The Implementation of Numbered Head Together Learning Model on Student Integrated Science Learning Outcomes in SMP Negeri 1 Panei

Salome Rajagukguk[1*]

Lecturer of LLDIKTI dpk Universitas Simalungun, Indonesia
* Corresponding author:
Email: rajagukguksalome1967@gmail.com

Abstract.

The prevailing inquiry was performed aiming to know how Numbered Head Together Method was implemented and affect the students learning outcomes of 7th grade in SMP Negeri 1 Panei during Integrated Science Learning process. Cluster random sampling was employed to choose the samples, obtaining 64 students (two classes), in which one class (32 students) acted as experimental class receiving Numbered Head Together learning model, while another class (32 students) acted as control class received by conventional model. Data retrieved were then analyzed using SPSS 21. The analysis resulted that students who received Numbered Head Together learning model had better learning outcomes (80.62) than students' who received conventional model (72.19). Hypothesis was further tested using t-test at significance level of $\alpha = 0.05$ obtaining t_{count} (3.30) > t_{table} (2.00), thus Ha is accepted, indicating that Numbered Head Together learning model affect the Learning Outcomes of 7th grade students of SMP Negeri 1 Panei during Integrated Science learning process. It is concluded that Numbered Head Together has an impact on students learning outcomes of 7th grade of SMP Negeri 1 Panei during Integrated Science learning process at academic year of 2019/2020. The learning by using Numbered Head Together model can improve students' learning outcomes during the Integrated Science subject, therefore such method can be selected as one of the alternatives to plan a better Integrated Science learning.

Keywords: *Numbered head together, learning outcomes.*

1. INTRODUCTION

Improving education quality demands hard work from various parties including educational worker, parents, students, community, and government. This aimed to obtain the final goal of quality human resource. Therefore, students need to be prepared earlier. Student passive behavior during learning process and monotonous learning system affect students learning achievement. Therefore, building students' active, creative, and innovative behavior are not easy. Teacher is assumed as the most correct learning source, while student is merely a listener. This argument further causes learning and teaching process tend to be boring and students are learning by force. In fact, teacher has many roles including facilitator, motivator, and inspiration provider for the students. Teacher does not merely provide information to their students, but also a facilitator who should provide easier learning process so that learning becomes fun. Meanwhile, as a motivator, teacher should increase student motivation to learn, so that a conducive condition can be created. Teacher as a learning boost must improve student potentials and develop them according to their aspiration and dream in the future.

Many efforts can improve Integrated Science learning success, one of them is through active learning where students do most of the works need to be dome. Active learning is a fast, fun, supporting, and interesting step. In order to learn well, active learning assists the students to listen, see, and raise questions about certain subjects and discuss it with friends. There are numerous learning models, and each of them certainly has strength and weakness. Therefore, choosing a learning model should pay attention to several matters, including material delivered, learning objective, time provided, and things related to students' success during the learning process. Such success includes changes in terms of cognitive, affective, and behavior [1]. In order to reach these skills, accurate learning model needs to be applied. This research applied Numbered Head Together learning model, whose strength is that the students are expected to be

actively state their opinion. This technique allows the students to have the chance to share their ideas and think the most correct answer. As a cooperative learning model, Numbered Head Together is designed to change how students interact with each other and becomes an alternative learning method in a class which applies conventional learning model. Numbered Head Together was first introduced by Spenser Kagen [2] to involve more students in learning material covered in a subject and check the students comprehension regarding the material contents [3]. Based on the explanation above, this research was performed to know how Numbered Head Together affect the students' learning outcomes of 7th grade in SMP Negeri 1 Panei during Integrated Science subject. Research results obtained were expected to be beneficial to develop and improve education quality by using *Numbered Head Together* learning model.

II. METHODS

This research was done in SMP Negeri 1 Panei, Simalungun District in January to March 2020. Research population was 219 students (7 classes) in which 64 students (two classes) were involved as the research samples through *Cluster random sampling.* Current research was done through experiment of *randomized control Two Groups Pretest-Postest design.* Two classes were employed as samples, in which one class (32 students) became experimental class obtaining Numbered Head Together learning model, while the other class (32 students) became control class obtaining conventional model. Before the learning process carried out, pre-test was performed on both classes, while after the learning process carried out, post-test was done. The subsequent Table present the research design applied:

Table 1. Research Design

Class	Pre-test	Treatment	Post-test
Experiment	T_1	X_1	T_2
Control	T_1	X_2	T_2

SPSS 21 application was employed to analyze data, while hypothesis was tested through t statistic or t test at significance level of $\alpha = 0.05$ and degrees of freedom of $dk = n_1 + n_2 - 2$.

Testing criteria: Ho is accepted if t-count is higher than t-table, which means that Numbered Head Together did not have any effect on the Learning outcomes of 7th grade students in SMP Negeri 1 Panei, Simalungun District, at the Academic Year of 2018/2019 during Integrated Science subject.

Ha is accepted if t-count > t-table, which means that Numbered Head Together affects students' learning outcomes of the 7th grade of SMP Negeri 1 Panei, Simalungun District, at the Academic Year of 2018/2019 during Integrated Science subject.

III. RESULT AND DISCUSSION

3.1 Learning Outcomes of Control Class (Conventional Model)

Students' learning outcomes of control class (received conventional model) obtained score range at 60.00-90.00. Based on the following table showing the students' learning outcomes, the lowest score obtained by the students was 60.00, while the highest score obtained by the students was 90.00. Furthermore, the mean score calculated was 72.19.

Table 2. Data Frequency Distribution of Control Class Learning Outcomes

Score		Frequency	Percentage	Valid Percentage	Cumulative Percentage
Valid	60.00	8	25.00	25.00	25.00
	70.00	11	34.40	34.40	59.40
	80.00	11	34.40	34.40	93.80
	90.00	2	6.30	6.30	100.00
	Total	32	100.0	100.0	

Data presented in Table 2 above shows that among 32 students of control class, 8 students obtained score 60 (25.00%), 11 students obtained score 70 (24.40), 11 students obtained score 80, and 2 students obtained score 90 (6.30%). Since the Minimum score criteria for Integrated Science in SMP Negeri 1 Panei was 70, it can be seen on Table 2 than there were 24 students who reached minimum score criteria (75.10%), while the other 8 students did not reach the minimum score criteria (24.90%).

Table 3. Mean ($\bar{X}$) and Standard Deviation (S) of Class Control Post-Test Data

N	Valid	32
	Missing	0
Mean		72.19
Std. Deviation		9.07
Variance		82.16
Minimum		60.00
Maximum		90.00
Sum		2310.00

Based on Table 3 above, mean score obtained during the posttest by control class was 72.18, while the standard deviation obtained was 9.07. In addition, 60.00 was the lowest score obtained by the students, while 90.00 was the highest score obtained.

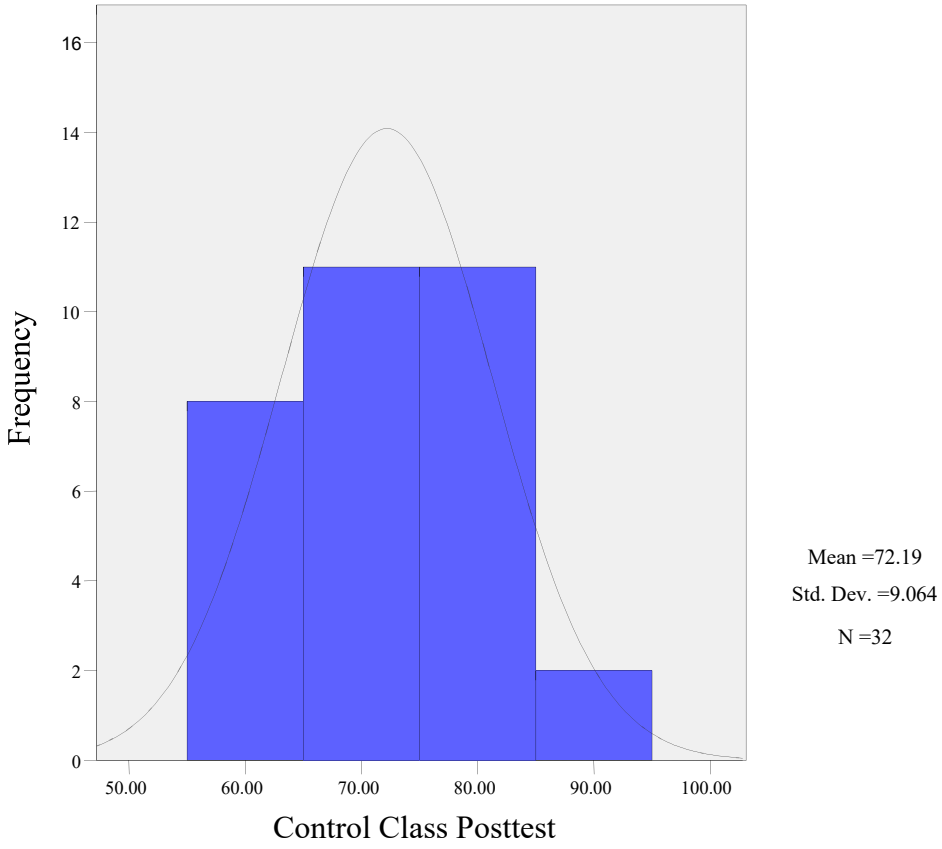

Fig 1. Data Histogram of Control Class Post-Test

3.2 Experimental Class Learning Outcomes (Numbered Head Together Model)

Learning outcomes of experimental class students (received Numbered Head Together learning model) obtained score range at 60-100, with lowest score of 60, highest score of 100, and mean score of 80.62. Frequency distribution of experimental class learning outcome is presented in the following table.

Table 4. Data Frequency Distribution of Experimental Class Post-Test

Score		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	60.00	3	9.40	9.40	9.40
	70.00	7	21.90	21.90	31.30
	80.00	10	31.30	31.30	62.50
	90.00	9	28.10	28.10	90.60

	100.00	3	9.40	9.40	100.00
	Total	32	100.00	100.00	

Based on the data shown in table 4 above, among 32 students from experimental class, 3 students obtained score 60 (9.40%), 7 students obtained score 70 (21.90%), 10 students obtained score 80 (31.30%), 9 students obtained score 90 (28.10%), and 3 students obtained score 100 (9.40%). Since the minimum score criteria of Integrated Science in SMP Negeri 1 Panei was 70, it means that 29 students reached the minimum score criteria (90.70%), while 3 other students did not reach the minimum score criteria (9.30%).

Table 5. Mean ($\bar{X}$) and Standard Deviation (S) of Experimental Class Post-Test Data

N	Valid	32
	Missing	0
Mean		80.62
Std. Deviation		11.35
Variance		128.63
Minimum		60.00
Maximum		100.00
Sum		2580.00

According to Table 5 above, experimental class obtained post-test mean score of 80.62, in which the standard deviation was 11.35 with lowest score of 60.00 and highest score of 100.00.

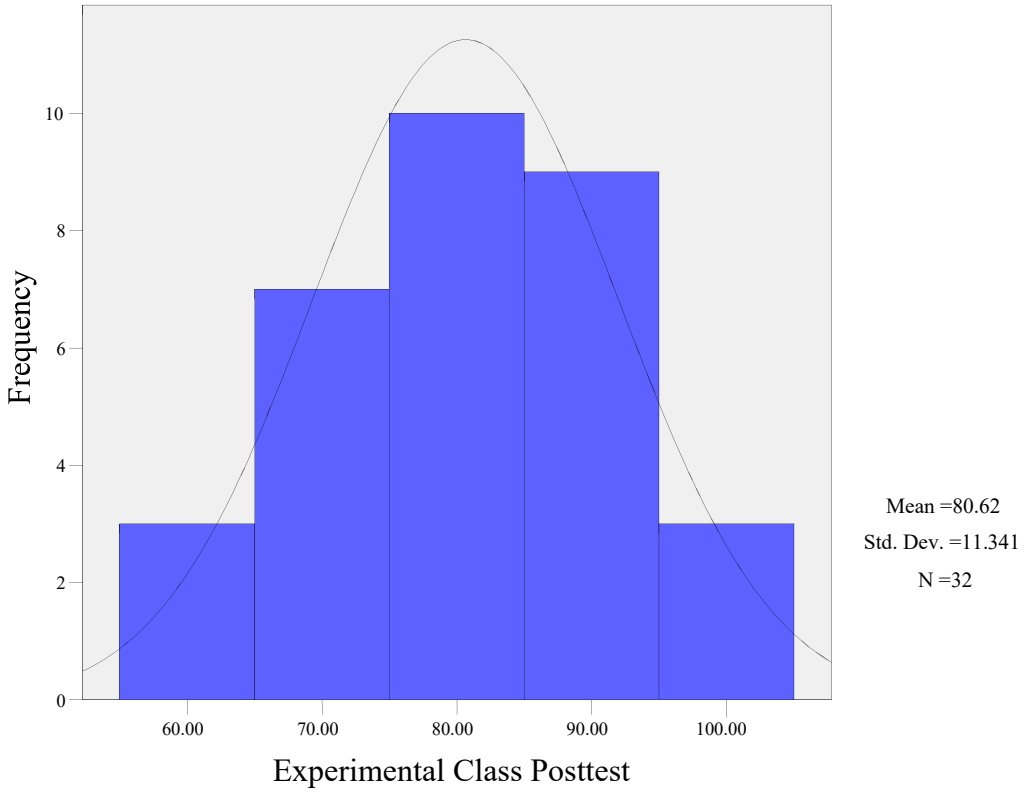

Fig2. Histogram of Experimental Class Post Test Data

3.3 Hypothesis Testing

Hypothesis testing was performed by using SPSS 21. The results is shown in the following Table.

Table 6. Paired (t) Samples Test

	Paired Differences				t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference	Mean	Std. Deviation	Std. Error Mean

	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
Pair 1 Experimental – Control	8.44	13.45	2.39	3.59	13.30	3.30	31	0.00

The hypothesis test performed through t test at significance level of α = 0.05 and dk = 62 obtained t-count (3.30) > t-table (2.00), thus Ho is rejected and Ha is accepted. It indicates that Numbered Head Together learning model affected the learning outcomes of 7th grade students of SMP Negeri 1 Panei during Integrated Science subject. Students who received *Numbered Head Together* learning model received higher outcomes (80.62) than students who received conventional learning model (70.19) on goods classification material in VII class of SMP Negeri 1 Panei. Hence, *Numbered Head Together* learning model can be used as one of learning model alternatives to attract students learning interest and motivation, so that it can lead to students learning outcomes improvement.

Higher students learning outcomes were obtained through *Numbered Head Together* learning model because this model emphasizes on students' active role in the classroom so that they can be involved in comprehending the subject material. In addition, this learning model also demands student cooperation and interdependency in task structure, test structure and its reward structure in obtaining good learning outcomes. *Numbered Head Together* learning model is one of cooperative learning model developed to reach learning outcomes in the form of academic achievement, tolerance, accepting diversity, and social skill development (Trianto, 2011). Thus, it can be summed up that *Numbered Head Together* learning model can improve the 7th grade students learning outcomes in SMP Negeri 1 Panei during Integrated Science subject.

IV. CONCLUSION

Since the hypothesis test results obtained t-count (3.30) > t-table (2.00), then Ha is accepted, indicating that Numbered Head Together learning model the 7th grade students learning outcomes in SMP Negeri 1 Panei during affects Integrated Science Subject. Students who received *Numbered Head Together* obtained outcomes (80.62) higher than students who received conventional learning model (72.19). This indicates that *Numbered Head Together* is better applied than conventional model. Therefore, *Numbered Head Together* learning model can improve 7th grade students' learning outcomes of SMP Negeri I Panei Simalungun District during Integrated Science subject.

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