

THE EFFECT OF NEARPOD-BASED AIR LEARNING MODEL ON PROBLEM SOLVING ABILITY IN NATURAL RESOURCES MATERIAL OF GRADE 4 STUDENTS AT SDN 54 BANDA ACEH

Nidar Yusuf¹, M.Usman²

¹Universitas Bina Bangsa Getsempena, Banda Aceh, Indonesia

²Universitas Serambi Mekkah Banda Aceh, Indonesia

* Corresponding email: *nidar@bbg.ac.id*

ABSTRACT

This research is motivated by the low problem-solving ability possessed by students. There are still many students who do not have the ability to solve problems well. Problem-solving abilities in the material of natural resources are still rarely developed. Conventional learning models with lecture methods are still the learning models that are often applied during learning activities. Technology-based learning media are also rarely applied in learning. The purpose of this study is to determine whether there is a difference and how big the difference is between the application of the Nearpod-based AIR learning model and the conventional learning model on the problem-solving abilities of grade 4 students. This study uses a quantitative approach with a quasi-experimental method with a pre-test and post-test control group design. The difference between the experimental class and the control class can also be seen through the results of the N-Gain score. The experimental class produced an N-Gain score of 0.66 while the control class produced an N-Gain score of 0.38. Data analysis using the T-Independent test calculation with a significance level of 0.05 found the final result of 0.000 which is less than 0.05 so H₀ is rejected and H₁ is accepted. Based on the data analysis carried out, it can be concluded that there is a difference between the application of the Nearpod-based AIR learning model and the conventional learning model on the problem-solving abilities of grade 4 students.

Keywords: *Air learning model Nearpod, problem solving ability, grade 4 student.*

INTRODUCTION

Facing the 21st century is often marked by the increasingly developed use of technology and science in all components of life, including the learning process. Therefore, we need an education system that is in line with 21st century learning which is able to provide various 21st century skills for students so they can face every challenge in every aspect of their lives. According to Aji in Fitri et al (2020: 78), 21st century learning is learning that provides various 21st century skills to students, including 4C skills which include Collaboration, Communication, Creativity and Innovation, and Critical Thinking and Problem Solving (critical thinking and problem solving). 21st century skills are very important to develop in learning, because they are aimed at improving students' abilities to be able to compete and keep up with current developments. One of the important skills that needs to be mastered in the 21st century is that it is an ability that is very important to develop, because it cannot be denied that in essence every human being cannot be separated from the problems that arise in his life. However, in contrast to the existing reality, problem solving abilities in general are still very minimally developed. So far, what has dominated is only the development of mathematical problem solving abilities. In fact, problem-solving abilities do not always lie solely in mathematical problem-solving abilities, but also in problem-solving abilities in all components of life. Problem solving abilities are also related to how students can solve problems that relate to various phenomena that occur in the student's immediate environment, such as utilizing the potential of natural resources, as well as efforts to balance and preserve natural resources. The natural resources material studied in elementary schools, especially by grade 4 students, is about issues of environmental balance, how to protect the environment, characteristics of the living environment, as well as preserving and utilizing natural resources in the environment. However, in reality, based on the results of interviews with grade 4 teachers at SDN 54 Banda Aceh, the problem solving abilities of grade 4 students at this elementary school in natural resources material are still considered less than optimal. Many students still do not have the ability to solve problems well. In line with this, Sujak and Dharma in Primayana (2019: 87) stated that there were 73 out of 100 Indonesian students who took part in international level competitions organized by PISA (Program for International Students Assessment) who were at the lowest level (level 1). on problem solving abilities. This illustrates that the problem solving abilities of Indonesian students are still very low and there are still many students in Indonesia who are not yet proficient in solving problems optimally. According to Hanifa et al (2019: 124), low problem-solving abilities are influenced by several factors, including internal factors originating from students' low interest and motivation in learning, as well as students' low intelligence and cognitive abilities. Meanwhile, external factors that also have an influence on students' low

problem solving abilities include the use of inappropriate learning methods and models, the use of inappropriate learning media, lack of motivation from teachers, and the creation of an inappropriate learning environment so that students' problem solving abilities to be less than optimal. with the demands of the 21st century which expects learning to be carried out creatively, actively and innovatively through the use of available technology and asking students to become accustomed to solving problems found in everyday life. Thus, implementing an appropriate learning model is an alternative that can be used to deal with these problems. One of several learning models that researchers consider appropriate to implement in this research is the Nearpod-based Auditory, Intellectually, and Repetition (AIR) learning model. The definition of the AIR learning model according to Shoimin (2014: 29) is an acronym for Auditory, Intellectually, and Repetition. Furthermore, Suherman in Shoimin (2014: 29) defines that the meaning of auditory is learning that must be carried out through the activities of listening, presenting, listening, speaking, responding, arguing and expressing opinions. Meanwhile, Intellectually, Suherman in Anwar & Marudin (2018: 28-29) states that Auditory is learning that is carried out through the activities of speaking, listening, listening, presenting, expressing opinions, arguing, responding and discussing. Meanwhile Intellectually is learning that is carried out by utilizing thinking skills through the activities of finding, identifying, investigating, constructing, solving problems, creating and applying. Then Repetition in the AIR learning model is an activity of repeating material that has been taught to students through practicing questions, giving assignments, or quizzes. Meanwhile, Huda (2017: 289) defines auditory as learning that prioritizes the use of words and sounds that are produced and remembered through discussion activities. Intellectually according to Meier in Huda (2017: 290) is learning that prioritizes the use of intelligence in thinking to create relationships, meaning, plans and ideas in an experience, as well as formulating questions, and then solving problems. Meanwhile, according to Huda (2017: 291), repetition is a repetition activity in learning which aims to ensure that students gain more depth and broaden their understanding of the material through giving assignments or quizzes so that it is hoped that students can solve problems more easily. Based on the understanding of the Auditory, Intellectually, and Repetition learning model according to experts which has been explained previously, it can be concluded that Auditory, Intellectually, and Repetition (AIR) is a learning model consisting of Auditory, which means learning is carried out through speaking activities, presentations, listening, paying attention, responding, discussing, and expressing opinions. Meanwhile Intellectually is learning that is carried out using thinking skills through activities of identifying, finding, creating, solving problems and applying them. Then Repetition is an activity of repeating material in learning which aims to ensure that students gain more depth and broaden their understanding of the material either through working on questions, giving assignments or quizzes. According to Aslami (2021: 137),

Nearpod is a software application that can be used to support learning activities. Nearpod can be accessed via the website or by downloading via Play Store on cell phones, laptops, computers or other technological devices. In line with this opinion, Nurhamidah (2021 : 82) also defines Nearpod as an application in the form of software that can be applied as support for interactive learning activities whose use can be done free of charge for both teachers and students without being limited by space and time. Meanwhile, according to Minalti and Erita in Faradisa et al (2021: 2) Nearpod is a learning application that can be used online or offline which allows students to interact directly or indirectly. Nearpod media has many interesting features that can be applied by teachers as supporting applications in learning activities, such as designing learning activities, material simulations, creating questions, as well as various other interesting activities such as quizzes and games that are interactive and also fun to apply in activities. learning. Based on the understanding of Nearpod according to experts that has been explained previously. In line with this opinion, Meier in Simamora (2019: 32) states that the AIR learning model includes 3 aspects, including: 1) Auditory means learning by involving the activities of listening, responding, arguing, presenting, speaking and listening, and expressing opinions. 2) Intellectually means learning activities that include students' internal thinking abilities in using their intelligence to consider the various knowledge and experiences they have. Repetition means repeating again which is important to do in learning aimed at making students' understanding broader and deeper. Furthermore, so that the repetition stage can attract students' interest, the Nearpod application is used as a medium for carrying out repetition activities through interactive quizzes. The steps for learning to use the Nearpod application according to Aslami (2021: 140-142) are: 1) Register an account by selecting sign up or log in if you have previously registered or have an account, 2) The account that can be used by teachers to register or enter the Nearpod application can be a previously owned Google or office email account. If it turns out that the teacher does not have these two accounts, then the teacher can create a new email by entering it in the email and password column provided. 3) After the teacher successfully has an account and registers, the teacher can then create classes, as well as learning plans such as class modules by utilizing the features in the create section.

METHODS

This study uses a quantitative approach with a quasi-experimental method with a pre-test and post-test control group design in accordance with the quasi-experimental design. The quasi-experimental method is applied in this study where the formation of the control group and the experimental group is not

formed randomly (Budiastuti & Bandur, 2018: 11).

Table 1.1 Research Design

Class	Pre test	Treatment	Post test
Experimental	O1	X	O2
Control	O3		O4

documentation in the form of photos of learning activities and student answer sheets and tests in the form of pretests and posttests given to students before receiving the Nearpod-based AIR learning model treatment, while the posttest was given after the application of the Nearpod-based AIR learning model to detect the results of the application of the Nearpod-based AIR learning model on the problem-solving abilities of grade 4 students.

The data analysis technique used in this study is to use inferential statistics. To test the hypothesis using a different test, namely the t-independent test. And the N-Gain Test is tested by calculating the difference related to the pretest and posttest scores. This score is seen in order to determine the quality of the increase in students' problem-solving abilities based on the table according to Hake in Rosidah et al. (2022: 12) as follows:

Table 3. 6 Normalized Gain Score Criteria

Skor Gain	Category
$g > 0,7$	high
$0,3 < g < 0,7$	medium
$g < 0,3$	low

RESULTS AND DISCUSSION

a. Description of Control Group Student Value Data

Table 4.1

Data on Problem Solving Ability Scores of Control Class Students
(Pretest)

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Pretest Kontrol	28	50	75	59.75	7.658
Valid N (listwise)	28				

Table 4. 2

Data on Problem Solving Ability Values of Control Class Students
(Posttest)

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Posttest Kontrol	28	67	88	76.25	6.346
Valid N (listwise)	28				

Description of Experimental Group Student Grade Dat

Table 4. 3

Data on the Problem Solving Ability Values of Experimental Class Students
(*Pretest*)

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Pretest Eksperimen	28	50	75	59.89	7.680
Valid N (listwise)	28				

Table 4. 4

Data on the Problem Solving Ability Values of Experimental Class Students
(*Posttest*)

Descriptive Statistics

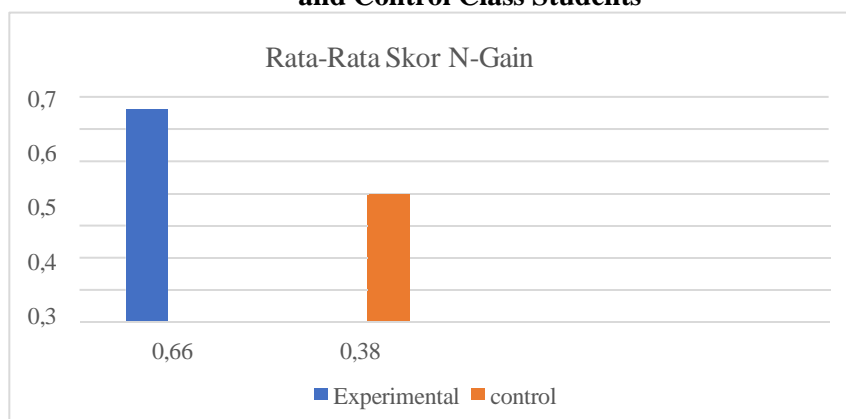
	N	Minimum	Maximum	Mean	Std. Deviation
Posttest Experimental	28	71	96	86.11	7.757
Valid N (listwise)	28				

Table 4. 7 Skor N-Gain

Class	Rata-Rata Skor N-Gain
Experimental	0,66
Control	0,38

Figure 1.1

Histogram of N-Gain Test of Problem Solving Ability of Experimental and Control Class Students



able 4. 10

T-Independent Test of Problem Solving Ability
Independent Samples Test

Student problem solving ability	Levene's Test for Equality of Variances		t-test for Equality of Means			Hypothesis	Decision
	F	Sig.	t	df	Sig. (2-tailed)		
Equal variances Assumed	1.168	.285	5.701	54	.000	H0 Rejected	There are differences
Equal variances not Assumed			5.701	49.936	.000	H0 Rejected	There are differences

Based on the results of the hypothesis test of students' problem-solving ability data using the T-Independent test in table 4.10, the Sig. (2-tailed) value was obtained for the use of the Nearpod-based AIR learning model, which is 0.000 with a significance level of 0.05 and the following decision-making criteria:

If Sig. < α then H0 is rejected If Sig. $\geq \alpha$ then H0 is accepted

Obtaining a significance value of less than 0.05 indicates that H0 is rejected and H1 is accepted, so it can be stated that there is a difference between students who learn using the Nearpod-based AIR learning model and students who use conventional learning models.

The average pretest score produced by students in the control class with the conventional learning model was 59.75 and the average posttest score was 76.25. Meanwhile, the experimental class with the Nearpod-based AIR learning model produced an average pretest score of 59.89 and an average posttest score of 86.11. This proves that there is a difference between the two classes that were given treatment and the class that was not given treatment. The difference between the experimental class and the control class can also be seen through the N-Gain score results. The experimental class produced an N-Gain score of 0.66 while the control class produced an N-Gain score of 0.38 with a difference between the two scores of 0.28 in the moderate category. Based on the results of the average posttest value of the experimental class of 86.11 and the average posttest value of the control class of 76.25, there is a difference of 9.86 with a t-count of 5.701 and an f-count of 1.168 and a significance value of 0.000 not exceeding 0.05, meaning that H0 is rejected and H1 is accepted. It can be concluded that the use of the Nearpod-based AIR learning model has a significant influence on students' problem-solving abilities in natural resource materials. This can happen because in problem-solving abilities there are several factors that influence it, in line with Hilman's opinion in Hanifa et al. (2019: 124) the factors that also influence problem-solving abilities include internal factors which include cognitive abilities, intelligence, and interests in

students. In addition, there are also other factors that also influence problem-solving abilities, namely external factors which include the use of learning models or methods applied by teachers in the classroom, the learning environment formed, and the provision of motivation given by teachers during learning. The use of learning models is one of the factors that influences students' problem-solving abilities. In this study, the learning model applied to improve students' problem-solving abilities is the Nearpod-based AIR learning model. This is in line with the opinion of Afryanto (2021: 207) who stated that the Auditory, Intellectually, and Repetition (AIR) learning model views that learning will run more effectively if it focuses on three things, namely Auditory, Intellectually, and Repetition. Auditory is the use of the sense of hearing which is used in learning by listening, speaking, discussing, presenting, and expressing opinions. Intellectually means the use of thinking skills that are trained through reasoning, creating, and problem-solving activities. And Repetition which means repeating in learning activities so that students' understanding becomes broader and deeper which is trained through practice giving questions or quizzes. The application of Nearpod media in this learning is carried out at the stage of providing material through slides and providing interactive quiz exercises at the repetition stage when implementing the Nearpod-based AIR learning model with the aim of attracting students' interest when carrying out repetition activities. The opinion that supports this was put forward by Minalti and Erita in Faradisa et al. (2021: 2) who stated that Nearpod media has many interesting features that can be applied by teachers as supporting applications in learning activities, such as designing learning activities, simulating materials, creating questions, and various other interesting activities such as quizzes and games that are interactive and also fun to apply in learning activities. By using this Nearpod-based AIR learning model, students are asked to get used to using their sense of hearing and thinking skills in order to be able to discuss and solve the problems given, and to repeat them in the form of fun technology-based interactive quizzes so that students are able to solve problems related to natural resource material in everyday life well.

CONCLUSION

The significant difference can be seen in the average posttest score produced by control class students, namely 76.25. Meanwhile, the average posttest score for experimental class students was 86.11. The difference between the experimental class and the control class can also be seen through the N-Gain score results. The experimental class produced an N-Gain score of 0.66, while the control class produced an N-Gain score of 0.38 with the difference between the two scores being 0.28 in the medium category. Based on the results of the average posttest score for the experimental class of 86.11 and the average posttest score for the control class of 76.25, there is a difference of 9.86 and a significance value of 0.000 is not more than 0.05, which means that H₀ is rejected and H₁ is accepted. It can be concluded that the use of the Nearpod-

based AIR learning model has a significant influence on students' problem solving abilities in natural resource material.

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