MUDIR (Jurnal Manajemen Pendidikan) P-ISSN : 2655-9331 E-ISSN : 2657-2230
Avalaible online at: **https://ejournal.insud.ac.id/index.php/mpi/index**
Volume 5, Nomor 1, Januari 2023 | DOI: https://doi.org/10.55352/mudir

THE ANALYSIS OF EFFECTIVENESS OF STUDENT LEARNING OUTCOMES IMPROVEMENT USING THE NHT (NUMBER HEAD TOGETHER) LEARNING MODEL

*[1]Edward Gland Tetelepta, [2]Ferdinand Salomo Leuwol, [3]Saparuddin Rambe, [4]David Ranlyns Efraim Selan, [5]Antonius Rino Vanchapo

[1,2]Universitas Pattimura, [3]IAIN Langsa,
[4]Universitas Persatuan Guru 1945 NTT, [5]STIKes Faathir Husada

Email: *[1]edwardunm@gmailcom

Abstrak: *Penelitian ini merupakan penelitian kuasi eksperimen kuantitatif tentang pengaruh pendekatan pembelajaran Number Head Together terhadap hasil belajar siswa. Populasi siswa kelas V dan "desain kelompok kontrol pretest-posttest" digunakan dalam penyelidikan ini. Soal kognitif pilihan ganda yang digunakan sebagai instrumen penelitian adalah soal yang telah melalui uji validitas dan reliabilitas. Temuan uji N-Gain menunjukkan bahwa hasil dengan skor persentase 54% termasuk dalam kategori kurang efektif. Temuan uji Shapiro-Wilk, yang digunakan untuk menguji data, mengungkapkan bahwa data tersebut terdistribusi secara teratur. Data homogen pada uji ANOVA memiliki nilai sig. dari 0,980 dan sudah melebihi 0,05. Temuan penelitian menunjukkan bahwa model pembelajaran NHT berpengaruh signifikan terhadap hasil belajar siswa apabila nilai t hitung pada uji independent sample lebih besar dari t tabel dan H0 ditolak dan H1 disetujui.*
Kata kunci: eksperimen, model pembelajaran, number head together, hasil belajar, siswa

Abstract: This study is a quantitative, quasi-experimental investigation into how the Number Head Together learning approach affects students' learning outcomes. A class V student population and a "pretest-posttest control group design" were used in this investigation. The multiple-choice cognitive question used as the study's instrument was one that has undergone validity and reliability testing. The N-Gain test findings indicate that the outcomes, with a percentage score of 54%, fall into the less effective category. The findings of the Shapiro-Wilk test, which was used to test the data, revealed that they were regularly distributed. The data is homogeneous in the ANOVA test, which has a sig. of 0.980 and already exceeds 0.05. The study's findings indicate that the NHT learning model has a significant impact on students' learning outcomes if the computed t value in the independent sample test is greater than the t table and H0 is rejected and H1 is approved.
Keywords: experimental, learning models, number heads together, learning outcomes, student

Introduction

Education is the cornerstone of a nation's civilization. Because only with education will humans be able to understand and know their God, the purpose of their lives, and themselves. So that later he is able to lead and become an agent of chance for his family, environment, and nation. Education is a beacon that illuminates the human journey through life. Only with education will humans be able to become virtuous individuals and benefit their environment. The National Education System is governed by Law of the Republic of Indonesia Number 20 of 2003, which states that education is a deliberate and planned effort to create a learning environment and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, and noble character, as well as the skills needed by themselves, the community, the nation, and the state.

Teachers must be able to adjust to and comprehend the characteristics of pupils in the millennial era in order to achieve active and successful learning. Because activities in schools in this millennial era have experienced a lot of development and progress in all aspects. Several more effective learning models and strategies have been widely implemented in several leading schools. Then, as technology and information rapidly advanced, learning resources that were pertinent to students' current circumstances started to be utilised. A teacher can choose the most effective learning model for carrying out learning activities in the classroom. There are several learning models that can be used, such as number heads together, the power of two, talking sticks, everyone is a teacher here, and others (Hasbullah, 2012).

Even though various learning models have been found, we still find schools that still use classical models such as lectures and assignments for learning in the classroom. Even though the material being taught will be maximized if it is taught with an updated learning model. This happens because the pedagogic strengthening and participation of teachers in learning improvement training have not been maximized. One of the schools that the researchers visited had 32 students in one class. This number is not small, resulting in difficulty mastering the class and maintaining student focus to continue to be active in learning activities. Because there are so many students, there are times when not all of them study well during the learning process, making it challenging to respond to the teacher's questions. Because of this, some pupils have difficulty learning and frequently find learning to be boring (Astuti, 2023). Consequently, individuals struggle to acquire and comprehend the material being taught during the learning process.

According to the Ministry of Education and Culture's official website, there were a total of 79 participating countries to test student learning outcomes in the fields of reading, math, and science. This information was based on the Program for International Student Assessment (PISA) report, which measures the level of achievement for students aged 15 and was conducted research in 2018. Indonesia's PISA results place it in the 72nd, 72nd, and 70th positions for reading, math, and science, respectively, out of 77 nations, 72 countries, and 78 countries, respectively. Reflecting on these data, education in Indonesia is still not good compared to other countries (Parinussa, 2023). All aspects of the education system in Indonesia must be thoroughly addressed. Starting from the teacher as the main actor and also the government as the power holder who has the authority to provide facilities and infrastructure in education. Teachers, as the spearhead of the education system in Indonesia, must have creative ideas in carrying out their duties to provide interesting learning for students. So that students can participate in learning activities with enthusiasm and so that the material presented by the teacher will be well received and maximized (Jihad, 2012).

Natural science is one of the subjects in elementary school that is interesting to learn. In science lessons, students will learn about everything around them, from plants to animals that are themselves. This very important material will become the basis for understanding further material at the junior high school level. The process of learning science in elementary schools is very important because it can train students to think logically and systematically. Seeing that the material is classified as a lot, a teacher must prepare an interesting learning model so that students continue to be enthusiastic about participating in learning activities. By using appropriate learning models and methods, learning science in elementary schools will be very enjoyable for students (Nurochim, 2013). However, in practice, science lessons are quite difficult for students to understand. They find it difficult to understand material that is abstract in nature because they cannot immediately see it when studying in class. This can happen because teachers find it difficult to develop appropriate learning models for students. Lecture methods and conventional learning methods that are still often applied in several schools make science lessons very boring. Natural knowledge that is very broad around us can actually be explored with good learning. Students can maximize themselves and the objects around them to be used as supporting media in the learning process. For example, in the material on the human respiratory system, students can see themselves or their classmates directly. Likewise, with other materials, such as the digestive system and the movement system in humans (Nugroho, 2023).

Apart from that, another problem that arises is the lack of understanding of the material being taught. Even in elementary school, students must be able to master the material at each grade level. Students must be able to express ideas, answer questions, and ask questions properly so that other students understand what the question means. Students must be adept in expressing opinions, defending opinions, countering the opinions of other students, or persuading other students to agree with them in order to participate in conversations (Nursidik, 2009). The Number Head Together learning model can help the teacher with the issue of communicating the students' viewpoints. NHT is a teaching method that gives pupils the chance to discuss topics and think about the best solutions (Safrida, 2023). According to this theory, NHT is one of the teaching methods that trains students to be able to synthesize and draw conclusions from numerous concepts as a result of discussing ideas or perspectives with peers in their group. Students must be capable of accepting

responsibility both individually and in groups in order to follow the NHT model. When using the NHT paradigm, students must be able to respond to questions when the researcher randomly calls a number. Students may find this motivating because the points collected benefit the entire class as well as the individual students. This certainly can be a solution so that we can properly coordinate learning in a large class with a large number of students (Permana, 2016).

The model of "Number Head Together" offers the benefit of conditioning many of kids. This is the rationale behind why researchers choose the NHT model. There are several children in each class at one of the elementary schools. Each class had, on average, more than 30 students, as can be seen. These students should be in good health. The NHT model can therefore be used as a substitute to improve classroom learning. It will be simple to set up the group learning approach because the classroom is big enough for the class. The NHT model demands enough classroom space for students to sit in groups during the learning process. This will certainly further maximize learning activities with the NHT model.

Method

The comparison group, also known as the control group, and the trial group, commonly known as the experimental group, were not randomly selected for this study for a variety of reasons. This model was selected since its main objective is to determine how a treatment will impact a patient. In this study, a control group with a pre-test and post-test was used. Both groups were still subjected to the pre- and post-tests, however the experimental group underwent therapy while the control group did not. 37 male pupils and 34 female students from class V made up the 71 participants in this study's population. A total of 60 pupils, divided equally across classes V-A and V-B, served as the study's samples. Four different multiple-choice questions with four possible answers made up the research tool employed in this study. An objective test with 20 questions will be used as part of this study's test sheet. The instrument was created using C1–C6 level adaptations of Bloom's taxonomy indications. Researchers used IBM SPSS Statistics 25, a computer program, to analyse quantitative data in this study, namely the learning outcomes of students using the T-test. Data processing consisted of the following four steps: (1) N-Gain Test; (2) Normality Test; (3) Homogeneity Test; and (4) Test the Hypothesis.

Findings and Discussion

According to the results of the tests given to the 30 students in the experimental class and the control class, the outcomes were as follows: The average learning outcomes for both the experimental class and the control class were subpar prior to the introduction of the Numbered Heads Together (NHT) learning paradigm. The experimental class's median value is 45.33; its maximum value is 70; and its minimum value is 20. The highest and minimum values for the control class are 60 and 25, respectively, with 42.83 as the average value. Just like all of the participants in the control group, all 30 of the kids in the experimental class who were present before the intervention belong to the less category. During the research, the experimental class used the Number Head Together (NHT) learning model, whereas the control class continued to use the conventional learning paradigm. These adjustments occur in the form of learning outcomes, the data from which is acquired after a post-test has been given. as a result of the Numbered Heads Together (NHT) learning model's adoption. The experimental class's average score is 73.17; the range from minimum to maximum score is 95; and the average score is 30. With a maximum value of 85 and a minimum value of 25, the control class's average value is 59.50. The experimental class has more students than usual, with 3 falling into the "very good" group, 8 into the "good" category, 4 into the "sufficient" category, and 15 into the "less" category. In contrast, there were just two students in the control group who fit the "good" category, six who fit the "sufficient" category, and twenty-two who fit the "less" category.

According to the calculations for the N-Gain Score test, the experimental class's average N-Gain Score (using the Number Head Together learning model) is 54%, falling into the medium and less effective categories. has an N-Gain value ranging from zero percent to ninety percent. In contrast, the control class's average N-Gain Score (using the traditional learning model) is 29.54%, placing it in the unsuccessful category. N-Gain values range from -25% to 66.67%, with a minimum value. Therefore, it can be concluded that the introduction of the Number Head Together learning technique has less success improving student learning outcomes. Although it does not contribute to better learning results, traditional learning paradigms. In order to collect data, pre- and post-test questions were administered to both the experimental class and the control class. The findings revealed that the experimental class employing the NHT learning model saw a good increase in average score outcomes. The experimental class's average increased from 45 to 73 over time. In contrast to the control class, which increased but not too much, namely initially from 42 to 59. Several factors influenced these results, namely the lack of student activity in conventional learning activities because they

were less interested and felt bored, so the process of learning activities became less effective. Students become involved in the learning process, making it more effective than it was in the experimental class using the NHT paradigm. However, research in the experimental class revealed that some students were still not committed to taking part in educational activities because of personal issues they were dealing with.

The majority of students come from families in the area around the school. This situation makes students very enthusiastic and passionate about learning at school. Even in class, the students actually want to learn actively. But sometimes, they also feel less interested in the learning process in class because their learning activities do not protect all students. Because of this, many students did not want to sit in their seats and chose to joke and disturb their other friends. The activeness of students in student learning should be accommodated by an active learning design that provides time for students to convey and channel their enthusiasm for learning. Learning activities using a monotonous method will certainly make students bored. Learning activities that are only teacher-centred should be improved by changing them to student-centred learning. Learning activities that are not optimal in class can be improved by providing interesting learning activities.

The number-head-together model is the right choice for student learning. Learning with the NHT model will involve students thoroughly and make them more active. Because the advantage of the NHT model is to provide equal opportunities to all students, those who sit behind or in front, students who are brave or shy, will be able to convey their ideas equally. With small group learning with a diverse composition and independent learning, the possibility of knowledge construction and the possibility for students to arrive at the expected conclusions will be greater. Learning with the NHT model is designed to facilitate all students in the class so that they can follow the lesson well. The NHT model will provide a stimulus for students to work together, think together, and seek answers as a team. This can affect student interactions so that they can be more positive and avoid gaps between smart students and students who do not understand the subject matter. The hope of this model is that students can understand every step of the learning process. In the end, it can make it easier for students to take lessons and material from the learning process carried out.

Students are given a pre-exam of 20 questions that have passed the validity test before the hypothesis test. Before pupils received treatment, a pre-test was administered to ascertain their level of readiness. Many students who took the pre-test had results below the KKM, which was set at 70. A post-test was provided to students to determine whether the number-head-together learning model had an impact on their performance after they had been taught using this method. 15 students received scores above the KKM and 15 students had scores below the KKM after receiving treatment using the Number Head Together learning paradigm and post-test questions. There are several factors that cause students to still be under the KKM, namely students who are not optimal in participating in number-head-together learning because there are only 2 meetings. Prior to testing the hypothesis, a precondition test is conducted. The relevant precondition tests are the homogeneity test, the normality test, and the N-Gain test. Based on the analysis of the data from the experimental class (VB class) and control class (VA class), the normality test shows that the samples were drawn from populations that were normally distributed. This is shown by computing the results of the normality test for the pre-test and post-test data with a significance value of > 0.05. All data are regarded as being normally distributed, which enables the execution of a homogeneity test. For both the pre-test and post-test data, homogeneity test results were obtained in the form of a significance value > 0.05. As a result, there is no discernible difference between the findings of the pre- and post-test. After that, do a gain test to see if the learning outcomes of the students have changed between when they received treatment and when they didn't. The average N gain score between the pre-test and post-test was 54 percent, and this finding is classified as less successful. Once all the necessary tests have been carried out, the hypothesis will then be put to the test. The hypothesis test involves a decision-making procedure; if the value of t count exceeds the value of t table, H0 is rejected and H1 is approved. If the value of t count is equal to that of t table, H0 is accepted and H1 is rejected. In light of the results from the pre-test and post-test data hypothesis testing, the value of t count 3.083 > t table 2.000, or H0, is rejected, whereas H1 is approved. In other words, the number heads combined model affects students' learning outcomes.

The NHT paradigm promotes student engagement and allows for enthusiastic participation in learning activities, which results in improved learning outcomes. The heads together learning model does encourage students to be cooperative. By working cooperatively, the possibility of knowledge construction will be greater, making it possible for students to arrive at the expected conclusions. Students can also be given chances to put their skills to use by asking questions, having discussions, and exhibiting leadership qualities. The learning process, whose centre of activity is the student, can provide an interesting experience for students. When students sit in groups and read material and get the opportunity to give their opinions, it

indirectly makes it easier for them to master the material. Because students become happy and do not feel bored or pressured to participate in learning activities in the classroom. These good learning outcomes will become knowledge for students and habits for better behaviour in everyday life. Learning outcomes, according to Jihad and Haris, are the realization of behavioral changes that frequently take place in the cognitive, affective, and psychomotor domains of the learning process throughout the course of a specified period of time. Learning outcomes become motivation and encouragement so that students can become good individuals and accept the circumstances of other people and the environment around them.

The researcher found an obstacle in this study, namely that there were still students who were less active and less confident. These students are not used to participating in discussion activities with their friends and are afraid that their friends will laugh at them when they give inappropriate opinions or answers. Due to this, some students still do not fully comprehend the subject matter, and as a result, their learning outcomes do not satisfy the minimal completeness criteria (KKM). The findings of the data analysis and the conclusions reached in this study are connected to another study conducted by a previous researcher. The research subjects in this study were grade IV students, with a total sample size of 53 individuals. The Number Head Together (NHT) learning model and the Student Teams Achievement Division (STAD) learning model both have an impact on learning outcomes, according to the study's findings. The experimental class's post-test percentage was 84.52% while it was only 74.42% for the control group.

The results of the study are in line with those of a previous study, which discovered that employing the Numbered Heads Together (NHT) learning model had a favourable and significant impact on the learning outcomes related to the themes of students' varied creative works. These data imply that theme learning outcomes are influenced by the Numbered Heads Together (NHT) learning approach. In a previous study, it was discovered that using the Puzzel Box media in conjunction with the NHT learning paradigm significantly improved student learning outcomes in science.

A prior researcher's investigation was repeated. In this study, it was found that the average post-test learning outcome score for the experimental class was 78.91, while the average score for the control class was 72.36. According to the Independent Sample t-test that was used to test the hypothesis and produced a value of p = 0.028 and a = 0.05, the Numbered Heads Together (NHT) model influences the learning outcomes of Class XI MIPA pupils of SMAN 2 Maros. The similar result was obtained from earlier study that was done. The NHT Type Cooperative Learning Model's Effect on Mathematics Learning Outcomes in View of Class X Bantaeng Muhammadiyah's Learning Interests is the title of an IIS MA research study. It was discovered that there were substantial differences between how effectively children studied mathematics using the direct learning model for students who are engaged in learning and the cooperative learning model a la NHT. Evidence for these conclusions may be seen in the learning outcomes of students, which have an average score of 86.25; the lowest value is 75, and the greatest value is 100. These outcomes surpass those of the control class, where the lowest result was 60 and the best was 87, with an average value of 75.75.

It is clear from the explanation and description of the data above that the number-head-together learning paradigm can enhance students' academic performance. Consequently, it is possible to say that the "heads together learning model" affects students' learning outcomes.

Conclusion

The use of the "number heads together model" has an impact on the learning results of class V students. The data analysis findings, which demonstrate that the average post-test score for the experimental class is 73.14 whereas it is 59.50 for the control class, make this conclusion very evident. According to the results of the post-test average score, the average score for the experimental class, which was taught using the number head-together model, was higher than the average score for the control class, which was taught using conventional methods (73.14 > 59.50). The results of data processing using the SPSS 25 application's hypothesis test (t-test) supported the results of the post-test. With a 5% significance level, the calculation produced a result of (Sig. (2-tailed)) < 0.05, or 0.003 < 0.05. The hypothesis test (t-test) results show that H0 is ultimately rejected and H1 is approved, hence it can be concluded that the number head-together model has a significant effect on learning outcomes. The post-test results for learning outcomes showed a significant average difference between the experimental class and the control class. The inference that can be made is that children are able to get the best results and experience growth while employing the number-head-together paradigm.

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