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The Influence of Application of The Number Head Together Learning Model Based on Edutainment Responsibility Learning Application (EDURESPECT) on Problem Solving Ability of Elementary Students

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ABSTRACT

This study has the objectives of (1) solving the average difference in students' problem-solving abilities, (2) testing the increase in students' problem-solving abilities. This research is included in the pre-experimental quantitative research with the one group pretest posttest design. The data in this study were analyzed using the paired sample t test which aims to test the average difference, and the n-gain score test to test the increase. The research was conducted in class V SD 5 Bae. From this study, the results obtained were (1) there were differences in students' problem-solving skills before and after the NHT model was applied with edutainment responsibility learning application media, (2) there was an increase in students' problem-solving abilities with a percentage of 52.66%.

INTRODUCTION

Thematic learning is an integrated learning which is a learning system that allows students, both individually and in groups, to be able to actively explore and discover scientific concepts and principles in a holistic, meaningful, and authentic way (Akrim, 2018). Thematic learning is learning that combines two or more subjects that can build broader insights according to the development of students.

Thematic learning will give a new color to students and educators because learning is not just fixated on one subject. The implementation of integrated thematic learning is expected to help students understand the concepts of the material being taught, because it is in accordance with their cognitive development (Ardianti et al., 2020; Ardianti et al., 2017). Students will be directed to play an active role in the teaching and learning process, so that students can gain direct experience and are trained to be able to discover the various knowledge learned.

Sambada (2012) said that encouraging students to be actively involved in the learning process in which there is organizing and discovery of knowledge information, will help students to produce increased knowledge and skills in thinking. In other words, when students are trained to be able to solve a problem, these students become skilled in gathering relevant information, analyzing information, and realizing the importance of re-examining the results they have obtained. Students really need problem-solving skills, because through this, students are trained to be able to be independent in finding solutions to a problem that has been presented by the teacher, as well as various accompanying knowledge, in order to be able to produce knowledge that is truly meaningful.

But in fact the problem solving abilities of students are also still relatively low, which is marked by an average student learning outcome of 62.9. Supported by the teacher's opinion in an interview on Friday, August 26, 2022, which said that students had difficulty working on questions related to problem solving.

Lestari et al. (2020) in his research said that the learning model used by teachers in teaching activities is one of the causes of low student problem-solving abilities. The learning model applied by the teacher is still not able to increase student learning interest where students are not able to articulate their thoughts. So it can be said that learning has not been attempted to improve problem solving abilities.

One effort that can be taken to improve students' problem-solving skills is to apply appropriate learning models in learning activities. The application of the NHT type cooperative model can help students understand and master learning concepts and encourage students to improve cooperation (Widyastuti, 2021).

In addition to the application of learning models, the use of instructional media also influences student learning interest. Student enthusiasm in learning activities can be overcome by building a good and interesting classroom atmosphere during learning activities. Using good learning media can facilitate and make students actively involved in learning activities (Dhamayanti, 2021).

The world of education has experienced a change from a learning process that is integrated with the world of digital-based education, which is referred to as the era of revolution 4.0 (Putra, 2020; Wanabuliandari et al., 2019). Therefore, teachers must also be able to create digital-based learning, one of which is by using learning applications as learning media.

The use of E-Learning as a learning medium is an effort to create a pleasant learning atmosphere. Elshareif et al. (2021) said that E-Learning is an important means of acquiring knowledge and skills at a higher level. Therefore, the use of E-Learning learning media can help students to improve the quality of their thinking.

In this study, researchers used E-Learning media in the form of edutainment responsibility learning applications. The media contains material content that will be conveyed by the teacher to students in the form of files, text, images, videos, and sound recordings. Students can access the material content and quiz questions provided by the teacher and can immediately see the teacher's response through the application used.

The use of instructional media can increase students' desire and interest in learning, can motivate and stimulate students to learn, and even has a good psychological effect on students (Tetep et al., 2022). The use of online-based learning media is the character of education in this era, where learning currently combines digital-based learning through face-to-face learning (Prestiadi, 2020).

LITERATURE REVIEW

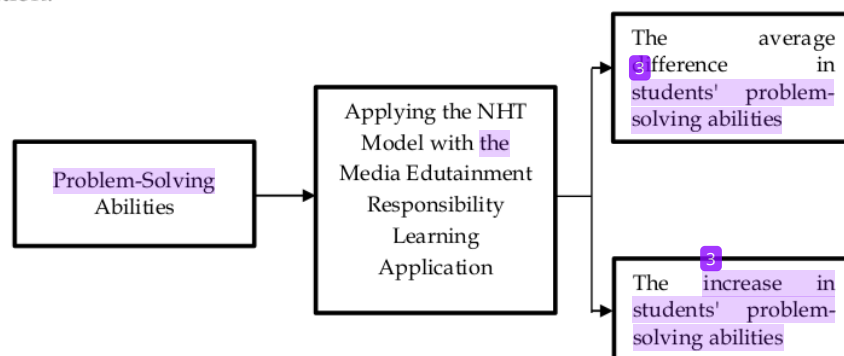
Solving the average difference in students' problem-solving abilities

In this study it is hoped that there will be an effect of the application of the NHT learning model with edutainment responsibility learning application media on students' problem solving abilities. In line with this Brilliana et al. (2019) in his research stated that there was an influence of the Numbered Head Together learning model on problem solving abilities and student learning outcomes in the mathematics subject matter of multiplication arithmetic operations and division of class III SD Kemaja Bhayangkari 1 Surabaya
H1: There is a difference in the average problem-solving ability of students before and after the application of the NHT learning model with the media edutainment responsibility learning application.

Testing the increase in students' problem-solving abilities

After applying the NHT learning model with edutainment responsibility learning application media, it is hoped that it can improve students' problem solving abilities. This is in accordance with the statement of Emiyati et al. (2022) in his research which shows that mathematical problem-solving skills can be improved through the application of the Numbered Head Together (NHT) learning model to class VIII A students of Negeri 2 Muara Bango.

H2: There is an increase in students' problem solving abilities after applying the NHT learning model with the media edutainment responsibility learning application.



Picture 1. Conceptual Framework

RESEARCH METHODS

The location of this research was carried out at SD 5 Bae, Bae District, Kudus Regency. The place was chosen because there were some students who had low problem-solving abilities, and the school was located in a rural area.

This research is included in the pre-experimental quantitative research with the one group pretest posttest design. This design aims to compare the condition of a group before and after being given treatment (treatment). In this study, students' problem-solving abilities could be observed directly during the learning process. In addition, before applying the NHT learning model with edutainment responsibility learning application media, the research sample was given a pretest to determine the extent of students' problem solving abilities. After that, all students were given treatment by applying the NHT learning model with edutainment responsibility learning application media in learning.

In this study, the population was fifth grade students at SD 5 Bae, Bae District, Kudus Regency, because in that class there were several students who had low problem-solving skills. The sampling technique used in this study was a purposive sampling technique with saturated sampling. The researcher used a purposive sampling technique for the reason that the school used for the research had criteria that matched the research, where there were students who still had low problem-solving skills in class V SD 5 Bae. Therefore, the sample in this study were all fifth grade students at SD 5 Bae, totaling 13 students.

RESEARCH RESULT

The research was carried out at SD 5 Bae which is located in Baekrajan Village, Bae District, Kudus Regency. The research sample was all fifth grade students at SD 5 Bae, consisting of 13 students. The physical condition at SD 5 Bae is quite good, there are air vents, tables, chairs and lighting in the classrooms.

Based on the results of interviews and tests in the preliminary study that had been carried out, the researchers knew the problems faced by teachers and students in the learning process in class V SD 5 Bae. Based on the results of the preliminary study test questions, data was obtained that on average students still had difficulty solving questions related to problem solving abilities. The results of the problem-solving ability test during the preliminary study showed that students who scored above the KKM were 6 students (46.2%) and those who scored below the KKM were 7 students (53.8%) with an average score of 62.9 .

This study applies the NHT learning model with edutainment responsibility learning application media in the thematic learning theme 6 Heat and its Transfer, sub theme 2 Heat Transfer Around Us. The following is a recap of student scores based on student work sheets, along with descriptions related to ongoing learning activities.

Table 1. Recap of The Thematic Learning Values of Students in Theme 6, Sub-Theme 2 Learning 1-6

	PB 1	PB 2	PB 3	PB 4	PB 5	PB 6
Lowest Value	25	25	50	50	50	75
The highest score	100	100	100	100	100	100
Average	55,76	61.53	75	82,69	90.38	96.15

1) Meeting 1

At the first meeting, students were given a pretest of problem solving abilities. The pretest consists of 10 questions and the questionnaire consists of 20 questions. Students are given 45 minutes to work on questions, 30 minutes to fill out a questionnaire. Work on new questions can begin 10 minutes after the researcher enters the classroom.

2) Meeting 2

At the second meeting the researchers conducted research by providing learning for theme 6, sub-theme 2, 1st lesson. At the beginning of learning the researcher asked students to prepare all the learning needs. At this second meeting, the researcher provided learning whose steps were adjusted to the steps contained in the NHT learning model. In addition, students are introduced to learning media in the form of edutainment responsibility learning applications which will be used while researchers are filling out learning activities in class V SD 5 Bae. Because students have not adapted well to the learning provided by researchers, this has resulted in the low scores of some students. There is 1 student with a value of 0, 4 students with a value of 25, 2 students with a value of 50, 3 students with a value of 75, and 3 students with a score of 3. The average score of students at this meeting was 55.76. Students who get low scores are caused by students not understanding how to use media properly and many students who still cannot be conditioned in learning activities.

3) Meeting 3

At the third meeting the researchers carried out research by providing learning for theme 6, sub-theme 2, the 2nd lesson. At the beginning of learning the researcher asked students to prepare all the learning needs. At this third meeting, the researcher provided learning whose steps were adjusted to the steps contained in the NHT learning model. Students have started to get to know the edutainment responsibility learning application which is used as a medium in learning activities. But some students are still not fully adapted to the learning activities carried out by researchers, so there are still students with low scores. At this meeting, the average student score has increased even though the increase is not significant. The average student score is 61.53.

4) Meeting 4

At the fourth meeting the researchers conducted research by providing learning for theme 6, sub-theme 2, the 3rd lesson. At the beginning of learning the researcher asked students to prepare all the learning needs. At this fourth meeting, the researcher provided learning whose steps were adjusted to the steps contained in the NHT learning model. Students have mastered the edutainment responsibility learning application media used by researchers in learning activities. In addition, students are also familiar with the learning activities carried out by researchers. But at this meeting there were still some students who could not be conditioned and were still experiencing confusion in accessing the edutainment responsibility learning application. There are 4 students with a value of 50, 5 students with a value of 75,

5) Meeting 5

At the fifth meeting the researchers conducted research by providing learning for theme 6, sub-theme 2, the 4th lesson. At the beginning of learning the researcher asked students to prepare all the learning needs. At this fifth meeting, the researcher provided learning whose steps were adjusted to the steps contained in the NHT learning model. At this meeting there were still 2 students who could not be conditioned. They tend not to pay attention and choose to play alone. There were 2 students with a score of 50, 5 students with a score of 75, and 6 students with a score of 100. The average student score at this meeting was 82.69.

6) Meeting 6

At the sixth meeting the researchers conducted research by providing lessons for theme 6, sub-theme 2, the 5th lesson. At the beginning of learning the researcher asked students to prepare all the learning needs. At this meeting, the researcher provided learning whose steps were adjusted to the steps contained in the NHT learning model. Almost all students have mastered the edutainment responsibility learning application media used by researchers in learning activities. There was only 1 student who could not be conditioned in learning activities. The student always complains when ordered to do assignments. The average student score in this 5th lesson is 90.38. 1 student gets a score of 50, 3 students gets a score of 75, 9 students gets a score of 100.

7) Meeting 7

At the seventh meeting the researcher conducted research by providing lessons for theme 6, sub-theme 2, the 6th lesson. At the beginning of learning the researcher asked students to prepare all the learning needs. At this meeting, the researcher provided learning whose steps were adjusted to the steps contained in the NHT learning model. There was 1 student with a score of 50, 2 students with a score of 75, and 10 students with a score of 100. The average student score at this meeting was 96.15.

8) Meeting 8

At the last meeting, students were given a posttest problem solving ability which consisted of 10 questions. Students are given 45 minutes to work on the questions. Work on the questions began 10 minutes after the researcher entered the classroom.

Data on students' problem solving abilities were obtained from the results of the pretest and posttest of problem solving abilities in the thematic learning theme 6 Heat and its Transfer, sub theme 2 Heat Transfer Around Us. This test is used to determine students' problem-solving abilities before and after receiving treatment. The rating scale used is 1-100. The KKM score that has been determined from the school is 70. The form of the test in this study is in the form of 10 descriptive questions, the answers to which are adjusted according to the indicators of problem solving ability. The pretest and posttest results of students' problem solving abilities are as follows.

Table 2. Recapitulation of Pretest and Posttest Results of Students' Problem Solving Abilities.

	<i>Pretest</i>	<i>Posttest</i>
Highest Score	73	91
Lowest Score	33	65
Average Score	60,31	81
Number of Completed Students	4 students (30.8%)	11 students (84.6%)
Number of Unfinished Students	9 students (69.2%)	2 students (15.4%)

Based on the table regarding the problem solving abilities of fifth grade students at SD 5 Bae, it can be seen that the application of the NHT learning model with edutainment responsibility learning application media shows that after being given treatment the average student score is higher than before being given treatment. In assessing the problem-solving ability to get initial results before being given treatment of 60.3% compared to after being given treatment of 81% higher than before. So it can be stated that student scores have

increased by 20.7%. The lowest score during the pretest was 33 while the lowest score during the posttest was 65. The highest score during the pretest was 73 while the lowest score during the posttest was 91.

In this study, 2 tests will be carried out, namely the average difference test and the increase test.

1. Test the average difference

The results of testing the hypothesis in this study used the t test, namely the Paired Sample T Test. This test is used to determine the comparison of pretest and posttest results in assessing problem solving abilities. Following are the results of the t test on assessing students' problem solving abilities.

Table 3. Output Of Paired Samples T Test Of Students' Problem Solving Abilities

Paired Samples Test							
Paired Differences							
Means	std. Deviation	std. Error Means	95% Confidence Interval of the Difference		Q	df	Sig. (2-tailed)
			Lower	Upper			
-20,692	8,380	2,324	-25,757	-15,628	-	12	.000
					8,903		

These results indicate that the value is $0.000 < 0.05$, these results are in accordance with the expected results, namely the significance $\leq 0,05$ which shows the understanding that there are differences in problem solving abilities before and after the implementation of the NHT learning model with media *edutainment responsibility learning application*.

2. Improvement Test Results

The results of increasing testing in this study used the n-gain score test. This test is used to determine the increase in pretest and posttest results in assessing students' problem solving abilities. The following are the results of the n-gain score test on assessing students' problem solving abilities.

Table 4. Output N-Gain Scores of Students' Problem Solving Abilities

Descriptive Statistics					
	N	Minimum	Maximum	Means	std. Deviation
Ngain_Score	13	.17	.73	.5267	.15251
Ngain_Persen	13	16.67	72.73	52.6675	15.25109
Valid N (listwise)	13				

The test results for increasing the value of the pretest and posttest showed a result of $0.52 > 0.3$ so that it is included in the medium category. So it can be concluded that the application of the NHT learning model with *edutainment responsibility learning application* media can improve problem solving abilities at the moderate category level. Based on the n-gain test, the

percentage increase in problem solving ability after applying the NHT learning model with edutainment responsibility learning application media is 52.66%.

DISCUSSION

Before using the NHT learning model with edutainment responsibility learning application media, a pretest was carried out first, after the pretest was carried out, the model and media used by the researcher were applied and at the last meeting it was ended by giving a posttest. This treatment aims to see the average difference in the ability of problem solvers before and after the NHT learning model is applied with the media edutainment responsibility learning application. The analysis was obtained from the paired sample t test which assessed problem solving abilities. Based on the test calculations, it shows that there is a difference in the average value of students' problem solving abilities before and after being given treatment.

Learning activities will be maximized when the teacher can improve students' problem-solving abilities and turn on students' curiosity (Amalia, 2022). Therefore, learning activities need to be designed properly so that teachers can maximize their delivery of learning.

The enthusiasm of students in participating in learning activities is also influenced by the teaching materials used by the teacher in teaching activities. As one of the components in learning, teaching materials can determine the success or failure of a learning process (Ulya. H., 2021).

The application of the NHT learning model with the edutainment responsibility learning application media shows that after being given treatment the results of students' problem solving abilities are higher than before being given treatment. This is in accordance with what has been stated by Riansyah, et al. (2020) that the class that was treated with the NHT learning model had a higher level of problem-solving ability compared to a class that was only given conventional learning. The NHT learning model can help students to solve problem-based questions so that students' problem-solving abilities can increase.

The difference in students' problem-solving abilities can be said to be higher based on the results of the posttest conducted by the researcher. Learning by applying the NHT model becomes more meaningful so that students will be more motivated and enthusiastic in participating in learning activities. As a supporter of the application of the NHT model, media is used in the form of an edutainment responsibility learning application. The media can be used to provide pictorial and/or video content, test questions, and group activity forums.

Analysis of increasing students' problem-solving abilities was obtained through the n-gain score test and the n-gain percent test. Based on the results of these calculations, it shows that there is an increase in students' problem solving abilities after applying the NHT learning model with edutainment responsibility learning application media.

The application of learning models can create a fun and meaningful learning atmosphere for students. So, teachers must be able to change the way

of teaching that only uses conventional methods into learning by applying cooperative learning models. The cooperative learning model is marked by the formation of groups in learning as a place for students to be able to discuss and exchange opinions. One of the learning models that can be applied by teachers in learning activities is the NHT type cooperative learning model. In the NHT type cooperative learning model, it provides opportunities for students to be able to work in groups so that students can be active in learning activities (Noor et al., 2014)

Tambunan et al. (2020) said that the Numbered Head Together (NHT) learning model had a positive influence on students' mathematical problem solving abilities. The NHT model can encourage students to be actively involved in the learning process. The discussion activities contained in the steps of the NHT learning model can provide students with the opportunity to exchange ideas or opinions in solving a problem that is presented in groups. Students will be trained to be able to consider possibilities in solving problems, so that students will be accustomed to processing their mindset in solving a problem independently.

CONCLUSIONS AND RECOMMENDATIONS

Based on the research that has been carried out, the results and discussion of the research on the application of the NHT model with edutainment responsibility learning application media on students' problem solving abilities in thematic learning theme 6 (heat and its transfer) sub-theme 2 (heat transfer around us) it can be concluded that (1) there is the average difference in students' problem-solving abilities in thematic learning before and after application of the NHT model with media edutainment responsibility learning application with a significance level $0.000 < 0.05$ up

H_0 rejected and accepted, (2) students' problem solving abilities in thematic learning H_1 before and after application of the NHT model with media edutainment responsibility learning application increased of 52.66% in the medium category.

Based on the research results, the application of the NHT learning model with edutainment responsibility learning application media is highly recommended to be able to improve students' problem solving abilities. the application of the NHT model with edutainment responsibility learning application media in learning can be used as a reference by teachers to create fun learning activities for students.

ADVANCED RESEARCH

The researcher's suggestion regarding the application of the NHT learning model with edutainment responsibility learning application media on students' problem solving abilities in thematic learning theme 6 (heat and its transfer) sub-theme 2 (heat transfer around us) is that researchers must prepare adequate facilities and infrastructure in the form of cellphones or laptops so that students can access the media used by researchers. In addition, there are still students who have not reached the KKM so there is a need for remedial for students who have not reached the KKM in order to obtain the desired results.

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