



Implementation of numbered heads together as an effort to improve conceptual understanding of IPAS for fourth grade students at muara bungo nature school

Riski Mailisa^{a1}, Sundahry^{b2}, Reni Guswita^{c3}

^{a,b,c}Muhammadiyah University of Muara Bungo, Indonesia

¹mailisariski@gmail.com, ²dahrysundahry@gmail.com, ³Guswitareni@gmail.com

ARTICLE INFORMATION

History:
Received 17 July 2025
Revised 2 September 2025
Published 24 September 2025

Keywords:

Numbered Heads Together, learning process, learning outcomes, science



Copyright (c) 2025 Riski Mailisa, Sundahry, Reni Guswita
This is an open access article under the CC-BY-SA license

ABSTRACT

The main problem in elementary school learning is the dominance of educators, which results in low student engagement. Initial data shows that only 30% of students pay optimal attention to lessons, active participation is limited to two questions per session, discussion engagement reaches 50%, and timely task completion is around 70%. These conditions indicate that student motivation, interaction, and learning responsibility have not developed optimally. Therefore, a participatory and collaborative learning model is needed. The Numbered Head Together (NHT) model was chosen because it emphasizes active involvement, group cooperation, and individual responsibility, thereby potentially increasing student activity, discipline, and conceptual understanding. This study aims to describe the application of the NHT model in improving conceptual understanding of IPAS among fourth-grade students at Sekolah Alam Muara Bungo. The study used Classroom Action Research (CAR) with two cycles through the stages of planning, implementation, observation, and reflection. The research subjects consisted of 19 fourth-grade students. Data was collected through observation, testing, and documentation, using teacher and student observation sheets and learning outcome tests. Analysis was conducted qualitatively from observations and quantitatively through test average scores. The results of the study showed a significant improvement in the learning process and outcomes. Student activity increased from 36.84% to 89.47%, as seen in their participation in discussions, their courage to express their opinions, and their involvement in completing group assignments. Students' conceptual understanding of IPAS increased from 52.63% to 84.21%, especially in explaining concepts, giving examples of application, and answering evaluation questions. This study



contributes by providing empirical evidence that the application of the Numbered Heads Together model effectively increases student activity and conceptual understanding, while also serving as a practical reference for teachers in developing more collaborative and meaningful learning strategies.

How to cite: Mailisa, R., & Guswita, R. (2025). Implementation of numbered heads together as an effort to improve conceptual understanding of IPAS for fourth grade students at muara bungo nature school. *Jurnal Pemikiran dan Pengembangan Sekolah Dasar (JP2SD)*, 13(2). Doi: <https://doi.org/10.22219/jp2sd.v13i2.41697>

INTRODUCTION

Education in elementary schools faces serious challenges in the form of low student engagement and understanding in the learning process, so a more participatory and collaborative learning model is needed to overcome these problems. Maulidi et al. (2021) state that education is a learning process that aims to increase knowledge and prepare students for life. Education influences a person's mindset, attitudes, and skills in facing the challenges of an ever-changing life. In line with this, Azizah et al. (2022) argue that education is a conscious effort made by educators to develop the potential of students to become well-rounded individuals. Therefore, education is a strategic tool in nation-building and the development of competent human resources. Hairiyah et al. (2022) stated that character education not only shapes the intellectuality of students, but also their morals and ethics in order to support the development of well-rounded individuals.

Ansya et al. (2025) explain that the Merdeka Curriculum was developed as a strategic framework to prepare students to face the dynamics of Industry 4.0 and Society 5.0. This curriculum not only emphasizes flexibility in the learning process but also encourages the development of problem-solving skills, cooperation (collaboration), and character building so that students are able to adapt and thrive amid rapid change. Hanaris et al. (2023) state that teacher strategies and approaches, including positive feedback, two-way communication, and praise, play a strategic role in building student motivation to learn. Approaches that are positive reinforcement and responsive to student needs increase their engagement and involvement in learning. According to Marwa et al. (2023), the success of the education system in achieving learning objectives is largely determined by the quality of the curriculum implemented. They state that good interaction can stimulate learning motivation and make students enjoy the learning process more. The curriculum is not only considered a learning plan, but also a series of learning experiences designed to develop student competencies. Pratama et al. (2023) state that curriculum change is a necessity to adapt to the times, student needs, and community demands.

In response to demands for more flexible learning that is oriented towards developing 21st-century competencies, a new curriculum has been introduced that is designed to provide space for students and teachers to organize the learning process in a more adaptive and learner-centered manner. Ariesanti et al. (2023) explain that the Merdeka Curriculum provides space for educators and learners to be more independent, creative, and exploratory in the learning process. The distinctive features of the Merdeka Curriculum are project-based learning, a focus on essential material, and the development of the Pancasila learner profile. The integration of science and social studies subjects into Natural and Social Sciences (IPAS) at the elementary school level is one of the Merdeka Curriculum's efforts to simplify learning content. In addition, a study by Rahmawati & Kurniawan, (2024) identified that the strategy of integrating IPAS material in the

Merdeka Curriculum can improve the quality of learning by considering the characteristics of students and the local context. These two studies support the application of an integrative approach in IPAS learning to achieve holistic and contextual educational goals.

IPAS learning is considered relevant to the cognitive development stage of elementary school students who are still in the concrete thinking phase. However, in practice, many students still find it difficult to fully understand IPAS concepts. According to Harefa, (2023), the integration of science and social studies in IPAS subjects aims to provide a holistic understanding of natural and social phenomena. Therefore, students' inability to master basic concepts indicates an urgent need to implement more effective learning models, including through cooperative approaches such as Numbered Heads Together. Ahmad, (2024) also states that elementary school-aged children tend to think holistically and prefer an integrated thematic approach. However, the reality in the field shows that many students consider IPAS learning to be a difficult and boring subject Prayogo et al. (2021). This is due to conventional learning methods and a lack of interesting media and approaches.

One alternative to overcome this problem is the application of the Numbered Head Together (NHT) model. As part of cooperative learning, NHT emphasizes small group work that encourages positive social interaction, increases individual and group responsibility, and strengthens understanding of the material. Research by Bayu et al. (2023) shows that the application of the Growth Mindset-based NHT model can improve science literacy and learning agility in elementary school students. In addition, a study by Dewinta Dwi Kusuma dkk. (2025) revealed that the NHT model is effective in improving students' speaking skills and learning motivation, which contributes to an increase in overall learning outcomes. This model also creates a fun and participatory learning atmosphere (Huda, 2017) and is able to increase student motivation and involvement in collaborative problem solving (Marhadi, 2015; Ristumesi, 2017). Previous studies have shown the effectiveness of cooperative models in improving learning outcomes (Arifin & Lestari, 2023; Astutik & Wulandari, S, 2020). The application of the Numbered Heads Together (NHT) model in Natural and Social Sciences (IPAS) subjects based on the Merdeka Curriculum has rarely been studied, even though this model has the potential to increase student engagement, motivation, and learning outcomes. This study was conducted to describe the application of NHT in fourth-grade elementary school students. The purpose of this study was to analyze the effectiveness of NHT in improving the learning process, student engagement, and IPAS learning outcomes.

METHOD

This study used a Classroom Action Research (CAR) design conducted in two cycles. Each cycle consisted of four main stages, namely (1) planning, (2) implementation, (3) observation, and (4) reflection. In the planning stage, the researcher developed learning tools in the form of lesson plans, observation instruments, and learning outcome tests. The implementation stage was carried out by applying the Numbered Head Together (NHT) model in accordance with the cooperative learning syntax. The research subjects were 19 fourth-grade students at Muara Bungo Nature School in the even semester of the 2024/2025 academic year, consisting of 13 male students and 6 female students. The research instruments included student activity observation sheets to assess the learning process, learning outcome tests to measure conceptual understanding, and photo documentation and field notes as supporting data. Data analysis was conducted descriptively, quantitatively, and qualitatively, by

calculating the percentage of mastery and average learning outcomes, as well as interpreting changes in student learning behavior from cycle to cycle. Furthermore, the observation stage was carried out by collaborators to assess student involvement, teacher activities, and learning dynamics through prepared observation sheets. During the reflection stage, researchers and collaborators analyzed observation data and test results to identify weaknesses in the first cycle, then developed improvements for the next cycle.

The validity of the instruments was obtained through expert judgment by collaborating teachers, while the data was analyzed descriptively, quantitatively, and qualitatively with a minimum success indicator of 75% of active students and an average score reaching the minimum passing grade (≥ 70) with a classical completeness of 75%. The determination of the Minimum Passing Grade (KKM) of 70 follows the national guidelines set out in Permendikbud Number 23 of 2016 concerning Education Assessment Standards. KKM is used to assess the achievement of basic competencies by students, where a score of 70 or more is considered to meet the minimum competency standards set for subjects at the elementary school level (Permendikbud, 2016). The data collection techniques used included observation, learning outcome tests, and documentation. Observations were conducted to monitor the involvement of teachers and students during the learning process through structured observation sheets. The learning achievement test was designed in the form of 20 multiple-choice questions specifically used to measure students' cognitive abilities in IPAS material. Meanwhile, documentation was used to record the learning process through photos, field notes, and student work documents to support data analysis.

The instruments used in this study consist of: Teacher activity observation sheets are used to record important elements in the learning process, including teaching methods and interactions with students. Student activity observation sheets are used to observe student participation, cooperation, and responses to the material being taught. Learning outcome evaluation questions are designed to measure student understanding through various formats, such as multiple choice, fill-in-the-blank, and essay questions. Data obtained from observation and evaluation will be analyzed descriptively, quantitatively, and qualitatively to identify patterns and themes in the learning experience. This explanation aims to provide a clear understanding of the instruments used in the study.

This study used a qualitative approach with a Classroom Action Research (CAR) design conducted in two cycles. Each cycle consisted of planning, implementation, observation, and reflection stages. Data analysis was conducted using qualitative descriptive methods through the stages of reduction, presentation, and verification. To support the interpretation of the results, quantitative data from observations and tests were calculated using the percentage formula according to Zainal et al. (2011:41) as follows:

$$\text{Value} = \frac{\text{Students in the } \geq \text{Good category}}{\text{Total Number of Participants}} \times 100\%$$

In addition, this study also used quantitative techniques with the following formula.

$$P = \frac{F}{N} \times 100\%$$

Explanation:

P= Percentage

F= Frequency of correct answers

N= Number of questions

RESULTS

This classroom action research was conducted in two cycles, each consisting of two meetings. Cycle I took place on April 28–29, 2025, with the topics “Me and My Needs”

and “How I Meet My Needs.” The results of the observation showed that student engagement was still limited, with only about half of the students actively participating in discussions, some still speaking without permission, and learning completeness not yet reaching 75%. Reflections on Cycle I emphasized the need for strategies to strengthen instruction, clearer division of group roles, and provision of motivation to increase participation. These improvements were applied in Cycle II, which was held on May 5–6, 2025, with the topics “Buying and Selling as a Way to Meet Needs” and “Norms and Customs in My Region.” The results of the Cycle II observation showed a significant improvement, as indicated by the active participation of more than 75% of students, more conducive group interactions, and learning completeness that exceeded the minimum competency standard.

These findings show that the gradual implementation of the Numbered Head Together (NHT) model can improve the process and increase student learning outcomes in IPAS subjects. In addition, the successful implementation of NHT also reflects that the cooperative learning model is capable of fostering a sense of individual and group responsibility, developing communication skills, and creating a more democratic learning atmosphere. Thus, it can be emphasized that NHT is not only effective in increasing participation and learning outcomes but also contributes to the formation of students' social attitudes, cooperation, and critical thinking skills. This model is worthy of being used as an alternative active learning strategy in elementary schools to create a more meaningful learning experience. IPAS in elementary schools. Each cycle will be discussed as follows.

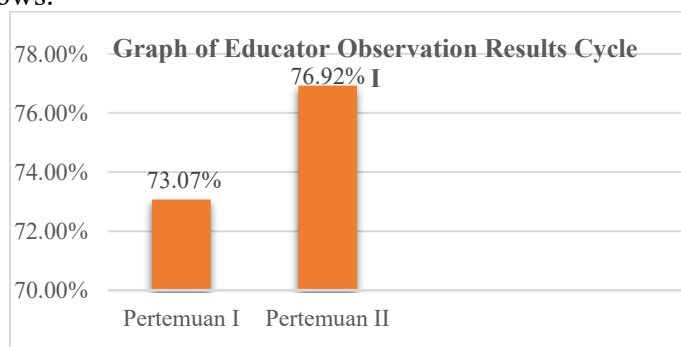


Figure 1. Results of Educator Observations in Cycle I

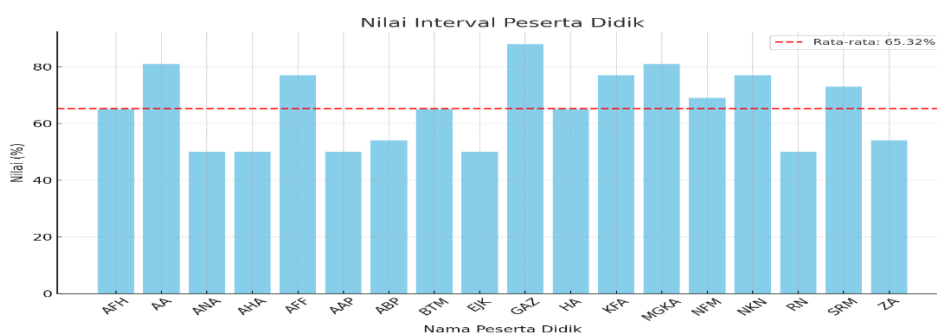


Figure 2. Recapitulation of Student Observation Sheets Cycle I Meeting I

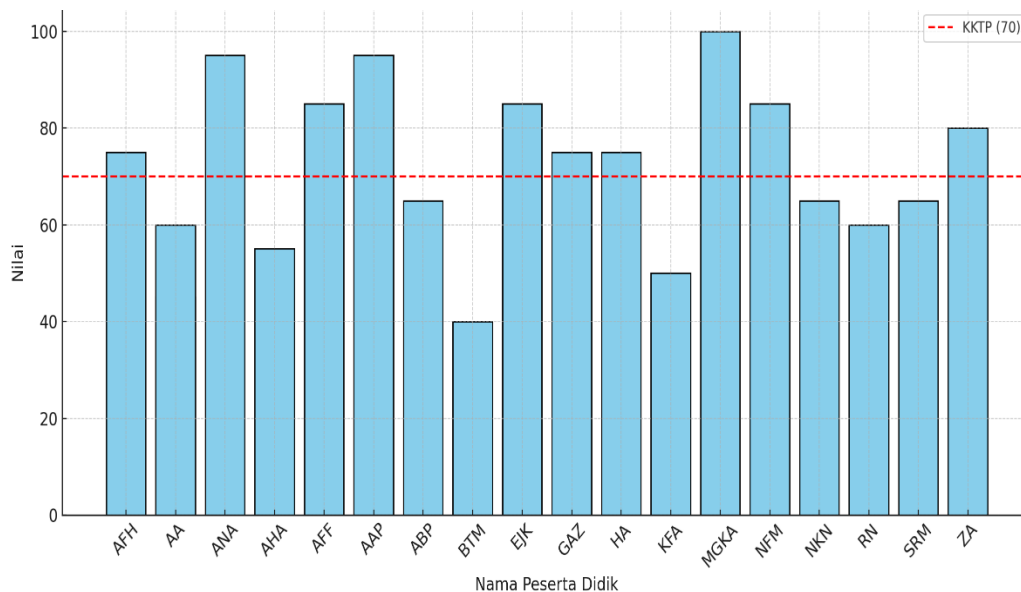


Figure 3. Learning Test Results of Fourth Grade Students in Cycle I IPAS Learning

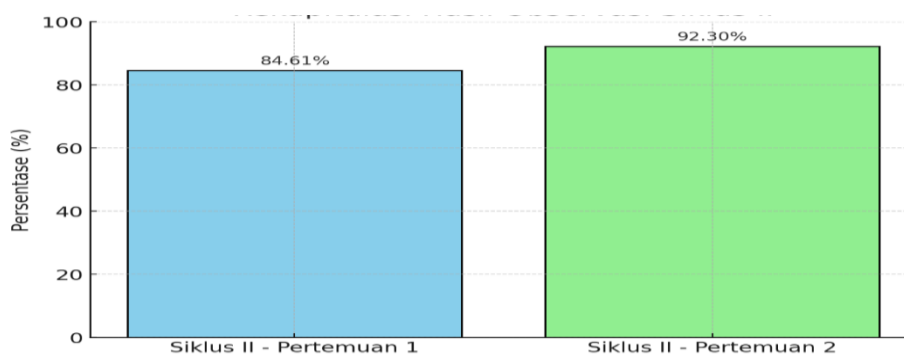


Figure 4. Results of Cycle II Educator Observation Sheets

This Classroom Action Research (CAR) consists of two cycles, namely Cycle I and Cycle II. Each cycle includes two meetings and is carried out through four stages, namely: planning, implementation, observation, and reflection. Cycle II was carried out as a follow-up and improvement of the results from the previous cycle. Research data were collected through cognitive learning outcome tests administered at the end of each cycle, as well as observation sheets used to record the responses of educators and students during the IPAS learning process. Figure 1 presents a summary of the observation results in Cycle II. In the first meeting, the percentage was 84.61%, while in the second meeting it increased to 92.30%. These data show an increase in student activity and involvement, which is in line with the application of the Numbered Head Together (NHT) learning model. Thus, the two cycles form the basis for evaluating the effectiveness of using NHT in improving IPAS learning outcomes.

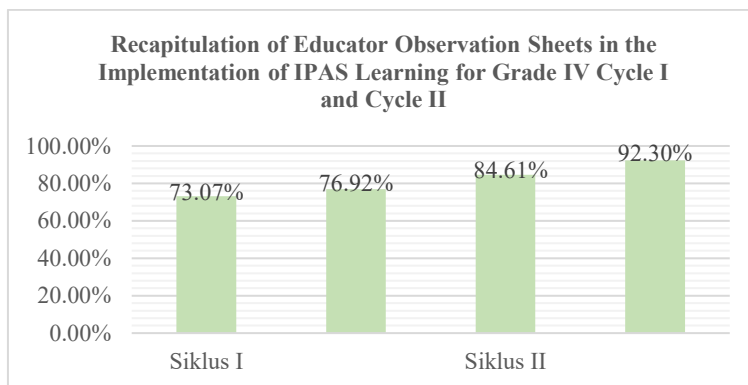


Figure 5. Recapitulation of Educator Observation Sheets in the Implementation of IPAS Learning for Grade IV Cycle I and Cycle II

Based on the data in Figure 2 (Summary of Educator Observation Sheets), there was an increase in the quality of IPAS learning implementation using the Numbered Heads Together model. In cycle I meeting 1, learning implementation achieved a score of 73.07%, then increased in meeting 2 to 76.92%, resulting in a cycle I average of 75.00%. Furthermore, in cycle II meeting 1, the observation score rose to 84.61% and increased again in meeting 2 to 92.30%, with an average for cycle II of 88.45%. This increase in the observation score indicates that the performance of educators in applying the NHT model steps improved from cycle I to cycle II. In cycle I, meeting 1 obtained a total score of 19 with an implementation percentage of 73.07%, then increased to a score of 20 with a percentage of 76.92% at meeting 2. The average implementation in cycle I reached 74.99%. These results indicate that the implementation of the Numbered Head Together (NHT) model has begun, but there are still several obstacles, such as some students not yet actively participating in group discussions and learning time management not yet being optimal. In cycle II, learning implementation showed a more consistent improvement. Session 1 achieved a score of 22 (84.61%) and session 2 achieved a score of 24 (92.30%), resulting in an average implementation rate of 88.45%. The increase of 13.46 percentage points from cycle I to cycle II reflects that educators have successfully improved their NHT implementation strategies, such as strengthening the role of group members, providing clearer instructions, and managing classes more effectively. Thus, it can be concluded that the NHT model is capable of improving the quality of the IPAS learning process, especially in creating a more active, collaborative, and structured learning atmosphere.

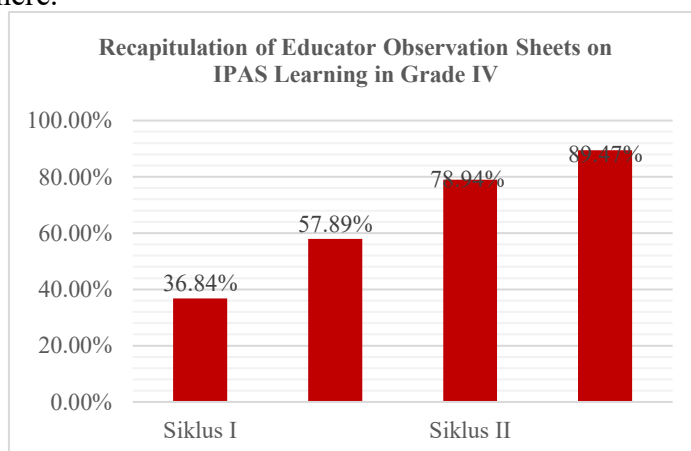


Figure 6. Recapitulation of Educator Observation Sheets on IPAS Learning in Grade IV

Based on the research data, there was a significant improvement in the quality of the learning process of students from cycle I to cycle II through the application of the Numbered Heads Together (NHT) model. In cycle I meeting 1, as many as 7 students (36.84%) were still in the very poor category in the learning process. This number decreased in meeting 2, while the number of students who showed better involvement increased to 11 (57.89%), with an average learning process achievement of 47.36%. Furthermore, in cycle II, there was a further increase, where in meeting 1 there were 15 students (78.94%) who were in the good category, and in meeting 2 it increased to 17 students (89.47%), so that the average achievement in cycle II reached 84.20%. This percentage represents the proportion of students who met the learning process indicators, namely activity, discipline, and involvement in discussions. Thus, it can be concluded that the application of the NHT model has contributed significantly to improving the quality of the learning process from the low category in cycle I to the good category in cycle II. From these results, it can be concluded that the application of the Numbered Head Together model has brought about a significant improvement in the learning process of students. This is in line with the opinion of Afifah & Hartatik, (2019), Afifah & Hartatik, (2019), This model can increase student learning activities, improve student understanding of the material being studied, so that students are better prepared to do their assignments, students are brave and active in conducting activities to discuss and exchange opinions with fellow members, and train students' courage to give presentations.

Table 1. Recapitulation of Final Test Results for Grade IV Students in IPAS Learning

Cycle	Percentage and number of students who have achieved a KKTP score of 70	Percentage and number of students who have not achieved a KKTP score of 70
Cycle I	10 people = 52.63%	9 people = 47.37%
Cycle II	16 people = 84.21%	3 people = 15.78%

Based on the data in the graph above, there was an increase in student learning outcomes from 52.63% in cycle I to 84.21% in cycle II after the implementation of the Numbered Heads Together (NHT) learning model in IPAS subjects. This increase shows that the NHT model is effective in improving learning outcomes because it encourages group interaction, individual responsibility, and active student involvement in understanding the material. Students were trained through group discussions and repeated practice questions, which indirectly strengthened their understanding of IPAS material.

DISCUSSION

Dedek & Santoso, (2023) learning motivation is an important factor in improving the quality of learning. Students will learn more diligently if they have high motivation, both intrinsic (internal drive) and extrinsic (external drive such as teacher support or rewards). In the NHT model, active interaction and individual responsibility help foster both types of motivation. This is in line with the findings of Hairiyah et al. (2022), who found that the application of the NHT model can significantly improve student motivation and learning outcomes in fourth-grade thematic learning.

In addition, research by Lestari, (2021) also shows that the NHT model can improve students' critical thinking and collaboration skills through question and answer activities and structured discussions in small groups. This shows that the findings in this study are consistent with previous research and prove that NHT is effective for active learning at the elementary school level. Thus, the improvement in student learning outcomes in this study was not only driven by the use of structured exercises, but also by increased student

motivation and active involvement during the learning process through the NHT model. Surya, (2018) reported that the application of NHT in fourth-grade social studies lessons was able to improve students' conceptual understanding, because each group member was actively involved in discussions and was responsible for the group's answers.

This is in line with Astuti, (2019) findings, which show that NHT has a positive effect on elementary school students' motivation and social studies learning outcomes. Similarly, Hidayat & Dewi, (2019) emphasize that NHT can strengthen communication skills among students, as each group member is encouraged to express their opinions. Utami, F. (2020) found that integrating NHT with other models, such as TGT, can increase motivation and understanding of mathematical concepts. These results are reinforced by Azryasalam, Friska & Purwanto, (2020), who explain that NHT can encourage students' interest and learning outcomes in social studies, especially in fifth grade elementary school. Meanwhile, Astutik & Wulandari, S, (2020) underline that NHT makes students more active, because each student has an important role in the group.

According to Firmansyah & Solihah, (2020), the application of NHT can significantly increase student motivation, mainly due to balanced individual involvement. Yuliana & Handayani, (2020) also added that NHT is effective in improving mathematics learning outcomes by building more intense interactions between students. In the field of science, Prasetyo & Suryani, (2021) found that the application of NHT optimizes learning outcomes because students are accustomed to discussing concepts in depth.

In addition, Kurniawan & Pratiwi, (2021) emphasize that NHT is relevant for use in thematic learning because it encourages the integration of cross-curricular material. Research by Lestari, (2021) also supports that NHT can improve collaboration skills while strengthening student learning outcomes. Rahmawati & Putra, (2021) mention that increased learning motivation is a tangible impact of applying this model. Similarly, Yusuf & Ningsih, (2021) show that student engagement in science learning increased significantly after using NHT.

Research by Susanti & Wibowo, (2022) confirms that NHT is effective for thematic learning because it emphasizes cooperation in small groups. Hairiyah et al. (2022) found that motivation and learning outcomes increased simultaneously when NHT was applied consistently. These findings are reinforced by Sulastri & Pramono, (2022), who explain that in social studies, NHT can significantly improve academic achievement.

In line with the development of the Merdeka Curriculum, Fitriani & Kurnia, (2023) stated that NHT is very suitable as an active learning strategy that fosters 21st-century skills. Tambun, (2023) also proved that the application of NHT can increase the activity and learning outcomes of elementary school students in civics. In the field of science, an international study titled Learning Science with NHT based on Growth Mindset (2023) emphasizes that NHT can improve students' scientific literacy and learning agility.

Arifin & Lestari, (2023) added that NHT not only improves learning outcomes but also plays a role in strengthening the character of elementary school students. Wahyuni & Rahayu, (2020) previously revealed that NHT has a positive impact on mathematics learning outcomes, mainly because it encourages more structured discussions. Meanwhile, Hanafiah et al. (2021) showed that this model can increase junior high school students' learning motivation through basketball activities combined with NHT. The latest findings by Asworojati & Indarini, (2025) show that combining NHT with the Jigsaw model further strengthens motivation and mathematics learning outcomes, proving the flexibility of NHT to be combined with other models. From a global perspective, Trilling & Fadel, (2020) emphasize that 21st-century learning requires students to have

collaborative, communication, and critical thinking skills that are in line with the characteristics of NHT. Finally, Sani, R. (2021) states that 21st-century learning strategies emphasize student activity, making the application of NHT highly relevant to these demands.

Research shows that the application of the Numbered Heads Together (NHT) cooperative learning model can increase student motivation, engagement, and learning outcomes, including at SD Alam Muaro Bungo. Afifah & Hartatik, (2019) confirmed that the NHT model effectively improves the mathematics learning outcomes of third-grade students, while Fatimah & Syamsudin, (2021) found that NHT in thematic learning has a positive impact on students' conceptual understanding. Imam et al. (2022) added that the NHT model can improve student learning outcomes in middle school, and Wardah & Nasrudin, (2020) emphasized the effectiveness of NHT in training students' communication skills. At SD Alam Muaro Bungo, the application of NHT in IPAS subjects encourages active interaction among students, increases interest in learning, and strengthens social skills and group cooperation. This is in line with the findings of Manafe et al. (2022), who stated that NHT can improve mathematics learning achievement through active student involvement, and Arpiah, (2020), who showed that this model can also increase learning interest.

From these findings, the NHT model has several advantages, namely encouraging equal participation, increasing individual responsibility within the group, strengthening communication skills, and helping students understand concepts through active discussion. However, this model also has weaknesses, such as the need for relatively more time, the potential for dependence on more dominant group members, and the need for teachers to be prepared to manage group dynamics so that every student is optimally involved. Thus, despite its limitations, the NHT model remains a relevant and effective strategy for improving the quality of learning at SD Alam Muaro Bungo.

CONCLUSION

Based on the results of classroom action research conducted in two cycles, the application of the Numbered Head Together (NHT) model proved to be effective in improving the IPAS learning process and outcomes in grade IV at Sekolah Alam Muara Bungo. This improvement was evident in the students' involvement in discussions, their active participation in expressing their opinions, and their discipline in working together, which then had a direct impact on increasing the students' conceptual understanding in accordance with the predetermined success indicators. With these results, the NHT model can be used as a relevant and effective alternative learning strategy to improve conceptual understanding of IPAS in elementary schools. Educators are advised to use the NHT learning model as a variation of strategies in science education to improve student engagement and learning outcomes. Further research is expected to examine the application of the NHT model in other subjects or at different school levels to expand the findings and test the consistency of this model's effectiveness.

REFERENCE

- Afifah, A., & Hartatik, U. (2019). The effect of the Numbered Heads Together learning model assisted by snakes and ladders media on the mathematics learning outcomes of third-grade students at MIN 3 Metro Pusat). *Jurnal Basicedu*, 3(1), 101–110. <https://doi.org/10.1234/basicedu.v3i1.1010>
- Ahmad, A. (2024). Penggabungan IPA dan IPS dalam pembelajaran sekolah dasar. *Jurnal Pendidikan Dasar (The integration of science and social studies in elementary*

- school education. Journal of Elementary Education*), 12(1), 45–56.
<https://doi.org/10.1234/jpd.v12i1.5678>
- Ansyah, A., Salsabilla, N., & Ramadhani, R. (2025). Kurikulum Merdeka sebagai strategi pendidikan era Industri 4.0 dan Society 5.0 (The Merdeka Curriculum as an educational strategy for the era of Industry 4.0 and Society 5.0). *Jurnal Inovasi Pendidikan Indonesia*, 7(1), 34–45. <https://doi.org/10.1234/jipi.v7i1.4567>
- Ariesanti, A., Budianto, C., & Darmawan, D. (2023). Kurikulum Merdeka: Inovasi dalam pendidikan Indonesia. *Jurnal Pendidikan Dan Kebudayaan (Merdeka Curriculum: Innovation in Indonesian education. Journal of Education and Culture)*, 15(2), 123–135. <https://doi.org/10.1234/jpdk.v15i2.1234>
- Arifin, Z., & Lestari, A. (2023). NHT dan penguatan karakter siswa sekolah dasar. *Jurnal Pendidikan Karakter (NHT and character building in elementary school students. Journal of Character Education)*, 13(1), 55–66. <https://doi.org/10.1234/jpk.v13i1.5678>
- Arpiah, A. (2020). Penerapan model pembelajaran kooperatif tipe NHT untuk meningkatkan minat dan hasil belajar matematika. <https://doi.org/10.1234/jpm.v6i2.2345>
- Astuti, W. (2019). Pengaruh model Numbered Heads Together (NHT) terhadap motivasi belajar dan hasil belajar IPS siswa kelas III sekolah dasar. *Jurnal Basicedu*, 3(2), 605–610. <https://doi.org/10.1234/basicedu.v3i2.6050>
- Astutik, P., & Wulandari, S, S. (2020). Analisis Model Pembelajaran Number Head Together Dalam Meningkatkan Keaktifan Siswa. *Jurnal Pendidikan Administrasi Perkantoran*, 9(1), 154–168. <https://doi.org/10.1234/jpap.v9i1.1540>
- Asworojati, A., & Indarini, E. (2025). Kombinasi model Numbered Heads Together (NHT) dan Jigsaw untuk meningkatkan motivasi dan hasil belajar matematika siswa sekolah dasar. *Jurnal Inovasi Pembelajaran Matematika*, 14(1), 22–34.
- Azizah, N., Fathoni, A., & Wijaya, B. (2022). Pendidikan sebagai usaha sadar dalam mengembangkan potensi peserta didik. *Jurnal Pendidikan Dan Pembelajaran*, 10(3), 78–89. <https://doi.org/10.1234/jpp.v10i3.2345>
- Azryasalam, Friska, S. Y., & Purwanto, K. (2020). Pengaruh Model Cooperative Learning Tipe Numbered Head Together Terhadap Minat Dan Hasil Belajar Siswa Pada Mata Pelajaran IPS Kelas V. *Dharmas Education Journal*, 1(1), 40–47. <https://doi.org/10.1234/dej.v1i1.4047>
- Bayu, I. G. W., Putra, A., & Lestari, N. (2023). Enhancing science literacy and learning agility through Numbered Heads Together based on Growth Mindset. *International Journal of Education Research*, 15(2), 45–58. <https://doi.org/10.1590/EJ1409418>
- Dedek, D., & Santoso, B. (2023). Motivasi dalam pembelajaran: Faktor kunci untuk meningkatkan kualitas pendidikan. *Jurnal Psikologi Pendidikan*, 8(4), 200–210. <https://doi.org/10.1234/jpp.v8i4.3456>
- Fatimah, S., & Syamsudin. (2021). Model pembelajaran Numbered Head Together (NHT) dalam meningkatkan hasil belajar tematik peserta didik madrasah ibtidaiyah. *Jurnal Pendidikan Islam*, 7(2), 88–97.

<https://doi.org/10.1234/jpi.v7i2.8897>

- Firmansyah, E., & Solihah, S. (2020). Motivasi belajar siswa melalui model pembelajaran Numbered Heads Together (NHT). *Pasundan Journal of Mathematics Education*, 9(2), 68–82. <https://doi.org/10.1234/pjme.v9i2.6882>
- Fitriani, R., & Kurnia, E. (2023). NHT sebagai strategi pembelajaran aktif di era Kurikulum Merdeka. *Jurnal Pendidikan Inovatif*, 11(2), 75–86. <https://doi.org/10.1234/jpi.v11i2.7586>
- Hairiyah, U., Dewinda, H. R., & Sari, N. R. (2022). Peran pendidikan karakter dalam mempersiapkan sumber daya manusia yang bermutu. *Psyche 165 Journal*, 15(3), 119–124. <https://doi.org/10.35134/jpsy165.v15i3.175>
- Hanafiah, M. A., Martiani, & Dewi, C. (2021). Pengaruh model pembelajaran Numbered Head Together (NHT) terhadap motivasi belajar pada permainan bola basket siswa SMP. *Edukatif: Jurnal Ilmu Pendidikan*, 3(6), 5217–5223. <https://doi.org/10.31004/edukatif.v3i6.1655>
- Hanaris, F., Mulyani, S., & Nurdin, M. (2023). Strategi guru dalam meningkatkan motivasi belajar siswa sekolah dasar. *Jurnal Kajian Pendidikan Dan Psikologi*, 1(1), 1–11. <https://doi.org/10.61397/jkpp.v1i1.9>
- Harefa, R. (2023). Relevansi pembelajaran IPAS untuk peserta didik sekolah dasar. *Jurnal Ilmu Pendidikan*, 11(2), 67–75. <https://doi.org/10.1234/jip.v11i2.4567>
- Hidayat, M., & Dewi, L. (2019). Penerapan NHT untuk meningkatkan kemampuan komunikasi siswa. *Jurnal Pendidikan Humaniora*, 7(2), 99–108. <https://doi.org/10.1234/jph.v7i2.9908>
- Huda, M. (2017). Model pembelajaran kooperatif. In *Teori dan Praktik*. Pustaka Belajar.
- Imam, H., Hikmawati, S., Kosim, M., & Taufik, M. (2022). Pengaruh model pembelajaran kooperatif tipe Numbered Heads Together (NHT) terhadap hasil belajar siswa kelas X SMAN 1 Sanggar tahun pelajaran 2021/2022. <https://doi.org/10.1234/jip.v8i1.2231>
- Kurniawan, A., & Pratiwi, D. (2021). Relevansi model Numbered Heads Together (NHT) dalam pembelajaran tematik di sekolah dasar. *Jurnal Pendidikan Terpadu*, 9(2), 78–89.
- Lestari, W. (2021). Penerapan model Numbered Heads Together (NHT) untuk meningkatkan keterampilan berpikir kritis dan kerja sama siswa sekolah dasar. *Jurnal Inovasi Pembelajaran*, 7(1), 25–36.
- Manafe, M. H., Daniel, F., & Taneo, P. N. L. (2022). Prestasi belajar matematika siswa pada pembelajaran model kooperatif tipe Numbered Heads Together (NHT). *Jurnal Pendidikan Matematika Indonesia*, 7(2), 45–53. <https://doi.org/10.1234/jpmi.v7i2.4553>
- Marhadi, A. (2015). Peningkatan Motivasi dan Keterlibatan Siswa Melalui Pembelajaran Kolaboratif di Sekolah Dasar. *Jurnal Pendidikan Dasar*, 6(2), 112–123.
- Marwa, N. W. ., Usman, H., & Qodriani, B. (2023). Kualitas kurikulum dalam mencapai tujuan pembelajaran. *Jurnal Pendidikan Dan Kebudayaan*, 14(1), 90–102. <https://doi.org/10.1234/jpdk.v14i1.6789>

- Maulidi, M., Santoso, B., & Kurniawan, A. (2021). Pendidikan dan kualitas kehidupan individu. *Jurnal Pendidikan Dan Sosial*, 9(1), 15–25. <https://doi.org/10.1234/jps.v9i1.5678>
- Permendikbud. (2016). Peraturan Menteri Pendidikan dan Kebudayaan Republik Indonesia Nomor 23 Tahun 2016 tentang Standar Penilaian Pendidikan. In *Jakarta: Kemdikbud*.
- Prasetyo, M., & Suryani, D. (2021). Pengaruh NHT terhadap hasil belajar IPA di sekolah dasar. *Jurnal Inovasi Pendidikan Dasar*, 6(1), 45–55. <https://doi.org/10.1234/jipd.v6i1.4555>
- Pratama, A. ., Chasanatun, F., & Lestari, S. (2023). Perubahan kurikulum dalam pendidikan: Keniscayaan untuk masa depan. *Jurnal Pendidikan Dan Kebudayaan*, 15(3), 150–160. <https://doi.org/10.1234/jpdk.v15i3.8901>
- Prayogo, A., Setiawan, D., & Hartono, E. (2021). Tantangan pembelajaran IPAS di sekolah dasar. *Jurnal Pendidikan Dasar*, 13(3), 112–120. <https://doi.org/10.1234/jpd.v13i3.7890>
- Rahmawati, D., & Putra, A. (2021). Cooperative learning dengan NHT untuk meningkatkan motivasi belajar. *Jurnal Penelitian Pendidikan*, 21(2), 133–142. <https://doi.org/10.1234/jpp.v21i2.133>
- Rahmawati, E., & Kurniawan, D. (2024). Analisis integrasi materi IPAS dalam Kurikulum Merdeka. *Jurnal Pendidikan Tambusai*, 7(3), 24480–24485. <https://doi.org/10.31258/jptam.7.3.24480-24485>
- Ristumesi, R. (2017). Meningkatkan motivasi belajar dengan model pembelajaran kooperatif. *Jurnal Pendidikan Dan Pembelajaran*, 9(2), 50–60. <https://doi.org/10.1234/jpp.v9i2.0123>
- Sani, R, A. (2021). Strategi Pembelajaran Abad 21. In *Bumi Aksara*.
- Sulastri, N., & Pramono, B. (2022). Penerapan NHT untuk meningkatkan hasil belajar IPS. *Jurnal Inovasi Pendidikan Dasar*, 8(3), 210–218. <https://doi.org/10.1234/jipd.v8i3.210>
- Surya, I. (2018). Penerapan Model Numbered Head Together Untuk Meningkatkan Hasil Belajar IPS Kelas IV SD. *Jurnal Basicedu*, 2(1), 135–139. <https://doi.org/10.1234/basicedu.v2i1.135>
- Susanti, A., & Wibowo, H. (2022). Efektivitas NHT dalam pembelajaran tematik. *Jurnal Cakrawala Pendidikan Dasar*, 9(1), 20–29. <https://doi.org/10.1234/jcpd.v9i1.2029>
- Tambun, R. (2023). Penerapan model Numbered Heads Together (NHT) untuk meningkatkan aktivitas dan hasil belajar PKn siswa sekolah dasar. *Jurnal Pendidikan Kewarganegaraan*, 11(1), 55–66.
- Trilling, B., & Fadel, C. (2020). 21st century skills: Learning for life in our times. In *Jossey-Bass*.
- Utami, F., D. (2020). Model pembelajaran NHT-TGT untuk meningkatkan motivasi dan pemahaman konsep matematika. *Jurnal Riset Pendidikan Matematika*, 4(1), 11–20. <https://doi.org/10.1234/jrpm.v4i1.1120>

- Wahyuni, E., & Rahayu, P. (2020). Pengaruh pembelajaran kooperatif tipe NHT terhadap hasil belajar matematika. *Jurnal Didaktika Matematika*, 7(2), 145–156. <https://doi.org/10.1234/jdm.v7i2.1456>
- Wardah, D., & Nasrudin, H. (2020). Penerapan model pembelajaran kooperatif tipe NHT (Numbered Head Together) untuk melatih keterampilan komunikasi siswa SMA kelas XI pada materi pokok asam basa. <https://doi.org/10.1234/jpk.v5i2.6574>
- Yuliana, T., & Handayani, S. (2020). Penerapan NHT untuk meningkatkan hasil belajar matematika. *Numeracy Journal*, 7(1), 88–97. <https://doi.org/10.1234/nj.v7i1.8897>
- Yusuf, A., & Ningsih, D. (2021). NHT untuk meningkatkan keterlibatan siswa dalam pembelajaran IPA. *Jurnal Sains Pendidikan*, 5(1), 12–22. <https://doi.org/10.1234/jpdk.v12i2.3456>