



Journal of Educational Sciences

Journal homepage: <https://jes.ejournal.unri.ac.id/index.php/JES>



P-ISSN
2581-1657

E-ISSN
2581-2203

Implementation of the Numbered Heads Together Learning Model Assisted by Image Media to Improve the Activities and Learning Outcomes of Science Students of Grade VI of SD Negeri 10 Koto

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ARTICLE INFO

Article history:

Received: 01 Jan 2026

Revised: 23 March 2026

Accepted: 25 March 2026

Published online: 05 April 2026

Keywords:

Numbered Heads Together,
Activities,
Learning Outcomes

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Article Doi:

<https://doi.org/10.31258/jes.10.4.p.556-565>

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ABSTRACT

This study was motivated by the low level of student activity and learning outcomes in science learning. The study aimed to improve the learning activities and science learning outcomes of sixth-grade students at SD Negeri 10 Koto through the implementation of the Numbered Heads Together (NHT) learning model assisted by visual media. This research used classroom action research conducted in two cycles. The subjects of this study were 26 sixth-grade students. Data were collected through observation of student learning activities and tests of learning outcomes at the end of each cycle. The results showed that student learning activities increased from 63.46% in cycle I to 82.69% in cycle II. In addition, student learning outcomes also improved from 65.38% in cycle I to 80.77% in cycle II. These findings indicate that the implementation of the Numbered Heads Together learning model assisted by visual media can improve students' learning activities and science learning outcomes. Based on the results of the study, it can be concluded that the implementation of the Numbered Heads Together learning model assisted by image media can improve students' learning activities and science learning outcomes.

1. Introduction

Education plays an important role in improving the quality of human resources and ensuring the sustainable development of a nation (Widiatmoko et al., 2024). In Indonesia, the implementation of education is guided by the National Education System as stated in Law of the Republic of Indonesia Number 20 of 2003, which emphasizes that education is a conscious and planned effort to create a learning atmosphere that enables students to actively develop their potential. Basic education

is an important stage in shaping students' character and developing their fundamental knowledge and skills (Pradana, 2021). Therefore, learning at the elementary school level should be designed in a way that encourages students' active participation and interest in the learning process.

One of the subjects in elementary school is the science subject. Science is a field of science that plays an important role in developing students' competencies or abilities (Amali et al., 2019). The science subject is an update to the independent curriculum that comes from a combination of science and social sciences to become science (IPAS) (Natural and Social Sciences) (Viqri et al., 2024). Learning Natural and Social Sciences (IPAS) is a combined learning between science that studies living things and inanimate objects in the universe and their interactions, and studies human life as individuals as well as social beings who interact with their environment (Zakarina et al., 2024). Science subjects are very necessary for students to develop their skills in recognizing themselves and their environment to be developed in knowledge and concepts in learning. Science learning helps students to develop their curiosity about phenomena that occur around them so that science learning guides students to be directly involved during the learning process (Siswani et al., 2024).

However, effective science learning requires active student participation. Elementary school students are at the concrete operational stage, at this stage children develop logical thinking, are still very tied to perceptual facts, meaning children are able to think logically, but are still limited to concrete objects (Septianti & Afiani, 2020). Therefore, teachers need to implement learning strategies that actively involve students in the learning process. In the learning process, teachers must also be able to develop appropriate media, strategies, and methods to motivate students to carry out teaching and learning activities (Hasanah Lubis et al., 2023). One way to achieve this is by applying appropriate learning models that support student-centered learning. A learning model is the entire series of presentations of teaching materials from the beginning to the end of the lesson carried out by teachers to achieve learning objectives (Khoerunnisa & Aqwal, 2020).

However, based on observations conducted on April 23, 2025, at SDN 10 Koto, several problems were found in science learning. Students were less active during the learning process, and many of them only listened to the teacher without actively participating in discussions or answering questions. This condition was partly caused by the limited use of interesting learning media and the dominance of textbook-based teaching methods. As a result, students tended to feel bored and less motivated to learn. In addition, based on interviews with the fifth-grade teacher at SDN 10 Koto, students' learning activities and learning outcomes were still relatively low. This can be seen from the results of the second semester mid-summative assessment, where many students had not yet reached the Learning Objective Achievement Criteria (KKTP), which is set at 85.

These findings indicate the need for an innovative learning approach that can increase students' participation and learning outcomes. One learning model that can be used to address this problem is the Numbered Heads Together (NHT) learning

model. The NHT model encourages students to work collaboratively in groups and actively participate in discussions. To further enhance the effectiveness of this model, this study integrates visual media as a supporting tool in the implementation of the NHT learning model. Visual media is a tool or medium used to provide an image or describe various objects, events, and various other types of activities in the form of images (Safitri & Kabiba, 2020). Visual media is the most commonly used learning tool and is a common language that can be understood and enjoyed everywhere and facilitates activities, in an effective, efficient, and interesting learning process (Masni et al., 2025). Therefore, this study aims to examine the implementation of the Numbered Heads Together learning model assisted by image media to improve the learning activities and learning outcomes of sixth-grade students at SDN 10 Koto.

2. Methodology

This type of research is Classroom Action Research (CAR). Classroom action research is a form of reflective study conducted by practitioners, educational and teaching staff, and action actors (Wardani et al., 2019). This method was chosen because it allows teachers to directly evaluate and improve the learning process through a series of planned actions implemented in the classroom. CAR is action research carried out intentionally by teachers in the classroom during learning as a form of self-reflection of the learning process that has been carried out with the aim of improving and enhancing the quality of learning so that it has an impact on improving student learning outcomes (Machali, 2022). The purpose of Classroom Action Research (CAR) is to improve and enhance the quality of learning to make it better and more enjoyable for students (Azizah, 2021). This action research was conducted in a cyclical manner. Each cycle consists of four stages: planning, acting, observing, and reflecting. The cyclical nature of classroom action research allows the researcher to evaluate the results of each cycle and make improvements in the next cycle to achieve better learning outcomes (Komalasari & Haryadi, 2025).

The model used in this study is the NHT learning model assisted by image media. The NHT learning model is a cooperative learning strategy that encourages students to actively participate in group discussions and share responsibility for understanding the learning material. The use of image media was intended to support students' understanding of the learning material and increase their interest in the learning process (Diana et al., 2023). The variables in this study consisted of an independent variable and dependent variables.

The independent variable was the implementation of the Numbered Heads Together learning model assisted by image media, while the dependent variables were students' learning activities and learning outcomes in science. This research was conducted in class VI of SDN 10 Koto, Bungus Teluk Kabung District, Padang City. The research subjects consisted of 26 sixth-grade students. The study was carried out in the first semester of the 2025/2026 academic year in science learning.

The procedure in this research was carried out following Kurt Lewin's model. Basically, Kurt Lewin's model is oriented towards a cycle consisting of four main components, each cycle (one round) going through four stages: PAOR: *planning*, *acting*, *observing*, and *reflecting*. In the planning stage, the researcher prepared learning plans, learning materials, and observation instruments. During the acting stage, the learning process was implemented using the Numbered Heads Together learning model assisted by image media. The observing stage involved observing students' learning activities and recording the learning process using observation sheets. Finally, in the reflecting stage, the researcher evaluated the results of the actions taken in order to determine improvements for the next cycle (Figure 1).

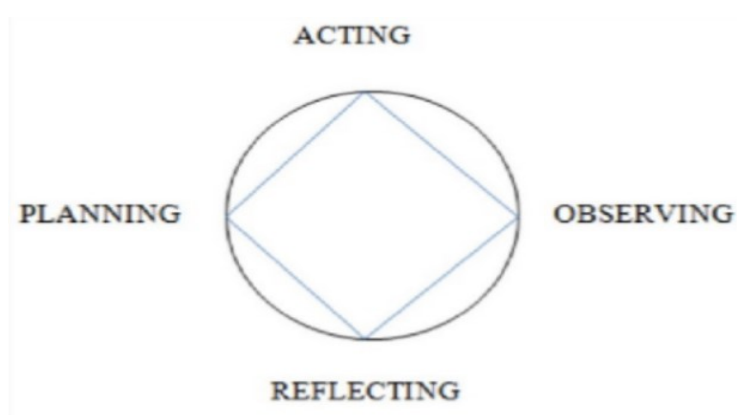


Figure 1. Kurt Lewin's Model

Data Collection Technique

Data collection can be conducted in various settings, from different sources, and through various methods. In this study, data were collected through observation, tests, and documentation to obtain information about students' learning activities and learning outcomes during the implementation of the NHT learning model assisted by image media. Observation is the activity of conducting observations or initial surveys on research subjects and objects before conducting a study (Utomo et al., 2024). In this study, observation sheets were used as research instruments to record students' learning activities during science learning when the NHT learning model assisted by image media was implemented. The observation was conducted during each cycle of the learning process and focused on students' participation, interaction, and involvement in group learning activities. The observation was carried out by the researcher with the assistance of a collaborator to ensure the accuracy of the collected data.

The test instrument consisted of multiple-choice questions administered at the end of each cycle to measure students' learning outcomes in science after the implementation of the NHT learning model assisted by image media. The test was used to determine the level of students' mastery of the learning material and to evaluate the improvement of learning outcomes from one cycle to the next cycle. Documentation is an activity that collects data in visual form Zakirman et al. (2023). In this study, documentation was used to collect supporting data in the form of

photographs of learning activities during the implementation of the research. These photographs were used to support the observation data and provide evidence of the learning process conducted in the classroom. Before being used in the research, the instruments were validated by experts to ensure their validity and feasibility. This validation process was conducted to ensure that the instruments were appropriate for measuring students' learning activities and learning outcomes.

3. Results and Discussion

This study aims to improve student learning activities and outcomes by applying the Numbered Head Together learning model assisted by image media in the science subject. This study starts from planning, acting, observing, to reflecting. This study was conducted in 2 cycles, each cycle consisting of two meetings. At the end of the cycle, at the 2nd meeting, a multiple-choice test was given to see the achievement of student learning outcomes by applying the Numbered Head Together model assisted by image media. And to see the achievement of student learning activities, the teacher used an observation sheet. the Numbered Heads Together model, aided by visual media, has been proven to increase student activity and learning outcomes compared to conventional approaches. This can be seen from the percentage of students who achieved the learning activity success criteria in cycles I and II, as shown in the table 1.

Table 1. Summary of Student Activity Observation Results in Cycles I and II

Cycle	Activity Study (%)
Cycle I Meeting 1	57.69%
Cycle I Meeting 2	69.23%
Cycle II Meeting 1	80.77%
Cycle II Meeting 2	84.62%
Total	292.31%

The data in Table 1 show a consistent increase in students' learning activities in each meeting. This improvement indicates that the application of the NHT learning model assisted by image media successfully created a more interactive and participatory learning environment. Students were more actively involved in discussions, group collaboration, and expressing their ideas during the learning process. Furthermore, the implementation of the cooperative learning model also encouraged students to take responsibility for understanding the learning material and contributing actively in group discussions (Rahman & Rini, 2026).

The use of image media also helped students understand the learning material more easily and increased their interest and motivation in participating in classroom activities. Through cooperative interaction within groups, students had the opportunity to exchange ideas, solve problems together, and build a deeper understanding of the learning material (Syamsi, 2026). This condition also reflects a shift from teacher-centered learning to student-centered learning, where students are encouraged to actively construct their understanding through discussion and

collaboration with their peers. Next is the average observation of student activities per aspect in cycles I and II which can be seen in the table 2.

Table 2. Average Observation of Student Activities per Aspect of Cycle I

No	Type Activity	Cycle I
1	Student notice material Which delivered by the teacher	72.12
2	Student ask to the teacher	73.56
3	Student answer question from Teacher	79.33
4	Student give idea moment discussion group	76.44
5	Student finish task discussion group appropriate time	74.52
6	Student brave convey results discussion in front class	77.89
7	Student each other help in discussion group	75.00
8	Student honor delivery opinion Friend in Group	80.77
9	Student value opinion Friend group other	75.97
10	Student notice material Which delivered by the teacher	75.96

The results of Cycle I indicate that students had begun to participate actively in the learning process. Activities such as paying attention to the teacher's explanation, answering questions, and participating in discussions showed relatively good results. However, several aspects such as asking questions and presenting discussion results in front of the class still needed improvement. This condition indicates that although students had begun to engage in learning activities, some students still lacked confidence in expressing their ideas and presenting discussion results in front of their peers.

In addition, the limited experience of students in cooperative learning activities also influenced their level of participation during the learning process. This condition occurred because students were still adapting to the new learning model that required them to be more active and collaborative during the learning process. Nevertheless, the implementation of the Numbered Heads Together learning model had begun to encourage students to interact with their peers, share ideas, and work together to solve problems during group discussions. The average observation of student activities in Cycle II can be seen in the following table 3.

Table 3. Average Observation of Student Activities per Aspect of Cycle II

No	Type Activity	Cycle II
1	Student notice material Which delivered by the teacher	89.91
2	Student ask to the teacher	84.62
3	Student answer question from Teacher	87.02
4	Student give idea moment discussion group	85.10
5	Student finish task discussion group appropriate time	89.43
6	Student brave conveys results discussion in front class	88.94
7	Student each other help in discussion group	88.46
8	Student honor delivery opinion Friend in group	94.23
9	Student value opinion Friend group other	85.10
10	Student notice material Which delivered by the teacher	84.62

The results of Cycle II show that students' learning activities improved significantly and more evenly across all aspects. Students demonstrated greater focus during the learning process and showed increased initiative in asking questions, answering questions, and expressing ideas during group discussions. In addition, students also showed greater confidence in presenting the results of group discussions in front of the class. This improvement indicates that the learning process using the NHT model assisted by image media was able to create a more collaborative and engaging learning environment. The improvement in student learning activities can be explained by the characteristics of the NHT learning model, which encourages students to work cooperatively and ensures that each member of the group is responsible for understanding the learning material. Through this process, students are motivated to actively participate in discussions and contribute ideas within their groups.

The results of this increase in student learning activities are supported by research (Ni Ketut Tambun, 2023) entitled the *Numbered Head Together (NHT) Cooperative Learning Model to Improve Civics Learning Activities and Outcomes in Grade VI Elementary School Students*. From the results of the study, it can be concluded that the NHT type of cooperative learning model is able to increase participation and provide many opportunities for the contribution of each group member. These findings are also consistent with the principles of cooperative learning, which emphasize student interaction, collaboration, and shared responsibility in the learning process. Through cooperative learning activities, students are encouraged to exchange ideas, solve problems together, and build a deeper understanding of the learning material.

The findings of this study also have important implications for classroom practice. The use of the NHT learning model assisted by image media can help teachers create a more interactive and student-centered learning environment. In addition, visual media can support students' understanding of the learning material and increase students' motivation to participate in classroom learning activities (Annisa et al., 2025). Based on the increase in the percentage of student learning activities and learning outcomes from Cycle I to Cycle II and the achievement of success criteria above 80%, it can be concluded that the implementation of the Numbered Heads Together learning model assisted by image media can improve the learning activities and learning outcomes of sixth-grade students at SDN 10 Koto.

4. Conclusion

This study concludes that the implementation of the Numbered Heads Together learning model assisted by image media was successful in improving students' learning activities and learning outcomes in science learning. The learning model encouraged students to participate more actively in classroom activities, particularly in group discussions, expressing ideas, and collaborating with their peers. The use of image media also helped students understand the learning material more easily and increased their interest during the learning process. Through

cooperative learning activities, students were able to interact more effectively and develop a better understanding of the subject matter.

Therefore, the application of the Numbered Heads Together learning model assisted by image media can be considered an effective strategy for creating an active and student-centered learning environment in elementary school science learning. Future studies are recommended to explore the implementation of this learning model in different subjects or educational levels in order to obtain broader insights regarding its effectiveness. For future research, it is recommended to explore the implementation of the Numbered Heads Together learning model in different subjects or educational levels to obtain broader insights into its effectiveness in improving students' learning activities and learning outcomes.

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How to cite this article:

Fernanda, D., Ismira., & Aisyah, S. (2026). Implementation of the Numbered Heads Together Learning Model Assisted by Image Media to Improve the Activities and Learning Outcomes of Science Students of Grade VI of SD Negeri 10 Koto. *Journal of Educational Sciences*, 10(4), 556-565.
