Journal of Higher Education and Academic Advancement
Homepage : https://journal.antispublisher.id/index.php/EJHEAA
Email : admin@antispublisher.com

e-ISSN : 3032-1123
JHEAA, Vol. 3, No. 2, February 2026
Page 107-114

The Implementation of the Number Head Together (NHT) Learning Strategy to Improve Student Learning Outcomes in Science Subjects at Elementary School

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DOI : https://doi.org/10.61796/jheaa.v3i2.1656

Sections Info

Article history:
Submitted: December 15, 2025
Final Revised: December 30, 2025
Accepted: January 19, 2026
Published: January 27, 2026

Keywords:
Numbered Head Together
Learning outcomes
Science
Classroom action research
Elementary school

ABSTRACT

Objective: *This study aims to improve student learning outcomes in Science subjects by implementing the Numbered Head Together (NHT) learning strategy in Grade IV of Madrasah Ibtidaiyah Darul Hikmah Sidoarjo.* ***Method:*** *This research uses the Classroom Action Research (CAR) approach with the Hopkins model, conducted in two cycles. Each cycle consists of planning, action implementation, observation, and reflection. The subjects of the study are 30 students with a Minimum Mastery Criteria (KKM) of 75. Data collection techniques include tests, student activity observation, interviews, and documentation. Data analysis is both quantitative and qualitative.* ***Results:*** *The study shows an increase in student learning completion in each cycle. Pre-action completion was 76.67%. After implementing NHT in Cycle I, it rose to 83.33%. A more significant increase occurred in Cycle II, reaching 93.33%, achieving classical learning completeness.* ***Novelty:*** *The application of the NHT strategy effectively improves student learning outcomes, student activity, group cooperation, and creates a more enjoyable learning environment in elementary school Science education.*

INTRODUCTION

Theoretical Foundation

Learning will be more effectively achieved by applying learning strategies that are suitable for the subjects being taught by educators. There are various learning strategies that are appropriate for use in Science subjects, such as Numbered Head Together (NHT), Jigsaw, Picture and Picture, and other strategies [1], [2], [3].

Learning strategies are well-known among educators because they understand that learning strategies are ways provided by educators to students to observe the changes students experience before and after the teaching and learning activities. With the presence of learning strategies in each lesson, educators will find it easier to give assignments. In every learning process, the application of learning strategies is crucial for educators. The strategies used will help educators deliver the lesson material more effectively. The hope is that the material can be absorbed and understood more quickly by students, as it impacts the final learning outcomes, aiming to achieve the desired learning results above the minimum standard [4], [5].

The learning process will proceed as planned when learning strategies are incorporated. The use of strategies serves as a guide in the implementation of teaching and learning activities in every school. For students, the use of learning strategies can accelerate and simplify the learning process in the classroom. The expected outcome from

using these learning strategies is to improve the final learning results for every student [6], [7], [8].

Every educator must realize that the choice of strategy significantly impacts the learning process in the classroom, allowing it to proceed smoothly and optimally. All educators desire this, as each individual educator has a strong sense of responsibility toward their students. No educator wants a chaotic learning environment that leads to poor learning outcomes. Therefore, every educator will carefully prepare the strategies to be used in the classroom to ensure continuous and stable improvement in student learning outcomes. When the learning successfully achieves its final goals, the visible changes will be in the form of overall behavior gained by students, including attitudes, knowledge, and behaviors [9], [10].

In Grade IV at Madrasah Ibtidaiyah Darul Hikmah Sidoarjo, educators have made efforts to improve student learning outcomes in Science subjects, including: a) Conducting learning activities within the allocated time, b) Initially using the lecture method, c) Providing feedback when students ask questions during the learning process, d) Not forgetting to evaluate students at the end of the lesson [11], [12].

One of the widely used learning strategies in schools today is Numbered Head Together, commonly abbreviated as NHT. The technique used in NHT is "learning with numbered heads." In this technique, educators give students the opportunity to express their opinions according to their abilities. Additionally, this technique encourages teamwork among students, as they do not want to fall behind others. This technique is suitable for use in all subjects, including Science [13], [14].

A common problem faced by educators is finding passive students or those who are less active. In response to this issue, educators can take appropriate action by using the right method. By using the NHT strategy, the expectation is that students will become more active during the learning process. When assignments are given, all students are expected to participate. Therefore, educators prepare numbers that are placed on each student's head to answer questions according to their numbered head. This ensures every student is included. With this strategy, students' learning outcomes are expected to improve [15].

Research Objective

The purpose of this article is to analyze the effectiveness of learning using the Numbered Head Together (NHT) method to improve student learning outcomes at MI Darul Hikmah.

RESEARCH METHOD

Research Type

The research method is a way commonly used by researchers to collect data for their study. In this article, the type of research used is Classroom Action Research, commonly referred to as CAR. The name itself contains three words:

Research : Conducting observations of an activity or object through observation to obtain the desired data or information, as per the title, which is useful for improving quality, which is crucial for the researcher.
Action : Implementing the planned activities on a chosen learning object to achieve the desired objectives. This action will create a new cycle for the students.
Class : The place that becomes the main object of this research.

Thus, combining these three words results in Classroom Action Research. It can be concluded that Classroom Action Research involves observing learning activities through an action that is intentionally introduced and occurs in the classroom. This action is carried out by the educator or under the educator's direction, conducted by the students.

Research and Development Model

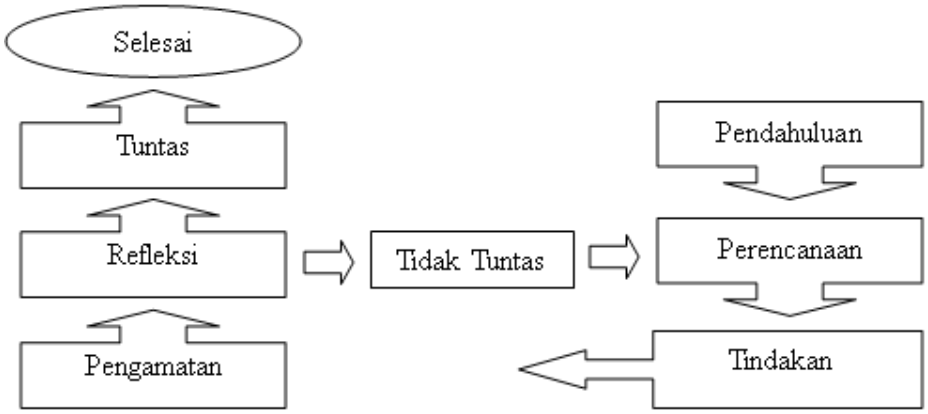

Figure 1. Hopkins PTK Model Design.

In this research, the study was conducted following the Hopkins model research design, which starts with an initial action, followed by planning, action, observation, and reflection. The research was carried out in two cycles. The evaluation results from Cycle I showed incomplete results, so improvements were made in Cycle II. The reflection on Cycle I was carried out to determine the steps for improvements in Cycle II.

Data Analysis

The data collection techniques used in this research are as follows:

a. Observation

This technique involves collecting data by observing the prepared object. There are two observers in this process: the educator and the researcher. The observation process must be in line with the guidelines that have been prepared beforehand. The students' activities are observed to determine the qualitative data regarding the extent of the learning process.

b. Interview

In addition to observation, interviews are also conducted. An interview is a stage where individuals knowledgeable about the problem to be addressed are interviewed.

c. Documentation

Documentation involves preparing documents that have occurred as evidence of activities without fabricating information.

RESULTS AND DISCUSSION

Cycle I

In the first cycle, the educator's task is to design what will be done in the classroom, and then apply it in class. The NHT learning model prioritizes cooperation among students in groups to achieve learning objectives. Students are divided into small groups and assigned numbers that are placed on their heads, after which they are given a task to study the predetermined lesson material. Students will gather with those who have the same number. This aims to give students the opportunity to actively engage in the thinking process during learning activities. In this process, learning activities are more student-centered, with students studying the material and discussing to express their opinions.

The cooperative learning model, NHT, is one that emphasizes specific guidelines designed to influence student interactions and aims to improve academic mastery. This model was developed in 2009, involving students in discussing material covered in a lesson and measuring how well students understand the content. Thus, Numbered Head Together (NHT) is an approach that involves many students in acquiring the material covered in a lesson.

There are three goals to be achieved in NHT learning: 1) To improve student learning outcomes in assignments, 2) To help students socialize with peers from diverse backgrounds, 3) To develop students' creativity and skills in answering questions. These skills include: actively asking questions, respecting peers' opinions, being able to explain their ideas or opinions, and cooperating within their group.

The steps taken in this learning model are as follows: the first step is preparation. In this step, the educator must prepare a lesson plan with student worksheets that match the learning model. The second step is group formation. In this step, the educator divides the students into groups of 3 to 5, assigning each student a number and giving the groups different names. This grouping is done to assess the pre-test results as a basis for forming each group. The third step is problem discussion. In this step, the educator distributes worksheets containing the material to be studied. Each student must work together with their group to find answers to the tasks assigned by the educator. The final step is calling out the group numbers and asking them to provide answers to the questions given by the educator.

This classroom action research was conducted in two cycles, applying the Numbered Head Together (NHT) learning strategy to Science lessons for Grade IV at MI Darul Hikmah Sidoarjo. The research subjects consisted of 30 students with a Minimum Mastery Criteria (KKM) of 75.

At the initial condition (pre-action), the students' learning outcomes showed that 23 students (76.67%) had achieved learning completion, while 7 students (23.33%) had not met the KKM. The following diagram illustrates the results:

Table 1. Students' Completion Status Based on Achievement Score.

Category	Number of Students	Percentage
Completed (≥75)	23 students	76.67%
Not Completed (<75)	7 students	23.33%
Total	30 students	100%

This condition shows that the Science learning outcomes have not yet been optimal and require improvement through the application of more active and collaborative learning strategies.

The observation results show that student activity was at a fairly active level.

Table 2. Students' Learning Activity Observation Results.

Observed Aspect	Percentage
Discussion activity	70%
Group cooperation	68%
Courage to express opinions	65%
Involvement in answering questions	72%

Based on the table above, there needs to be an increase in student activity, especially in the courage to express opinions, which received the lowest score of 65%, while the highest score was in involvement in answering questions.

Cycle II

After conducting the post-test, it was found that 28 out of 30 students achieved learning outcomes according to the established Minimum Mastery Criteria (KKM) of 75.

Table 3. Students' Post-Test Learning Completion Based on Minimum Mastery Criteria (KKM ≥ 75).

Category	Number of Students	Percentage
Completed (≥75)	28 students	93.33%
Not Completed (<75)	2 students	6.67%
Total	30 students	100%

Based on these results, it can be concluded that there was a significant improvement both individually and classically, and the action can be considered successful, even though it did not reach 100%.

Table 4. Students' Learning Activity Observation Results (Post-Implementation).

Observed Aspect	Percentage
Discussion activity	88%
Group cooperation	90%
Courage to express opinions	85%
Involvement in answering questions	92%

Based on the table above, after the improvements, student activity increased to the "active-very active" category. Although the maximum value of 100% was not reached, the highest scores were in group cooperation and answering questions, which achieved 90% and 92%, respectively. Meanwhile, the lowest score remained in the courage to express opinions, which reached 85%.

Table 5. Improvement of Students' Learning Completion Across Research Stages

Stage	Completion Percentage
Pre-Action	76.67%
Cycle I	83.33%
Cycle II	93.33%

Based on the data in the table above, there was an increase in the percentage of students' learning completion at each stage of the study. At the pre-action stage, the learning completion was 76.67%. After the application of the Numbered Head Together (NHT) learning strategy in Cycle I, the completion rate increased to 83.33%. A more significant increase occurred in Cycle II, reaching 93.33%. These results indicate that the implementation of the NHT strategy gradually improved students' Science learning outcomes and achieved the classical learning completion success indicator. Other issues that remain unresolved may be due to the educator's teaching method not yet creating an active, innovative, creative, effective, and enjoyable learning environment [16], [17], [18]. There is a need for learning that promotes active, innovative, creative, effective, and enjoyable characteristics to overcome this problem, which can be achieved through the application of the cooperative learning strategy Numbered Head Together (NHT).

One alternative solution offered by the educator to address the problem and increase student activity is by applying the learning strategy presented by educational experts, one of which is the cooperative learning model NHT. In this cycle, it serves as a validation stage for the previous first cycle. The benefits of the NHT strategy itself include: 1) Higher self-esteem, 2) Greater individual acceptance, 3) Reduced disruptive behavior, 4) Deeper understanding, 5) Higher learning outcomes [19], [20], [21].

CONCLUSION

Fundamental Finding : The implementation of the Numbered Head Together (NHT) learning strategy effectively increased student engagement and encouraged students to explore their skills further. It also deepened conceptual understanding, created a pleasant learning atmosphere, and fostered a positive attitude in the learning process. This was evidenced by the increase in learning completion percentages, from 76.67% in the pre-action stage to 83.33% in Cycle I, and a significant increase to 93.33% in Cycle II. **Implication :** The NHT strategy proves to be effective in creating an active and collaborative learning environment, helping students achieve classical learning completion and enhancing their overall learning experience. It has practical implications for educators looking to improve student participation and academic performance. **Limitation :** The study's limitations include the inability to reach a 100% completion rate and the potential influence of the educator's teaching methods on student participation and engagement, which may still require further improvement to fully optimize learning outcomes. **Future Research :** Future research could explore the long-term effects of NHT on student learning, investigate the impact of NHT on other subjects, and examine the specific factors that contribute to the variations in student engagement and performance across different educational settings.

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