

# Enhancing Students' Academic Performance in Science Through the Use of Numbered Heads Together (NHT) Learning Strategy

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**Abstract**— In recent years, there has been a rise in worries about scientific and academic attainment among Filipino students. Even though scientific education is valued, many students need help to satisfy these expectations. This research aimed to improve Grade 8 science performance in one of Ozamiz City's public schools during the academic year 2023-2024 by using the Numbered Heads Together Learning Strategy (NHT). The study used a classroom-based action research design. Fifty participants were selected through purposive sampling. The study utilized a researcher-made test and Minitab statistical software, with tools such as mean, standard deviation, and t-test. The study revealed the following findings: (1) Students' performance did not meet expectations before using the Numbered Heads Together Learning Strategy; (2) Students' performance improved significantly after using the Numbered Heads Together Learning Strategy. They performed satisfactorily; (3) Students' performance differed significantly before and after adopting the Numbered Heads Together Learning Strategy; and (4) There are other observed improvements among students after using the Numbered Heads Together Learning Strategy. Furthermore, using a numbered head together learning technique improves students' academic achievement in Science. This supports the recommendation to use this method of instruction to improve student performance.

**Keywords**— academic performance, cooperative learning, engagement, Numbered Heads Together Strategy

## I. INTRODUCTION

Science education is crucial for developing students' critical thinking, problem-solving abilities, and scientific literacy, helping to form a scientifically minded society (Napal et al., 2020). The issue of poor performance in science disciplines is global, as evidenced by several international research studies. The rising prevalence of low academic success and failures in science subjects in schools may influence individual pupils who intend to pursue a university education and seek a lifelong opportunity (Rebucas, 2022).

Students' academic performance is critical in generating the best quality graduates who will become virtuous leaders and workforce for the country's economic and social progress (Aninag et al., 2021). Science is considered one of the most significant courses due to its relationship to technology and industry. From a national viewpoint, this might be one of the most important areas for academic advancement. Even though Science has become an important aspect of the educational system, various studies suggest that many Filipino students need to improve (Refugio et al., 2020).

In the Philippines, initiatives to improve scientific education are underway to address difficulties

associated with the delivery and efficacy of science curricula in various educational contexts. However, the most recent Programme for International Student Assessment (PISA) results for 2018 show that the Philippines ranked last among the participating nations in Science. Furthermore, the 2019 Trends in International Mathematics and Scientific Study (TIMSS) revealed that the Philippines ranked last among the 58 countries that took the scientific and math tests. The Philippines falls behind other nations in terms of educational quality, notably in Science (Rogayan & Dollete, 2019).

The science education curriculum in the Philippines has evolved from input-based to outcomes-based, with students at the center of learning. As a result, educators are always developing new methods for engaging students in relevant and responsive scientific learning. Furthermore, introducing the K-12 curriculum results in a paradigm change in education regarding teaching, assessment, and outcomes (Tabiolo & Rogayan, 2019). Today's educational landscape necessitates more inventive and engaging teaching practices to improve learning, pique learners' attention, and promote better

education for Generation Z students (Rogayan & Bautista, 2019).

Many teachers needed help teaching Science in the new industrial period. For years, teachers, academics, and other education stakeholders have debated various methods of scientific teaching and learning (Mokiwa & Agbenyeku, 2019). Science educators are tasked with developing new strategies to make Science more accessible and relevant (Rogayan, 2019).

Teachers are crucial in changing and scaffolding pupils to accomplish educational goals and the prerequisites for becoming 21st-century citizens (Wisetsat & Nuangchalerm, 2019). The success of learning activities in each school environment is measured not by how well the teacher has explained the teaching material to students but by students' willingness to participate actively in every learning activity to achieve quality learning. The situation raises questions regarding the root causes of the problem and potential ways to improve student performance. Teachers, who play a significant role in driving education, must manage learning to promote 21st-century skills. Learning management is one factor in learners' academic success (Negash et al., 2022).

Appropriate models, approaches, and tactics are required to help students translate their information into good thinking, understanding, and inhabiting abilities (Makafui et al., 2021). Educators must understand that a well-planned effort may be accomplished during the learning process to develop a child's potential actively (Dong et al., 2020). Students are likelier to achieve favorable learning outcomes if they enjoy the teacher's teaching style (Theobald et al., 2020).

Teachers must use an appropriate learning method to generate engaging and diverse learning experiences, particularly when teaching science content that needs observation. Using proper teaching methods and learning materials increases students' motivation to learn. Thus, instructors must be conscious of the strategies they employ in their classroom activities to attain learning objectives (Dwinalida & Setiaji, 2020). To accomplish this, using varied and relevant learning models, such as Numbered Heads Together, can catch students' attention and encourage active engagement in the learning process. Choosing the appropriate learning model can significantly benefit learning (Saputro, 2023).

Numbered Heads Together (NHT) is a learning technique that can increase student performance in science fields. This method, which actively engages students in learning, may create a more dynamic classroom environment and improve the process of grasping the material. Furthermore, NHT enables students to communicate, share ideas, and assist one another in understanding complex scientific topics (Oppermann, 2019). The NHT technique, which involves students directly in learning activities, can increase student engagement, motivation to participate, and understanding of science subjects. As a result, using the The NHT learning strategy is intended to improve student learning results in science. Implementing this method can strategically offer students more dynamic, interesting, and successful learning experiences (Hadi & Novaliyosi, 2019).

According to research, during NHT sessions, each student plays an important role in the group, which might increase students' sense of responsibility and engagement. Apart from the problem of student engagement, the NHT learning technique can help students improve their social skills. Students in this framework must communicate well, exchange ideas, and assist one another (Owens et al., 2020). The Numbered Heads Together (NHT) method is thought to be effective for optimizing learning in schools and achieving learning objectives (Bayana & Surachman, 2020). Therefore, by using the learning cooperative type, Numbered Heads Together (NHT), students may be engaged and collaborate, allowing them to grasp what they are studying and achieve good outcomes (Panuah, 2019).

This approach's competitive and collaborative aspects may create an interesting environment for students, inspiring them to seek more knowledge. Developing and implementing learning using the NHT model will contribute significantly to efforts to enhance student learning outcomes, particularly in science fields. Applying this model of instruction can improve learning outcomes and raise students' understanding of the science disciplines being taught.

However, there appears to be a practical knowledge gap in previous studies. The existing literature requires more thorough research, as certain components are essential for effectively teaching Science to Grade 8 pupils. Identifying and addressing these missing elements is important to enhance the effectiveness of scientific teaching practices. The topic of scientific education for

Grade 8 is ripe for an exploration of practical focus study on employing the Numbered Heads Together Learning Strategy to increase grade 8 students' science performance (Miles, 2017).

To fill this gap, the Numbered Heads Together learning technique will be implemented during the 2023-2024 school year to improve students' academic performance in science.

This study is significant for students since it provides insights into successful ways to improve their academic performance in science. For instructors, it has practical consequences for developing curriculum and instructional methodologies adapted to the requirements of junior high students. Finally, for the school community, it provides useful information on the impact of focused interventions such as the Numbered Heads Together Strategy, which may influence future educational policies and practices to enhance student outcomes.

### **Research Questions:**

This action research aimed to address the academic performance of students in science.

Specifically, this study will seek to answer the following research questions:

1. What is the students' performance before using the Numbered Heads Learning Strategy?
2. What is the students' performance after the use of the Numbered Heads Together Learning Strategy?
3. Is there any significant difference in the students' performance before and after the use of the Numbered Heads Together Learning Strategy?
4. What other improvements are observed among the students after the use of the Numbered Heads Together Learning Strategy?

## **II. METHODOLOGY**

### **Research Design**

This study utilizes a classroom-based action research strategy, which entails numerous iterative cycles of improving teaching methods and student learning. Action research has been a reliable method for doing applied research in educational settings for decades.

It is a method that enhances education by incorporating change and engaging educators in working together to improve their practices; it is collaborative and participatory because educators are integral members of the research process; it is practical and relevant, providing educators with direct access to research

findings; and it focuses on critical reflection about professional practice (Mertler, 2020). This approach allows teachers to evaluate their practice and determine what will and will not work for their pupils. The primary purpose of action research is to address local-level problems in practice to discover immediate answers or solutions to such issues (Mertler, 2018).

Classroom-based action research was well-suited to improving students' academic performance in science. The Numbered Heads Together Learning Strategy allowed direct observation in classroom settings. This methodology ensured that the research findings could be applied in classrooms, potentially leading to improved teaching methods and student learning.

### **Research Setting**

This study was conducted in a junior high school, particularly in Grade 8, at one of Ozamis City's secondary schools. It is a complete secondary school serving grades 7 through 12. The school provides various programs, including the Regular Curriculum, Special Science Curriculum, Special Program of the Arts, Strengthen Technology Vocational Education Program, and Open High School Program. The school is committed to providing the local community with curriculum-based, high-quality, and affordable education.

### **Respondents of the Study**

The study involved 50 eighth-grade pupils. Participants were chosen using a purposeful selection strategy based on the following criteria: 1.) Students enrolled in a specific secondary institution in Ozamis City as grade 8 students for the academic year 2023-2024; 2.) Students who demonstrated to have low performance in science; 3.) Students who gave their full consent to serve as study respondents; and 4.) The researcher only picked students from the Moonstone because the researcher teaches in this section. Before conducting the survey, the researcher confirmed that they met all the criteria.

### **Data Collection**

This action research gathered quantitative results. Grade 8 students' science performance will be measured using a researcher-made instrument, such as test questions.

A. Pre-Implementation Phase. The researcher observed emerging challenges that pupils experienced during their study. The researcher obtained insights and information about the relevant challenges by performing extensive observations. The researcher began writing the research proposal,



creating lesson plans, before- and post-tests, and prototype strategies or interventions. Eventually, the researcher requested permission from the Superintendent of the Division of Ozamiz City and consent from the principal and collaborating teacher to conduct the study at an Ozamiz City secondary school.

- B. Implementation Phase. The implementation stage included collecting data, which involved conducting a pre-test on the participants, implementing the targeted interventions by the researcher to the respondents for a specific time frame, monitoring the participant's performance and attitude, and conducting the post-test assessment. It also encompassed retrieving, tallying, analyzing, and interpreting data. This stage involved analyzing the data to determine whether the Strategy was significantly effective.
- C. Post-Implementation Phase. The post-implementation step involved drawing findings, making suggestions, proofreading, revising, and completing the research project. It also required correctly conveying the research findings to a specific set of people.

### **Ethical Consideration**

When working with others, one should follow through on promises and act honestly (Resnick, 2015). Respondents should receive accurate information about the study, involvement, rights, benefits, and damage. Respondents must know that their participation is fully voluntary and that they may withdraw at any time (even after the data collection is complete) without fear of repercussions or prejudice. Responders' identities should be kept confidential, particularly during data gathering. Non-authorized users should not have access to the data. There will be no data collecting that is unrelated to the research. Participants should not experience mental, emotional, or physical harm. The interview venue and time should be convenient for the participants (Amdur & Bankert, 2011).

To maintain the ethical aspects of the study, participants provided informed consent before responding to the questions. Throughout the study, participants learned of the research's objectives, potential benefits to them and others, data confidentiality, and anonymity. Misleading information, coaching, and misinterpreting critical facts were avoided, ensuring that all study-related discussions were honest and transparent.

### **Data Analysis**

Using Anaconda and Jupyter statistical software, the following tools were utilized:

Frequency and percentage were used to offer a descriptive summary of the study's main components.

Mean and standard deviation were used to assess the learners' performance before and after using the Numbered Heads Together Strategy.

The T-test was used to determine whether there was a significant difference in learners' performance before and after using the Numbered Heads Learning Strategy.

A thematic Analysis was used to investigate the benefits students noticed after implementing the Numbered Heads Learning Strategy with HyperResearch

## **III. RESULTS AND DISCUSSION**

### **Students' Performance Before the Use of the Numbered Heads Together Learning Strategy**

Table 1 shows how students performed before using the Numbered Heads Together (NHT) learning strategy. The overall result shows that all students (100%) did not meet the expectations ( $M = 13.700$ ;  $SD = 3.559$ ).

It indicates the student's average performance was below expectations before implementing the numbered heads together learning technique. The average score of 13.700 suggests that the usual student received a score around that level. Furthermore, the standard deviation 3.559 suggests a large degree of variability in the results, with some students scoring higher or lower than the mean. These findings indicate that the student's performance before implementing the numbered heads together learning technique could have achieved the required criteria or desired goals. Based on the data collected, the numbered heads together learning technique may have been implemented to increase student performance.

Both students performed poorly, which signifies that no student performed exceptionally or excellently. Most students (100%) still needed to fulfill academic performance objectives, although they might improve. This suggests that the majority of pupils performed below the expected levels or requirements.

The findings highlight the need for intervention to improve learner performance. Educators and school administrators should consider adopting learning tactics like numbered heads together to enhance

comprehension and retention. The present performance levels indicate that more than standard teaching approaches may be required for students to comprehend the content fully.

Student's academic performance is the key feature (Rono et al., 2014) and one of the important goals of education, which can be described as the knowledge gained by the student and assessed by marks by a teacher, as well as educational goals set by students and teachers to be achieved over a specific period (Narad & Abdullah, 2016).

Over time, academic achievement has been the key determinant in determining whether students may continue their studies and pursue further education. Understanding student conduct in educational institutions' classrooms demonstrates how the university's directives and academic processes have been implemented. Consequently, instructors and academic supervisors can utilize it to develop successful

pedagogical practices that optimize students' learning experiences (Delfino, 2019). Furthermore, using proper teaching techniques and learning materials increases students' learning motivation. Thus, instructors must be conscious of the tactics they employ in their classroom activities to attain learning objectives (Dwinalida & Setiaji, 2020).

Educators should be trained in the NHT strategy to enable its successful implementation. Supplementary activities such as peer tutoring, formative assessments, and tailored teaching should also be included to meet unique learning requirements. Regular monitoring and evaluation of student performance following the introduction of NHT will be critical in determining its success and making required improvements. Addressing these gaps with targeted interventions and ongoing assistance can improve student knowledge and performance, eventually bringing more students into better performance groups.

**Table 1. Students' Performance Before the Use of the Numbered Heads Together Learning Strategy (n=50)**

Performance	Frequency	Percentage	M	SD
<b>Did not Meet the Expectations</b>	50	100	13.700	3.559

Note Scale:42-50 (Outstanding); 38-41 (Very Satisfactory); 34-37 (Satisfactory); 30-33 (Fairly Satisfactory); 1-29 (Did not Meet the Expectations)

**Students' Performance After the Use of the Numbered Heads Together Learning Strategy**

Table 2 shows how students performed after applying the Numbered Heads Together (NHT) learning technique. Overall, the students performed satisfactorily (M = 34.360, SD = 4.910).

The distribution of student performance shows various degrees of accomplishment across performance areas. Fourteen students (28%) received the highest rating, Very Satisfactory, indicating that the Numbered Heads Together Learning Strategy helped improve their grasp of ScienceScience. Following this, 19 students (38%) received "Satisfactory" scores, indicating that they improved significantly but not as much as those who received "Very satisfactory" marks. Twelve students (24%) received a "Fairly Satisfactory" rating, indicating improved performance. Finally, five students (10%) still needed to fulfill the requirements, indicating a need for extra assistance. Notably, no pupils obtained the "Outstanding" performance level.

The data show a significant increase in student performance following the implementation of the NHT

method. The total mean score (M = 34.360) indicates that students perform at a "Satisfactory" level. The number of pupils in the "Very Satisfactory" and "Satisfactory" categories implies that the new learning technique benefited a large part of the class. The comparatively low standard deviations within these categories suggest that students scoring within these ranges performed consistently. However, the persistence of a small minority of students (10%) in the "Did Not Meet the Expectations" group suggests that, while NHT has been helpful for most students, some still require more assistance. This group's larger standard deviation (SD = 7.800) indicates that these students' results vary considerably.

The findings suggest that the Numbered Heads Together method effectively enhanced overall student performance, pushing many students into higher performance groups. However, the fact that no pupils received an "Outstanding" score implies that there is still an opportunity for growth in teaching approaches to raise student learning to the greatest levels.

Cooperative learning is an empirically supported teaching technique. In collaborative learning, teachers

shape students' relationships and prepare them for collaboration so that students work in small groups to assist one another's learning processes (Abramczyk et al., S, 2020). Students in cooperative learning (including the numbered heads together learning approach) gain mastery of the learning content by collaborating, assisting one another, and exchanging ideas (Ahmad, 2010).

Cooperative learning enhances motivation by allowing individual learners to demonstrate their skills, enabling self-learning, increasing self-confidence, and developing a good attitude toward other group members (Kirbas, 2017). Research has been conducted worldwide on how cooperative learning improves student achievement. It is distinguished by special activities that foster peer interaction while also assisting in developing

communicative language and learning concepts and content (Alrayah, 2018).

To address these findings, educators should continue to refine the NHT method, combining it with other collaborative learning techniques to improve student engagement and comprehension. In addition, tailored interventions should be designed for students who did not meet the requirements, such as customized assistance plans, additional tutoring sessions, and formative assessments to identify and solve particular learning gaps. Implementing these measures will guarantee that all students can reach their full potential, and frequent evaluations should be undertaken to assess the success of these interventions and make any required changes. This holistic Strategy will promote a culture of continual improvement in student achievement.

**Table 2. Students' Performance After the Use of the Numbered Heads Together Learning Strategy (n=50)**

Performance	Frequency	Percentage	M	SD
Very Satisfactory	14	28	39.000	0.877
Satisfactory	19	38	35.263	1.098
Fairly Satisfactory	12	24.0	31.583	1.379
Did not Meet the Expectations	5	10.0	24.60	7.80
Overall Performance	50	100	34.360	4.910

Note Scale:42-50 (Outstanding); 38-41 (Very Satisfactory); 34-37 (Satisfactory); 30-33 (Fairly Satisfactory); 1-29 (Did not Meet the Expectations)

**Significant Difference in the Students' Performance Before and After the Use of Numbered Heads Together Learning Strategy**

Table 3 shows substantial changes in students' performance before and after using the Numbered Heads Together (NHT) learning technique. There was a significant difference in student performance before and after using the NHT Learning Strategy ( $t = 30.49$ ,  $p = 0.00$ ).

The substantial p-value (0.000) indicates that introducing the NHT learning technique resulted in a statistically significant improvement in student achievement. The considerable rise in the mean score from 13.700 to 34.360 indicates that students performed much better after implementing the NHT method. The significant t-value supports the conclusion that the observed improvement was not caused by chance. The table contains no non-significant findings since the p-value for the difference in student performance before and after the NHT method is significantly lower than the threshold of 0.05. These results indicate that the Numbered Heads Together Learning Strategy

considerably influenced students' performance and learning outcomes.

The substantial improvement in student performance after using the NHT learning method demonstrates that this collaborative approach is highly effective in improving student learning outcomes.

Cooperative learning is an effective learning approach for students from various characteristics and socioeconomic backgrounds since it increases academic performance (Warsono & Hariyanto, 2013). This technique has been shown to boost student success and information retention (Johnson & Johnson, 2009). Numbered Heads Together (NHT), also known as numbering thinking together, is a cooperative learning strategy that impacts student interaction patterns and serves as an alternative to typical classroom frameworks. This allows students to share ideas, examine the best responses, fosters student cooperation, and may be utilized in various topics and grade levels (Huda, 2016).

The NHT cooperative learning method engages students and allows them to share and collaborate more



effectively (Sari et al., 2017). Aside from that, it might encourage pupils' creativity in the learning process. Student learning activities improve throughout the NHT cooperative learning process, as seen by an increase in the proportion of students who pay attention and respond to the teacher's directions, resulting in good learning results (Damanik et al., 2020).

When students are actively involved in their learning, they enhance their academic performance, such as critical thinking and grades, and then apply what they have learned in real life. It becomes an indicator of educational quality as well as the presence of active learning.

The NHT learning technique is suggested to be used more widely across many topics and grade levels. Teachers should attend professional development seminars to ensure they understand and can effectively execute the NHT technique. Continuous monitoring and evaluation should also be done to maintain and enhance student performance. Furthermore, extra interventions such as tailored learning plans, tutoring, and targeted assistance should be offered to assist the tiny number of students who still need to achieve expectations even after the introduction of NHT. By addressing these issues, educators can guarantee that all students benefit from enhanced teaching practices and reach their full academic potential.

**Table 3. Significant Difference in the Students' Performance Before and After the Use of the Numbered Heads Together Learning Strategy (n=50)**

Variables	M	SD	t-value	p-value	Decision
<b>Before Using Numbered Heads Together Learning Strategy</b>	13.700	3.559	30.49	0.000	Reject Ho
<b>After Using Numbered Heads Together Learning Strategy</b>	34.360	4.910			

Ho: There is no significant difference in the performance of learners before and after the use of numbered heads together learning strategy

Note: Probability Value Scale: \*\*p<0.01 (Highly Significant); \*p<0.05 (Significant); p>0.05 (Not Significant)

**Other Improvements in Students' Performance After the Use of Numbered Heads Learning Strategy**

The study examined the distinctive effects of using the Numbered Heads Learning Strategy. Participants in the research shared their own experiences and opinions about implementing this exercise. The researchers used answers provided by participants and examined the data for significant meaning to categorize the responses. The study identified three (3) emerging themes that revealed participants' experiences and feelings when using the Numbered Heads Together Learning Strategy: 1) Enhanced Responsibility and Class Participation; 2) Promotes Engagement and Retention; and 3) Promotes Collaboration and Teamwork.

**Enhanced Responsibility and Class Participation**

The Numbered Heads Together (NHT) method is a cooperative learning technique that aims to improve student engagement and participation in the classroom. This technique encourages active involvement by holding each student accountable for understanding and contributing to the group's work. It promotes healthy competitiveness and peer connection by requiring students to collaborate and support one another. The participants' responses highlight this:

"This strategy has made me more responsible for my learning, which has positively impacted my grades." (P5)

"This strategy is very relevant as it helps me to stay engaged and ensures that everyone in the group is contributing." (P7)

"The Numbered Heads Together strategy impacted my academic performance by allowing me to work together and be socially active to participate, contribute the right answers, and help each other explain the answers." (P2)

Students often remark how this method helps them be more motivated to study in class. "It also helps me to stay engaged and motivated during class because I know I might be called upon to share the group's answer, so I need to be prepared and attentive." (P1)

In 21st-century education, students must be engaged learners in all phases of the learning process (Ghavifekr, 2020). Classrooms for active learning are being developed as part of a comprehensive educational endeavor to increase student involvement and engagement in learning (Qureshi et al., 2023). Several recent research have highlighted the value of

collaborative learning as a successful educational strategy (Lin et al., 2010).

Collaborative learning requires students to participate and communicate in a group setting, manage their relationships, and create material (Lee, 2014). In an interactive learning environment, students serve as learning resources for one another by conversing, viewing one another's work, exchanging ideas, and making collective choices (Strebe, 2018).

To increase student participation, create a positive learning environment, set clear expectations, use active learning techniques, promote collaboration, tailor learning to individual needs, act as an engaging facilitator, encourage questioning and critical thinking, develop strong relationships, and connect meaningfully with students. By implementing these tactics, teachers may enable students to participate actively in their education, resulting in higher engagement, deeper knowledge, and overall academic success.

### ***Promotes Engagement and Retention***

The Numbered Heads Together strategy is a collaborative learning approach that greatly improves student engagement and retention of content. This Strategy ensures that every group member is actively involved in learning. The prospect of being called upon to represent their group motivates each student to stay attentive and comprehend the material properly. It is highlighted in the responses of the participants:

"Numbered Heads Together has enhanced my performance by engaging me more in my studies. "I understand the material better." (P6)

"The Numbered Heads Together strategy has helped me retain information better and perform well in tests because I am more involved in the learning process." (P4)

"The strategy has positively impacted my academic performance by keeping me engaged and accountable for my learning." (P7)

"I am more involved in class, particularly during group discussions and presentations. It makes learning more active." (P5)

Students have also stated that this method improved their critical thinking and problem-solving abilities, allowing them to comprehend the issue more readily and a desire to share information with others. This is

regularly experienced by the majority of the participants, as evidenced in the responses of participants 2 and 6:

"Yes, it influenced how we tackle complex problems by using our knowledge, facts, and data to solve them, allowing us to think through our answers and find the right solutions." (P2)

"Yes, my problem-solving skills have improved because we discuss different ways to solve problems together." (P6)

Knowledge retention is how pupils recall what they have previously learned. Some teaching and learning methodologies promote knowledge retention. It is most likely tied to students' attitudes about such tactics. Thus, students who like learning are more likely to remember the information due to an effective teaching style. When teachers apply such techniques to teaching, pupils are less likely to forget what they have learned. Cooperative learning (CL) has been shown to increase attitude and retention. For example, CL has significantly impacted academic success (Sibomana et al., 2021).

The Cooperative Number Heads Together technique (NHT) model is an educational technique that promotes student engagement, cooperation, and accountability (Kaur, 2017). Students then collaborate to discuss and answer the questions, ensuring each group member fully understands the material. This cooperative learning strategy promotes peer connection, critical thinking, and effective communication.

Engaging students in learning improves their attention and focus, encourages them to develop higher-level critical thinking abilities, and fosters meaningful learning experiences. Student involvement is only possible if students are permitted to participate or be active in the educational process.

### ***Promotes Collaboration and Teamwork***

The Numbered Heads Together Strategy describes new collaborative learning strategies promoting student teamwork and collaboration. This cooperative atmosphere improves individual comprehension and fosters important interpersonal skills, resulting in a classroom culture in which cooperation and teamwork are crucial to learning. This is highlighted in the responses of the participants:



"This strategy improved our ability to work with peers because it allows us to connect with our group members and share our ideas with them." (P2)

"Group tasks are more effective because everyone participates and shares their ideas." (P5)

"I have observed that I work better among my peers. It is more effective and enjoyable." (P6)

Students have also reported that this method increased their self-confidence and communication abilities. This is regularly experienced by the majority of the participants, as evidenced in the responses of participants 2 and 5:

"Yes, because when we use this technique, we will have to interact with our group members. You will feel more secure since you are sharing ideas with them and listening to their thoughts." (P2)

"I have acquired confidence in communicating my opinions. Presenting our group's answers has made me more comfortable contributing to the group". (P5)

Teamwork and collaborative skills are becoming increasingly crucial in academic and professional settings. Collaboration in teams is frequently an effective strategy to address complicated and non-routine problems (Avry et al., 2020). To meet these needs, higher education has shifted its emphasis from teacher-centric approaches to student engagement and collaborative knowledge building to provide students with the skills they will need at work. One teaching strategy that may be used to generate well-rounded students with good collaboration and creativity is cooperative learning (Azizan et al., 2018.).

Previous studies have shown that integrating collaborative learning can improve motivation and collaboration abilities (Moreno et al., 2007), emphasizing the relevance of social connection and shared accountability for team learning and outcomes. Each member works closely together to attain the same goals. Cooperative learning fosters teamwork values. Students develop a collaborative community by aiding one another, which improves each member's performance (Chen et al., 2018).

In essence, the Numbered Heads Together approach promotes classroom teamwork and collaboration. It encourages open communication, mutual respect, and active participation among students. This fosters an

environment where students solve problems together, preparing them for success in school and beyond.

#### IV. SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

##### *Summary*

The study was conducted at a secondary public school in Ozamiz City to enhance grade 8 students' scientific performance using the Numbered Heads Together Learning Strategy during the academic year 2023-2024. The study used a classroom-based action research approach, with 50 students chosen through purposive sampling. Data was obtained using a researcher-made test. The analysis comprises determining the mean and standard deviation and running a t-test. Specifically, the study's objectives were to (1) determine the students' performance before using the Numbered Heads Together Learning Strategy; (2) determine the students' performance after using the Numbered Heads Together Learning Strategy; (3) identify the significant difference in students' performance before and after using the Numbered Heads Together Learning Strategy; and (4) explore other observed improvements among the students after the use of the Numbered Heads Together Learning Strategy.

##### *Findings*

The study yielded the following results:

1. The students' performance did not meet expectations before implementing the Numbered Heads Together Learning Strategy.
2. Students' performance improved after using the Numbered Heads Together Learning Strategy. They performed satisfactorily.
3. Student performance was considerably different before and after using the Numbered Heads Together Learning Strategy.
4. The Numbered Heads Together Learning Strategy has resulted in additional improvements. This Strategy involves increasing responsibility and class involvement, encouraging engagement and retention, and promoting cooperation and collaboration.

##### *Conclusions*

Based on the findings, the following conclusions are drawn:

1. Students' academic performance was noticeably poor before implementing the Numbered Heads Together (NHT) Learning Strategy. This is because standard teaching approaches are not engaging

enough or adapted to students' various learning demands. As a result, students fail to learn and retain the content, which leads to poor academic achievement.

2. After using the Numbered Heads Together Learning Strategy, pupils' performance improves significantly. They produce good outcomes, demonstrating that the technique improves their learning performance. It encourages active involvement, teamwork, and accountability, contributing to better topic learning and retention.
3. The significant difference in student performance before and after using the NHT Learning Strategy demonstrates the Strategy's effectiveness in improving student learning and academic accomplishment. The approach fosters an interactive and collaborative learning environment in which students actively engage in the educational process. This Strategy enables students to discuss and exchange ideas, which improves their comprehension and memory of the information.
4. Besides academic performance increases, the Numbered Heads Together Learning Strategy has resulted in additional favorable outcomes. These include increased accountability and class involvement, increased engagement and retention, and improved cooperation and collaboration. The Strategy creates a more dynamic and supportive learning environment, resulting in these beneficial effects.

### Recommendation

Based on the findings and conclusions, the following recommendations are drawn:

1. Students should actively participate in collaborative learning activities like the Numbered Heads Together (NHT) Strategy to improve their academic performance and cooperative abilities.
  2. Teachers should use interactive teaching methods like the NHT Strategy to boost student engagement and understanding across many learning types.
  3. School administrators should encourage and support professional development opportunities for teachers, allowing them to learn and effectively integrate new teaching approaches, such as NHT, in the classroom.
  4. Teachers should highlight the significance of developing inclusive and engaging learning environments that promote active student engagement, cooperation, and responsibility to achieve academic achievement.
5. To inform and improve educational practices and policy, Additional research should be performed to assess the long-term impact of NHT and comparable tactics on student academic performance.

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