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The Effect of the Numbered Head Together (NHT) Cooperative Learning Model on Students' Understanding of Science Concepts and Social Skills Grade V of Elementary School

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Abstract

The study aims to determine the impact of the Numbered Head Together (NHT) learning model on understanding the concept of IPAS and the social skills of grade V elementary school students. This study used quantitative research using a quasi-experimental method with a nonequivalent control group design. Two classes were trated: the first experimental class that used the NHT learning model, and the second, the control class, that used the lecture method. The population of this study was the entire high class of UPT SPF Labuang Baji II Elementary School. The sample for this study consisted of VA class students, who served as the control group, while VB class students were designated as the experimental group. The data analysis technique used prerequisite tests: normality, homogeneity, independent sample t-test, hypothesis test, and manova test. The results showed the impact of the NHT type cooperative learning model on: (1) understanding the concept of ipas, with a significance value of 0.000 < 0.05. (2) students' social skills are significant, with a significance value of 0.009 < 0.05. (3) the understanding of the concept of ipas and social skills of student simultaneously, with a significance value of 0.000 < 0.05 with a predetermined statistical calculation.

Keywords: *Numbered Head Together; Understanding the Concept of Social Science; Social Skills*

Introduction

Education is an essential aspect inherent in human life, this cannot be separated from the learning process, individual and societal development, in any simple form human society requires education determined by the educational activities within it, because education is essentially a necessity of human life (Salmia, 2022).

The independent curriculum focus on student centtered learning, adapting the learning process to each students' unique needs, interests, and potential, allowing them more room to develop optimally. Furthermore, the implementation of the independent curriculum in elementary schools follows established curriculum rules and structures (Fadli, 2022).

Understanding concepts makes it easier for students to learn science because one concept is closely related to another. Therefore, if students understand the concepts of previous material, these concepts become the main foundation, a kind of preliminary knowledge, which greatly supports students' deeper understanding of the learning material later on. Conceptual understanding is the key to the learning process by concstructing the meaning of eduational messages, which are summaries of events, objects, or phenomena the occur (Saihu in Fazlurrahman, 2020).

In addition to understanding science concepts, students also need to learn how to interact effectively. This skill is crucial fot developing positive character. Social skills significantly impact a person's success in life, enabling them to collaborate with others, express and manage emotions effectively, listen to others' opinions, follow on learning, and complete tasks independenty.

The function of social skills is as a toll to build positive interactions with their peers, for example, by helping each other who are having difficulty learning, working together to keep the classroom clean, making wise decisions, communicating effectively, and being active in discussions. Students with good interaction skills are generally more confident and courageous in interacting by expressing what they think, telling everything they feel or problems that exist, and finding solutions more flexibly.

Various learning models are designed to improve the quality of the learning process and student learning outcomes, one of which can be done by implementing the NHT learning model, namely a learning method in the form of a discussion which is carried out by giving numbers to all students through quizzes or assignments that will be discussed in line with the relevant characteristics of elementary school students (Sudewiputri & Dharma, 2021).

The role of teachers inschools is crucial, not only trandorming knowledge but also providing instruction, guiding students, guiding them in the right direction, training them in skills, assessing them, and evaluating their progress in formal education, as well aas teaching them the values and norms of society. Teachers play a crucial role in developing students' social skills, including their multi-faceted role ini the learning process, serving as role models, encouragers, mentors, and facilitators (Budiono & Abdurrohim, 2020).

The NHT cooperative learning model is a method that organizes students into mixed-group to collaborate on understanding the material, complete with a unique number sequence. This numbering serves to designate who is responsible for presenting the conclusions of their team discussion to the other team members. This teaching method itself was designed by Spencer Kagan. This method allows students to exchange ideas more frequently and examine various solutions. Furthermore, this technique is effective in fostering a spirit of cooperation among students to achieve optimal learning outcomes (Pendy & Mbagho, 2020).

The NHT learning model, a method developed by Kagan, aims to involve as many students as possible in the learning process. Furthermore, this approach also serves to assess students' level of understanding of the material they have learned (Md. Padmarani Sudewiputri, 2021).

Previous research has shown that the numbered head together type of cooperative learning model such as the impact of the NHT learning model on social skills and learning achievement of class V social studies students (Beatrisida Effi Guniarti; Jamaluddin Arifin; Idawati, 2023), development of reflective storybook media based on a sociocultural approach to improve social skills and character of love for the country in class IV elementary school students (Amin Prasetyo Aji, 2022), and increasing of social studies concepts with the learning cycle 5E learning model (Laila Fatmawati, 2016).

This research was conducted because there is a clear gap between the educational objectives of the independent curriculum and the actual conditions in elementary schools, particularly in terms of students' understanding of science concepts and social skills. Field support through observations and interviews proved that conventional methods are not effective enough. Therefore, the NHT model is seen as an innovative and relevant solution based on theory, student characteristics, and previous empirical evidence.

Research Methods

This study used a quantitative approach with an experimental design. The methodology employed by the researchers was a nonequivalent control group design, or quasi-experimental design, in which the independent variable is tested against the dependent variable, conducted on a sample of the experimental or control group (Untung, 2021).

Results and Discussion

1. Results

Hypothesis testing was carried out using MANOVA analysis. The decision criterion for the MANOVA test was that if the significance level was less than 0.05, the null hypothesis (Ho) would be rejected and the alternative hypothesis (Ha) would be accepted.

Hypotheses

Ho : The Numbered Head Together (NHT) type of cooperative learning model has no influence on students' understanding of science concepts and social skills.

Ha : The Numbered Head Together (NHT) type of cooperative learning model has an influence on students' understanding of science concepts and social skills.

Table 1. Manova Tests

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Kelas	Pillai's Trace	0,363	12.846[b]	2,000	45,000	0,000	0.363
	Wilks' Lambda	0,637	12.846[b]	2,000	45,000	0,000	0.363
	Hotelling's Trace	0,571	12.846[b]	2,000	45,000	0,000	0.363
	Roy's Largest Root	0,571	12.846[b]	2,000	45,000	0,000	0.363

The data in the table shows a significance value of 0.000, which is below the 0.05 threshold. This means there is a significant difference in the NHT learning model's impact on students' understanding of science concepts and social skills.

The results of the MANOVA test using SPSS version 22 also confirm that the difference between the experimental and control classes is statistically significant:

Table 2. Tests of Between-Subjects Effects

Tests of Between-Subjects Effects							
Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partiel Eta. Squared
Corrected Model	Understanding of Concepts	145.653[a]	1	145.653	21.214	0,000	0.316
	Social Skill	740.232[b]	1	740.232	7.526	0,009	0.141
Intercept	Understanding of Concepts	11745.653	1	11745.653	1710.752	0,000	0.974
	Social Skill	87241.482	1	87241.482	886.986	0,000	0.951
Kelas	Understanding of Concepts	145.653	1	145.653	21.214	0,000	0.316
	Social Skill	740.232	1	740.232	7.526	0,009	0.141
Error	Understanding of Concepts	315.826	46	6.866			
	Social Skills	4524.435	46	98.357			
Total	Understanding of Concepts	12337.000	48				
	Social Skill	93330.000	48				

Based on the test results using SPSS above, it is known that the significance value of the Test of Between Subjects Effects test. The significance value for the dependent variable of understanding the concept of science and students' social skills is 0,000 and 0,009, which means it is smaller than the alpha limit of 0,05, so it can be concluded that there is a significant difference in the ability to understand the concept of science and social skills in the control and experimental classes.

2. Discussion

The research findings show that the use of the NHT learning method has a significant positive impact on students' understanding of science concepts and social skills. This means that the application of the NHT learning model can encourage students to be more actively involved during learning and facilitate the understanding of the concepts of the subject matter by being happier to exchange opinions with their group members, and being brave in presenting the results of their group discussions in front of the teacher and other friends. Students' social skills also increased, this indicates that students began to show courage in communicating and a sense of responsibility and were able to respect the opinions of other students with good responses (Ufie, 2020).

Furthermore, a study conducted (Laura M. Smith and Robert T. Brown, 2014) that the NHT collaborative learning method was roven to be successful in improving student's social skills, such as students being accepted by their peers, better communication skills, and active participation in group activities.

The NHT learning model is considered suitable for implementation in the teaching and learning process because it has been proven effective. In addition to improving student understanding, this model also makes group work more enjoyable, encourages activeness, and allows students to exchange views more freely. This happens because the NHT learning model is designed to motivate students, discuss and explain the concept of science to each other to their group members, so that a deeper understanding is

created together, and the group members are invited to collaborate, listen to the opinions of others, respect each other, and practice the NHT learning model also helps develop speaking and presentation skills, because each student is required to understand the results of group discussions and be ready to present them in front of the class, and become more confident in conveying ideas orally. For a group to be successful, they help and encourage each other, so that each member can develop better together (Slavin, 2016).

Conclusion

This study concludes that the NHT cooperative learning model has been shown to have a significant effect on fifth-grade elementary school students' mastery of science material, with a very strong level of influence. Cooperative learning using the NHT model has been shown to have a significant positive influence on fifth-grade elementary school students' social skills, with a very strong level of influence. Simultaneously, the NHT cooperative learning model has an effect on fifth-grade elementary school students' understanding of science concepts and social skills. This means that the better students' understanding of science concepts, the better their social skills.

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