Regency. *Alpha zone* around 67.86% in the very high category. The mathematics learning outcomes of class VIII MTsN 1 Jeneponto, Jeneponto Regency without alpha zone conditioning are around 53.58% in the very high category.

Based on the results of the analysis, it was found that there was a difference in the average learning outcomes of mathematics between students who applied conditioning *alpha zone* and unconditioned

students *alpha* zone from the t-test results obtained that the average learning outcomes of mathematics with an *alpha zone* of 81.50 while the average learning outcomes of mathematics without conditioning *alpha zone* of 65.14, so it can be concluded that the average learning outcomes of mathematics with the *alpha* zone is bigger than without conditioning *alpha zone*.

## REFERENCES

- [1] Sanjaya, Vienna. *Educational Process Standard Oriented Learning Model*. Jakarta: Kencana Prenada Mredia Group, 2010
- [2] Niedderer, Hans & Budde, Marion & Givry, Damien & Psillos, Dimitris & Tiberghien, Andrée. (2007). *Learning Process Studies*. 10.1007/978-1-4020-5032-9\_12.  
[https://www.researchgate.net/publication/227097583\\_Learning\\_Process\\_Studies](https://www.researchgate.net/publication/227097583_Learning_Process_Studies)
- [3] Slameto, Learning, and Factors Affecting It. Jakarta: Rineka Cipta, 2003
- [4] Chabit. *Human teacher*. Bandung: PT Mizan Pustaka, 2011.
- [5] Ngalim. *Educational Psychology*. Bandung: Youth Rosda Karya, 2002.
- [6] Salsa Umi. *Logic with Mathematics for Class VIII SMP and MTS (Curriculum 2013) (Volume 1)*. Jakarta: Platinum, 2016
- [7] Zulfa Fahmy & Titi Wuryani. 2020. The Use of Magic in Alpha Zone-Based Indonesian Language Learning. ICLLT 2019, October 12, Magelang, Indonesia. EAI DOI 10.4108/eai.12-10-2019.2292192.
- [8] Lusiana Hasan Puteri. *International Journal of Education, Training and Learning* 2018, Vol. 2, No. 1, pp. 7-12.