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The Effectiveness of Numbered Head Together in Learning

Bambang Saptono
Department of Primary Education, Universitas Negeri Yogyakarta
Jl. Colombo No.1, Karang Malang, Caturtunggal, Depok, Sleman, Daerah Istimewa Yogyakarta, Indonesia
*Corresponding Author. E-mail: b.saptono@uny.ac.id

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Abstract: Elementary school teachers frequently encounter the challenge of achieving suboptimal learning gains. This research intends to characterize student learning outcomes before and after implementing the NHT Cooperative Learning Model and assess the impact of the Numbered Head Together Cooperative Learning Model on elementary school student learning outcomes. This research is a type of quasi-experimental research using a quantitative approach. The sample in this study was 15 elementary school students at the Class IV level obtained from the target class in elementary school. Data collection was carried out using learning outcomes tests and observation techniques. The data analysis technique used is descriptive and inferential statistical analysis via the t-test. The research results show a significant influence of the Numbered Head Together Cooperative Learning Model on student learning outcomes.
Keywords: number head together, learning model, elementary school

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Introduction

Teachers are one of the essential components in an education system, especially in elementary schools (Wuryandani & Herwin, 2021). The role, duties and responsibilities of teachers are very important in realizing the goals of national education, namely to educate the life of the nation, improve the quality of Indonesian people, which includes the quality of faith, piety, noble morals and mastery of science, technology and art, as well as realizing Indonesian society. advanced, just, prosperous and civilized (Tjabolo & Herwin, 2020). To carry out these very strategic functions, roles and positions, teachers are needed who are professional and full of innovation in applying teaching skills according to the needs of their students in the classroom (Herwin et al., 2022).

Basically, the curriculum requires teachers to be able to design and implement learning models that enable students to feel happy in learning and not get bored in studying the material taught by the teacher (Juniarti et al., 2021). This is intended so that students always have motivation to learn to improve their cognitive, affective and psychomotor abilities. Thus, teaching skills are something that teachers absolutely have in carrying out their duties as teachers in the classroom.

Teaching is an effort to create environmental conditions or systems that support and enable the teaching and learning process. Thus, student activity is very necessary in teaching and learning activities so that students should be the ones who are most active, because students as learning subjects are the ones who plan and carry out learning. Another thing explained is that if students are active and participate in the learning process, they will not only achieve the achievement aspect but also gain other aspects, namely the affective and social aspects.

Various learning problems found in the field become the empirical basis for the need for classroom action research in these schools. The results of initial observations show that student learning activities in class are very lacking. The learning process seems to be centered on the teacher, often only the teacher is active, so opportunities for students to be active are rarely found. It can be seen that students are often found sleepy, doing other work that is not related to the lesson, and there are even students who are not paying attention at all to the lesson in progress. This shows that there is a lack of

encouragement for students to be active and participate in the learning process in the classroom. Another empirical problem is that student learning outcomes do not appear to align with expectations.

To obtain maximum student learning outcomes, it is also necessary to increase the activity and participation of all students in the learning process. This can be done by allowing students to ask questions, involving all students in expressing ideas and evaluating the ideas expressed by fellow students, and involving all students in solving a problem on the topic being discussed. Based on several things stated, it shows that the appropriate learning model is not applied to social studies subjects. The model in this case is a learning model that allows students to be active and participate in learning activities in the classroom.

Cooperative learning is one of the appropriate models to be used as a solution in a learning process (Filippou et al., 2022). The cooperative learning model is a type of learning designed to influence student interaction patterns, so that this learning model is considered a good solution for creating communication between students in a learning process (Novi Rasanti et al., 2023; Segundo Marcos et al., 2020). Indirectly, teachers can stimulate student activity in a learning process in the classroom.

Cooperative learning can optimize student participation in expressing opinions and can increase students' knowledge and thinking about information related to problems provided by the teacher (Abramczyk & Jurkowski, 2020; Bores-García et al., 2021). The implementation of the cooperative model is intended so that learning activities in the classroom are dominated by student activities, so that the learning process is student-centered and creates meaningfulness in the learning process (Namaziandost et al., 2020; Ridwan & Hadi, 2022). By implementing the cooperative model, teachers are also able to identify the level of students' ability to work together to solve a problem (Hidayah et al., 2021; Tu & Chu, 2021). Apart from the things mentioned above, sharing activities are also expected to help students form and express thoughts and opinions freely. Through sharing experiences and discussions about the meaning of experiences, ideas will increase and develop and questions will arise that stimulate students to be active and participate in the learning process in class.

Selecting and mastering appropriate teaching strategies and mastering basic teaching skills is an alternative in an effort to improve the quality of teaching. Several types of cooperative learning models are known: STAD, Jigsaw, TGT, NHT, etc. One of the cooperative learning models that concerns the author in this research is implementing the Numbered Head Together (NHT) type cooperative learning model appropriately.

However, it is necessary to realize that each student has different abilities in receiving lessons explained by the teacher, so groups can be formed so that students can complement each other, complement each other, and work together in completing the questions or assignments given by the teacher so that the goal teaching can be achieved and student learning outcomes can be improved. The Numbered Head Together (NHT) type cooperative learning model allows teachers to pay attention to students and create a more intimate relationship between teacher and student and between student and student (Aditya et al., 2022; Jufrida et al., 2021; Listiasari et al., 2023). There are times when it is easier for students to learn from their own friends, there are also times for students who learn more easily because they have to teach or train their own friends. Cooperative learning is a learning strategy where students learn in small groups with different ability levels. This learning model creates a situation where individual success is driven by group cooperation. Cooperation between group members and interdependence in the structure of tasks, goals and rewards are demanding in this learning model. This research aims to test the effectiveness of Numbered Head Together in classroom settings in elementary schools.

Methods

The approach used in this research is quantitative. Using a quantitative approach is a description of the data resulting from the learning process by applying the numbered heads together type cooperative learning model to the learning process. A quantitative approach was also used to test the effect of the NHT-type Cooperative Learning Model on student learning outcomes. This research uses a pre-experimental design. This design consists of one group being observed without treatment, after that, they are given treatment using the NHT-type Cooperative Learning Model in the learning process. These two results were then tested statistically. This research uses a pre-experimental design. This design

consists of one group being observed without treatment, after that, they are given treatment using the NHT-type Cooperative Learning Model in the learning process. These two results were then tested statistically.

Research data was collected through observation techniques and learning outcomes tests. The data analysis techniques used in this research are descriptive quantitative analysis and inferential analysis. Descriptive quantitative analysis describes student learning outcomes data distribution before and after implementing the NHT-type Cooperative Learning Model. The descriptive analysis in question describes central tendencies such as: mean, mode, middle value, variance and standard deviation. Apart from descriptive quantitative analysis, the data in this research was also analyzed using inferential statistics. Inferential statistical analysis using the t test. The t test is a statistical method used to test the differences between two paired pieces of data. Before testing the hypothesis, a requirements test is carried out, namely the Normality Test.

Results and Discussion

The research results in the field have captured two research data, namely data related to learning outcomes before and after implementing the NHT-type Cooperative Learning Model. Student learning outcomes before implementing NHT referred to in this research are the results achieved by students related to learning material before implementing the NHT-type Cooperative Learning Model. These learning outcomes are measured by applying a pre-test. In this study, social studies learning outcome score data before implementing the NHT-type Cooperative Learning Model was obtained from 17 students. The data for these variables totals 17 with a score range between 50.00 as the minimum score and 85.00 as the maximum score, with the first quartile 65.00, the second quartile 70.00, and the third quartile 75.00. Descriptive statistical data from the results of measuring learning outcomes before implementing NHT can be seen in the following table.

Table 1. Recapitulation of the Results of Descriptive Statistical Analysis in the Pre-Test Phase

Statistics		Score
Mean		69.1176
Median		70.0000
Mode		70.00
Std. Deviation		8.33578
Variance		69.485
Range		35.00
Minimum		50.00
Maximum		85.00
Percentiles	25	65.0000
	50	70.0000
	75	75.0000

Based on the presentation of the results in the table, it is stated that the data from measuring learning outcomes before implementing NHT shows an average score of 69.11 with a standard deviation of 8.3, which indicates that the average score tends to be in the medium category. Student learning outcomes after implementing the NHT-type Cooperative Learning Model referred to in this research are the results achieved by students after following the teaching and learning process using NHT-type Cooperative Learning. These learning outcomes are obtained through test techniques. Data on student learning outcomes was obtained from post-test learning outcomes after the teacher implemented the NHT-type Cooperative Learning Model. The score data from this learning outcome variable totals 17 with a score range between 60.00 as the minimum score and 95.00 as the maximum score, with the first quartile 70.00, the second quartile 80.00, and the third quartile 80.00. Descriptive statistical data from the results of measuring student learning outcomes after implementing NHT Cooperative Learning in more detail can be seen in the following table.

Table 2. Recapitulation of the Results of Descriptive Statistical Analysis in the Post-Test Phase

Statistics		Score
Mean		76.7647
Median		80.0000
Mode		80.00
Std. Deviation		8.28047
Variance		68.566
Range		35.00
Minimum		60.00
Maximum		95.00
Percentiles	25	70.0000
	50	80.0000
	75	80.0000

Based on the presentation of the results in the table, it is stated that the data from measuring learning outcomes before implementing NHT shows an average score of 76.76 with a standard deviation of 8.2, which indicates that the average score tends to be in a good category. The next thing is explained about testing the analysis requirements which is carried out before research hypothesis testing is carried out. The hypothesis in this research was tested using the t-test for paired samples, namely the statistical test used to determine the differences between two paired sample groups. This difference test is the basis for drawing conclusions whether the NHT-type Cooperative Learning Model significantly influences student learning outcomes. Before the analysis using the t-test, the analysis requirements are first assessed, namely the normality test of the data. The normality test is carried out to determine whether the data to be analyzed is normally distributed. In this study there are two different groups of data, namely data originating from measuring learning outcomes before implementing NHT and learning outcomes after implementing NHT, so two data normality test results were obtained from these two groups of data.

The next thing is explained about testing the analysis requirements, which is carried out before research hypothesis testing is carried out. The hypothesis in this research was tested using the t test for paired samples, namely the statistical test used to determine the differences between two paired sample groups. This difference test is the basis for concluding whether the NHT-type Cooperative Learning Model significantly influences student learning outcomes. Before carrying out the analysis using the t test, the analysis requirements are first assessed, namely the normality test of the data. The normality test is carried out to determine whether the data to be analyzed is normally distributed. In this study there are two different groups of data, namely data originating from measuring learning outcomes before implementing NHT and learning outcomes after implementing NHT, so two data normality test results were obtained from these two groups of data.

In this research, one hypothesis is being tested: the influence of the NHT-type Cooperative Learning Model on student learning outcomes. The hypothesis shows that H_0 means that there is no influence of the NHT-type Cooperative Learning Model on student learning outcomes, while H_1 means that there is an influence of the NHT-type Cooperative Learning Model on student learning outcomes. Based on the data from data analysis carried out using the t test, a p-sig of 0.00 was obtained. The coefficient shows p-sig < α 0.05. Thus it is decided that the test rejects H_0 or accepts H_1. This shows that there is a significant influence of the NHT-type Cooperative Learning Model on student learning outcomes. Other information obtained is the calculated t value, namely -4.583, indicating that student learning outcomes before implementing NHT are lower than those after implementing NHT. This shows that NHT-type Cooperative Learning influences student learning outcomes.

Based on the results of descriptive analysis of research results related to social studies learning outcomes before the implementation of NHT-type Cooperative Learning in the classroom, the results showed that learning outcomes were in the Good category. Even though it is in the good category, the average student learning outcomes before implementing NHT were not optimal. However, after NHT was implemented, learning outcomes improved as expected. These findings show that NHT learning positively impacts student learning outcomes (Rahayu & Suningsih, 2018; Wati & Suarni, 2020). Numbered Head Together (NHT) is a structural approach to involve more students in studying the material covered in a lesson and checking their understanding of the content of the learning material (Leasa & Corebima, 2017). Numbered Head Together (NHT) is a teaching and learning technique.

Numbered Head Together (NHT) is a technique that gives students the opportunity to share ideas with each other and consider the most appropriate answer.

The findings of this research are also in line with other findings which suggest that Numbered Head Together is a type of cooperative learning designed to influence student learning interaction patterns and as an alternative to traditional classroom structures. The learning interaction referred to in this case is student interaction in managing the material provided, student interaction in discussing with other students, and student interaction in receiving any questions from the teacher. Suppose the results of this research are linked to several theories and relevant research results. In that case, it can be argued that student learning outcomes are better and maximum if taught using NHT-type Cooperative Learning.

Based on the results of descriptive analysis of research results related to social studies learning outcomes after implementing NHT-type Cooperative Learning in the classroom, the results showed that student learning outcomes were in the Good category. Based on the findings of this research, student learning outcomes are better when NHT-type Cooperative Learning is implemented in the learning process. This shows that teachers effectively implement the NHT-type of Cooperative Learning to improve student learning outcomes.

These findings are in line with various views which outline several advantages that can be utilized in implementing the numbered head together type cooperative learning model in the learning process in the classroom, namely that the correct application of the numbered head together type cooperative learning model will make students ready to receive and answer questions. proposed by the teacher. This indirectly activates students in learning activities, because students feel they have their own responsibility and they have to save themselves without expecting protection from intelligent group members (Guniarti et al., 2023).

Learning with NHT encourages children's activity and involvement in learning (Mahmudah & Rasyid, 2022). This impacts student learning outcomes after participating in learning with NHT (Rahmawati et al., 2023). Learning with NHT provides an interesting experience for students so that this can contribute positively to student learning motivation (Hasibuan & Wahyudin, 2023). This learning model is recommended in learning activities so that students have high attention and interest in learning (Sari et al., 2023). Because of this, several previous findings have supported the results of this research that learning with NHT positively contributes to learning outcomes.

Because numbers are called or turns for students who are asked for answers are carried out randomly, this will minimize students messing around in learning activities, so that discussions between students will take place seriously. By holding group discussions, the smart students will teach the less skilled students, because they feel a sense of responsibility in the group. So that indirectly, students' social awareness attitudes will be built and the formation of positive character will be embedded in students. Thus, this learning can be applied to improve the quality of learning.

Conclusion

Based on the results of the research and discussion described previously, it can be concluded that the numbered heads together cooperative learning model has an effect on student learning outcomes in terms of eyes. This can be seen from the increased student learning outcomes after implementing teaching and learning activities using the numbered heads together type cooperative learning model. Based on the conclusions that have been expressed, it is recommended that in teaching and learning activities in the classroom, teachers are expected to apply the numbered heads together type cooperative learning model as a learning model in mathematics subjects to improve student learning outcomes. The application of the numbered heads together type cooperative learning model can be collaborated with other innovative learning models to obtain various variations in teaching and learning activities in the classroom.

References

Abramczyk, A., & Jurkowski, S. (2020). Cooperative learning as an evidence-based teaching strategy: What teachers know, believe, and how they use it. *Journal of Education for Teaching*, *46*(3), 296–308. https://doi.org/10.1080/02607476.2020.1733402

Aditya, B. R., Jannah, F., & Nurhas, I. (2022). Problem-based numbered head together learning approach for a successful teaching strategy. *JINoP (Jurnal Inovasi Pembelajaran)*, *8*(1). https://doi.org/10.22219/jinop.v8i1.20861

Bores-García, D., Hortigüela-Alcalá, D., Fernandez-Rio, F. J., González-Calvo, G., & Barba-Martín, R. (2021). Research on cooperative learning in physical education: Systematic review of the last five years. *Research Quarterly for Exercise and Sport*, *92*(1), 146–155. https://doi.org/10.1080/02701367.2020.1719276

Filippou, D., Buchs, C., Quiamzade, A., & Pulfrey, C. (2022). Understanding motivation for implementing cooperative learning methods: A value-based approach. *Social Psychology of Education*, *25*(1), 169–208. https://doi.org/10.1007/s11218-021-09666-3

Guniarti, B. E., Arifin, J., & Idawati, I. (2023). The effect of numbered head together learning model on social skills and learning outcomes of IPS class V students. *Edumaspul: Jurnal Pendidikan*, *7*(2), 3244–3252. https://doi.org/10.33487/edumaspul.v7i2.6452

Hasibuan, J. B., & Wahyudin, D. (2023). Implementation of the NHT-type cooperative learning model to improve mathematics learning outcomes. *Sukma: Jurnal Pendidikan*, *7*(2), 117–146. https://doi.org/10.32533/07201.2023

Herwin, H., Senen, A., Nurhayati, R., & Dahalan, S. C. (2022). Improving student learning outcomes through mobile assessment: A trend analysis. *International Journal of Information and Education Technology*, *12*(10), 1005–1011. https://doi.org/10.18178/ijiet.2022.12.10.1712

Hidayah, R., Dasna, I. W., & Budiasih, E. (2021). Bibliometric analysis of the term 'cooperative learning chemistry.' *JPI (Jurnal Pendidikan Indonesia)*, *10*(3), 475. https://doi.org/10.23887/jpi-undiksha.v10i3.31710

Jufrida, J., Astalini, A., Darmaji, D., Tanti, T., Kurniawan, D. A., Erika, E., Hayi, R., & Sukarni, W. (2021). Student responses to the application of the number head together learning model in physics subjects. *Jurnal Pendidikan Fisika Indonesia*, *17*(2), 151–159. https://doi.org/10.15294/jpfi.v17i2.24083

Juniarti, N., Al'Adawiyah MZ, I., Sari, C. W. M., & Haroen, H. (2021). The effect of exercise and learning therapy on cognitive functions and physical activity of older people with dementia in Indonesia. *Journal of Aging Research*, *2021*, 1–9. https://doi.org/10.1155/2021/6647029

Leasa, M., & Corebima, A. D. (2017). The effect of numbered heads together (NHT) cooperative learning model on the cognitive achievement of students with different academic ability. *Journal of Physics: Conference Series*, *795*, 012071. https://doi.org/10.1088/1742-6596/795/1/012071

Listiasari, D., Nasrullah, A., Yendra, N., Rahmadani, K., & Egwuasi, P. I. (2023). Unlocking the potential for creative thinking ability and self-efficacy: Implementation of numbered head together and algebra blocks in middle school students. *International Journal of Mathematics and Mathematics Education*, *1*(3), 236–247. https://doi.org/10.56855/ijmme.v1i3.737

Mahmudah, H., & Rasyid, F. (2022). Engaging students in cooperative learning model of reading course through numbered head together. *ETERNAL (English Teaching Journal)*, *13*(1), 55–69. https://doi.org/10.26877/eternal.v13i1.10339

Namaziandost, E., Homayouni, M., & Rahmani, P. (2020). The impact of cooperative learning approach on the development of EFL learners' speaking fluency. *Cogent Arts & Humanities*, *7*(1), 1780811. https://doi.org/10.1080/23311983.2020.1780811

Rahayu, S., & Suningsih, A. (2018). The effects of type learning model numbered head together and think pair share. *International Journal of Trends in Mathematics Education Research*, *1*(1), 19–21. https://doi.org/10.33122/ijtmer.v1i1.27

Rahmawati, N., Otaiwi, Z., Nakkhasen, W., & Thãnh, N. P. (2023). Increasing mathematics learning activities through numbered heads together (NHT) cooperative learning models in students. *Interval: Indonesian Journal of Mathematical Education*, *1*(1), 1–7. https://doi.org/10.37251/ijome.v1i1.608

Ridwan, M. R., & Hadi, S. (2022). A meta-analysis study on the effectiveness of a cooperative learning model on vocational high school students' mathematics learning outcomes. *Participatory Educational Research*, *9*(4), 396–421. https://doi.org/10.17275/per.22.97.9.4

Sari, R., Supatminingsih, T., Hasan, M., Rahmatullah, R., & Nurjannah, N. (2023). The effect of numbered heads together (NHT) cooperative learning model and learning interest on student learning outcomes in economics subject at Sman 11 Wajo, Takkalalla District, Wajo District. *Jurnal Eduscience*, *10*(1), 87–103. https://doi.org/10.36987/jes.v10i1.3874

Segundo Marcos, R. I., López Fernández, V., Daza González, M. T., & Phillips-Silver, J. (2020). Promoting children's creative thinking through reading and writing in a cooperative learning classroom. *Thinking Skills and Creativity*, *36*, 100663. https://doi.org/10.1016/j.tsc.2020.100663

Tjabolo, S. A., & Herwin. (2020). The influence of teacher certification on the performance of elementary school teachers in Gorontalo Province, Indonesia. *International Journal of Instruction*, *13*(4), 347–360. https://doi.org/10.29333/iji.2020.13422a

Tu, J.-C., & Chu, K.-H. (2021). Discussion on the teaching mode of cooperative learning from the perspective of design department students. *Knowledge Innovation on Design and Culture*, 133–136. https://doi.org/10.1142/9789811238727_0032

Wati, N. K. S., & Suarni, N. K. (2020). Social studies learning with numbered head together model improves learning outcomes viewed from student learning motivation. *International Journal of Elementary Education*, *4*(2), 244. https://doi.org/10.23887/ijee.v4i2.25250

Wuryandani, W., & Herwin, H. (2021). The effect of the think–pair–share model on learning outcomes of Civics in elementary school students. *Cypriot Journal of Educational Sciences*, *16*(2), 627–640. https://doi.org/10.18844/cjes.v16i2.5640