

The Relationship between the Use of Pyramid Hologram Media and Student Activities in Science Learning in Elementary Schools

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ABSTRACT

The purpose of this study was to determine whether there was a positive and significant relationship between the use of pyramid hologram media and student activity in science learning in elementary schools. The 4C class research sample consisted of 28 students selected using random sampling techniques. The type of research conducted is quantitative with a correlational model. Research data collection techniques use observation and questionnaires. While the instruments used are observation sheets and questionnaires. Data analysis techniques use statistical analysis through product-moment correlation tests. Based on the results of the study, with a significant value of $0.031 < 0.05$, it shows that there is a positive and significant relationship between the use of pyramid hologram media and student activity in science learning in elementary schools.

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1. INTRODUCTION

Education is a basic milestone for children to prepare for life in the future through learning activities for self-quality in social life in society. In accordance with Law Number 20 of 2003 concerning the National Education System, it is stated that education is a conscious effort and is structured in a planned manner to develop the potential of students to have religious spiritual strength, self-control, personality, intelligence, noble moral personality, and skills of self, society, nation, and state (Indonesian Ministry of Education, 2003). Thus, education is a process given to learners to develop self-quality.

Science is a subject that has a very broad role in human life. Science is the science of seeking, understanding the universe systematically, and spreading scientific understanding of the phenomena of nature poured into concepts and rules that are tested for truth (Mariana & Praginda, 2009). Science equips students to have logical, analytical, and critical thinking skills as well as the ability to work together (Wahyuningsih et al., 2009). Science develops process skills for studying the natural

environment, solving problems, and making decisions (Mahmudah, 2016). Therefore, science lessons need to be given to all students starting from elementary school.

Basically, learning is a way to change behavior for the better, of course, you have to be active, but when learning science, there are still many students who are not active in class. Active learning is a process of teaching and learning activities whose subjects are educated intellectually and emotionally so that students can actively participate in carrying out learning activities (Sudjana, 2010). Student inactivity in the learning process results in hampering the achievement of learning objectives and even reducing student learning outcomes (Khumaeroh et al., 2021). Therefore, the lack of student learning activities will have an impact on their lack of understanding of the learning material.

This is reinforced by the issuance of a new policy from the Minister of Education and Culture of the Republic of Indonesia, Nadiem Makarim called "Merdeka Belajar". Merdeka Belajar is a curriculum that gives freedom to teachers and schools to manage learning systems to achieve learning goals that are deeper in concept and more active in the classroom (Susilawati, 2021). This year's Merdeka Belajar will be used as a foundation for teachers to create active learning that is expected to produce active students with the help of learning media (Aini, 2020). Teachers can create media that are used with technological sophistication (Sugiyarti et al., 2018). In other words, "Merdeka Belajar" is a platform for teachers to create students who are active in the classroom.

Based on the results of observations by researchers in August 2021 at SD Negeri 188 Pekanbaru, it was found that in the past teachers still used conventional methods or lectures, causing student saturation and learning that had been carried out was less interesting as a result students tended to become passive during the learning process. Science must be done by actively familiarizing themselves in learning and involving students to gain knowledge, Science learning is learning that emphasizes providing direct experience to students in understanding the environment. The use of 3D media in science learning can improve student learning activities (Jonkendi, 2017).

Based on this phenomenon, it is necessary to innovate in the classroom to support interesting learning so that students are more active in learning to achieve learning goals, with the existence of learning media will make it easier for students to understand learning (Lilis & Pujiastuti, 2021). The researchers offer a solution by using the medium of holographic pyramids because it conveys information that is more easily traced with material about the earth. Selection from ground material based on the fact that not all learning materials can be applied using holographic media.

Pyramid Hologram media is a three-dimensional learning media which is a combination of two solid lights to form a three-dimensional object (Listyorini et al., 2016). According to the Big Indonesian Dictionary (KBBI) A hologram is an image that has color and is three-dimensional on a piece of paper so that it seems to arise. Generally, holograms are used in films or films, but now hologram media has begun to be used as a learning medium (Arifudin et al., 2019). Of course, this will be a new and interesting thing. The use of pyramid hologram media will be an alternative solution in stimulating Student To be more active in learning so that students get a new learning experience (Sadimin, 2019). Therefore, the use of hologram media is expected to have an impact on schools in improving the quality of learning.

Besides being interesting, the use of pyramid hologram media also provides new learning experiences and clarifies the material delivered by teachers such as the appearance of the earth and celestial bodies with the use of hologram learning media will be easier to understand because the shape of the earth and so on looks more clear and real. In addition, students seem to interact directly with learning objects, this is certainly different from two-dimensional learning media that can only be seen from one direction (Kurniawan & Soepriyanto, 2019) Because holographic media can be seen from any point of view. Therefore, the use of hologram media provides new experiences to students in learning.

This new learning experience is supported by previous research conducted entitled "3D Holograms as an Interactive Media for Ancient Dinosaur Animal Recognition", Research results show that the developed media can modernize animal recognition media in three-dimensional form to increase public enthusiasm in recognizing ancient animals (Listyorini et al., 2016), So it is hoped that with the use of hologram pyramid media, students will be more enthusiastic in participating in learning

so that they can increase student activities at SD Negeri 188 Pekanbaru. In line with the study entitled "The Use of Hologram Media in Class IV Social Studies Learning at MI Ma'arif Patihan Wetan, the results show that the use of hologram media affects students such as learning attracts more students' attention and students are more active in learning because students not only listen but also carry out other activities such as, observing, doing, demonstrating and others. Research that has been conducted by Ridsa entitled "The Effectiveness of Using 3D Hologram Learning Media in Improving Student Learning Outcomes at SMA Negeri 2 Majene". The results showed that there was an increase from the average score of 40.42 to 76.83. This proves that there is a significant influence in the use of 3D holograms. (Hashim, 2019) (Ridsa, Sideng, & Suprpta, 2020) Another study entitled "Analysis of the Use of Learning Media in Increasing Student Learning Activity in SD Bakung III" shows the results that the use of learning media in elementary schools can increase student learning activity (Saniah & Pujiastuti, 2021). Unlike the research conducted by Lilis & Pujiastuti, research conducted by Nia Amanda found that the use of Mintini learning media had no effect on student learning activity indicated by significant numbers of $0.221 > 0.005$. Research conducted by Ansaharullah and Ristiliana states that the influence of the use of learning media by teachers on students is only 22.90%, the rest of student learning activity is influenced by other factors. This is actually inversely proportional to the results of research that has been described previously (Ansharullah & Ristiliana, 2011)

From the explanation above, researchers are interested in investigating the relationship between the use of pyramid hologram media with student learning activity in science learning in grade 4 SD Negeri 188 Pekanbaru to solve problems in the school. The novelty of this study is different from previous studies can be seen from the use of media used (Holograms) with student learning activity. The benefit of this research is that the application of Hologram media in science learning can be used as an alternative solution for the use of learning media in overcoming the low learning activity of students at SD Negeri 188 Pekanbaru

2. METHOD

This research was conducted in October 2022 at SD Negeri 188 Pekanbaru. This research is a type of quantitative research with a correlational design. Quantitative research with correlation design is research that uses data collection methods to see if there is a relationship between two different variables at the same time (Sugiyono, 2019).



Figure 1. Directions of research design

Source:(Sugiono, 2018)

A population is all members of a well-defined class, event, or object (Sugiono, 2018). The population in this study was all students of grades 4A, 4B and 4C of SDN 188 Pekanbaru. Sample is a selected participant taken from the population for the study The sample is part of the population. This study uses (Sugiono, 2018) A *Nonprobability* technique uses random sampling, which means that the sampling technique, in this case, research sample, is randomly sampled. (Sugiono, 2018) The samples in this study are 25 students of grade 4C SDN 188 Pekanbaru.

The data collection methods are observation and questionnaire. The research instruments used are observation sheets and questionnaires. An observation sheet is a list of student activities that show student learning activity in science learning by validators and the results are worth using. As for the questionnaire used, there are 20 points of statements that have been tested on students using the Likert scale, the variables measured are developed into several statements. The data obtained from the trial was then tested for validity using IBM SPSS Statistic 25 results which showed its validity. While the reliability test in this study was carried out with the help of IBM SPSS Statistic 25 using the Cronbach

Alpha formula and declared reliability if Cronbach's Alpha > 0.6 (Hamid et al., 2019). Based on the results of these calculations, the questionnaire instrument tested was reliable because Cronbach's Alpha was $0.902 > 0.6$.

Learning using hologram media is carried out during one meeting for each class. The implementation of learning is carried out in several phases as follows: The first stage, this phase includes preliminary activities in the form of delivering learning objectives, fostering student learning applications through apperception activities by asking several questions. In the second stage, the teacher forms a group, explains a little about the earth material and assigns students to discuss with the pyramid hologram medium. The third stage, the teacher guides students until students can present the results of the discussion and demonstrate holographic media. In the fourth phase, the teacher directs students to develop learning concepts about the earth by asking what happens to areas covered by sunlight and areas not covered by the sun and how does the process occur day and night? In the fifth stage, the teacher gives questions to students to measure students' comprehension abilities. In this fifth phase, researchers will also take data by distributing questionnaires to students.

Data analysis techniques use statistical analysis with person-product moment correlation tests to see if there is a relationship between variables. The basis for decision making is the correlation of people product moment if $r_{\text{calculate}} < r_{\text{table}}$ then H_a accepted H_0 rejected. In addition, it provides an interpretation of the correlation coefficient based on the following conditions:

Table 1. Interpretation of Correlation Test

Interval	Group
0,00 – 0,199	Very weak
0,20 – 0,399	Weak
0,40 – 0,599	Moderate
0,60 – 0,799	Strong
0,80 – 1,000	Very powerful

Source: (Arikunto, 2006)

See The significant value of the relationship done with the IBM SPSS Statistics help 25 by seeing the important value above the The Pearson product moment correlation coefficient is as follows: if the value is significant < 0.05 then there is a Significant relationships and if important $>$ value of 0.05 then there is no significant relationship (Sugiyono, 2019). By the In the above explanation, the hypothesis proposed is as follows: Based on the explanation above, the hypothesis proposed is as follows:

H_0 There was no positive and significant relationship between the use of holographic media and student activity in science learning in elementary schools.

H_a : There is a positive and significant relationship between the use of hologram media and student activities in science learning in elementary schools.

3. FINDINGS AND DISCUSSION

3.1 Findings

Based on research that has been done, to determine the positive and significant relationship between the use of pyramid hologram media with student activities in science learning in elementary schools. The author has made student observations using observation sheets which consists of seven indicators, then each indicator is created a statement item. Students are observed one by one in one minute. From the overall observation data obtained and the calculation of the score, it is known that the minimum score is 88 and the maximum score is 174. The categories determining student learning activity in science learning are as follows:

Table 2. Determining Categories of Student Learning Activity

No	Percentage	Category
1	0 - 20	Very Low
2	21 - 40	Low
3	41 - 60	Enough
4	61 - 80	Tall
5	81 - 100	Very High

Source : (Arikunto, 2006)

3.1.1 Indicators of student attention during the learning process

The indicator of student attention during the learning process consists of 1 item, namely statement 1. The score can be seen in the table below:

Table 3. Student Attention Indicator Score During Learning Process

No	Number of Respondents	Number of Scores	Percentage	Category
1	28	686	54%	Enough

Source : Results of data processing by researchers

Based on table 3, it shows that out of 28 respondents obtained a total score of 686 with a percentage of 54% with sufficient category. This indicates that during the teaching and learning process in class students pay enough attention and do not speak when the teacher is explaining the subject matter.

3.1.2 Indicators of Student Attention to Other Students' Explanations

The indicator of students' attention to other students' explanations consists of 1 item, namely statement 2. The score can be seen in the table below:

Table 4. Student Ability Indicator Score of Students against Other Students' Explanations

No	Number of Respondents	Number of Scores	Percentage	Category
1	28	525	41%	Enough

Source : Results of data processing by researchers

Based on table 4, it shows that out of 28 respondents obtained a total score of 525 with a percentage of 41.66% with sufficient category. This indicates that when studying students pay enough attention to other students' explanations.

3.1.3 Indicators of Student Ability to Ask Questions

The indicator of students' ability to ask questions consists of 1 item, namely statement 3. The score can be seen in the table below:

Table 5. Student Ability Indicator Score in Questioning

No	Number of Respondents	Number of Scores	Percentage	Category
1	28	522	41%	Enough

Source : Results of data processing by researchers

Based on table 5, it shows that out of 28 respondents obtained a total score of 522 with a percentage of 41% with sufficient category. This indicates that students have sufficient ability to ask the teacher if there is material that is not understood.

3.1.4 Indicators of Students' Ability to Express Their Opinions

Indicators of students' ability to express their opinions consist of 1 item, namely statement 4. The score can be seen in the table below:

Table 6. Student Ability Indicator Score in Expressing Their Opinions

No	Number of Respondents	Number of Scores	Percentage	Category
1	28	445	35%	Low

Source : Results of data processing by researchers

Based on table 6, it shows that out of 28 respondents obtained a total score of 445 with a percentage of 35% in the low category. This indicates that the student has not been able to express his opinion when the teacher asks him.

3.1.5 Indicators of Student Ability to Respond to Other Students' Opinions

The indicator of the ability of students to respond to the opinions of other students consists of 1 item, namely statement 5. The score can be seen in the table below:

Table 7. Student Ability Indicator Score in Response to Student Opinions

No	Number of Respondents	Number of Scores	Percentage	Category
1	28	444	35%	Low

Source : Results of data processing by researchers

Based on table 7, it shows that out of 28 respondents obtained a total score of 444 with a percentage of 35% in the low category. This indicates that students have a low ability to respond to other students' opinions or students have not been able to perfect answers from other students' opinions.

3.1.6 Indicators of Working Together in Discussions

The indicator of cooperation in the discussion consists of 5 items, namely statement 6. The score can be seen in the table below:

Table 8. Score Indicators Working Together in Discussions

No	Number of Respondents	Number of Scores	Percentage	Category
1	28	594	47%	Enough

Source : Results of data processing by researchers

Based on table 8, it shows that out of 28 respondents obtained a total score of 594 with a percentage of 47% with sufficient category. This indicates that students have sufficient ability to cooperate during discussions such as completing assignments given by low-ability teachers.

3.1.7 Indicators of Looking for Answers in Discussions

The indicator of looking for answers in the discussion consists of 1 item i.e. statement 7. The score can be seen in the table below

Table 9. Score indicators looking for answers in discussions:

No	Number of Respondents	Number of Scores	Percentage	Category
1	28	549	43%	Enough

Source : Results of data processing by researchers

Based on the table, it shows that out of 28 respondents obtained a total score of 549 with a percentage of 43% with sufficient category. This means that students have sufficient ability to find answers during discussions.

Table 10. Recapitulation of Student Learning Activity Indicator Scores

No	Indicators	Percentage	Category
1	Attention of students during the learning process	54,%	Enough
2	Students' attention to other students' explanations	41,%	Enough
3	Students' ability to ask questions	41,%	Enough
4	The ability of students to express their opinions	35,%	Low
5	Students' ability to respond to other students' opinions	35,%	Low
6	Work together in discussions	47,%	Enough
7	Looking for answers in discussions	43%	Enough
	Average	42%	Enough

Source : Results of data processing by researchers

In table 10, a recapitulation of the scores of student learning activeness indicators is presented by indicators of student attention during the learning process with a percentage of 54%, indicators of student attention to other students' explanations with a percentage of 41%, indicators of students' ability to ask questions with a percentage of 41%, indicators of students' ability to express their opinions with a percentage of 35%, indicators of students' ability to respond to the opinions of other students with a percentage of 35%, The indicator cooperated in the discussion with a percentage of 47%, the indicator looked for answers in the discussion 43%. Of the seven indicators of student learning activity, an average percentage of 42% was obtained in the sufficient category. Through observational data, it is known that students have been quite active, because the holographic pyramid media tried in this study simulates the occurrence of day and night. So that students not only actively observe, listen to the teacher explain the subject matter, but students also actively ask questions, express their opinions, and discuss.

Researchers have also conducted prerequisite analysis tests by conducting normality and linearity tests. The normality test results showed $139 > 0.05$ and $0.200 > 0.05$ so that the data was declared normally distributed in accordance with the normality test provisions. Then continued with the linearity test, obtained results of $0.260 > 0.05$. So it is concluded that there is a linear relationship between the variable of holographic media use (X) and the variable of student learning activity (Y). After obtaining the data, the data is analyzed statistically by testing the correlation of a person's product moment as follows

After the ware data is obtained, the data is statistically analyzed by a person's product-moment correlation test as follows:

Table 11. Results of the Correlation Test of People's Product Moments

Use of pyramid hologram media	Pearson correlation	1	0,132
Student activities	Pearson correlation	0,132	1

Source : Results of data processing by researchers

Table 11 shows that the calculated value of the pearson product moment correlation test is 0.132, which is The relationship between the use of hologram media and student activities in science learning in elementary schools. Calculations using IBM SPSS 25 showed that a calculation of 0.132 indicates a positive correlation direction, meaning that the increase in the use of holographic media will

affect student activities in science learning in elementary schools. Based on the interpretation of the correlation test (Arikunto, 2006), the Pearson product-moment correlation coefficient of 0.132 is included in the very weak category. This means that there is a very weak relationship between the use of pyramid holographic media and Student Activities in Science Learning in Elementary Schools.

To see the significant value of the relationship is done with the help of IBM SPSS Statistic 25 by looking at the significant value of the pearson product-moment correlation coefficient as follows:

Table 12. Results Coefficient

Test the hypothesis	Sig. correlation	5%	Direction	Description	Hypothesis
Significant	0,031	0,05	Positive	Significant	Accepted

Source : Results of data processing by researchers

Based on table 12 above, it is known that at the level of 5% shows a significant value of < 0.05 (0.031 < 0.05) so it is concluded that H_0 is rejected and H_a is accepted. Thus, the hypothesis proposed by the researcher that reads "there is a positive and significant relationship between the use of pyramid holographic media and student activity in science learning in elementary schools" is acceptable. Data on the use of hologram pyramid media were obtained as measured by questionnaires of 36% and data on student learning activity using observations of 42%. From the results of research on the use of hologram pyramid media in science learning on earth material, the occurrence of day and night provides a new learning experience. Through observational data, it is known that, students will be quite active, because the holographic pyramid media tested in this study simulates the occurrence of day and night. So that students not only actively observe, listen to the teacher explain the subject matter, but students also actively ask questions, express their opinions and discuss. (Kurniawan, 2015) suggests that the use of technology in learning media increases the active learning process.

However, the relationship between the use of holographic media and student activity in science learning in elementary schools is inevitably very weak. This research is in line with the opinion expressed by (Hashim, 2019) that the use of hologram media affects students such as students are more active in learning because students not only listen but also carry out other activities such as, observing, doing, demonstrating and learning attract more students' attention. Another study conducted by (Kurniawan, 2015) entitled "development of holographic-based 3D display learning models" shows that the use of technology in learning media increases the active learning process. Based on the results of research analysis, theory and relevant research that there is a positive and significant relationship between the use of pyramid hologram media with student activities in science learning in elementary schools.

4. CONCLUSION

Based on the results of hypothesis tests that have been carried out show that there is a positive and significant relationship between the use of hologram media and student activities in science learning in elementary schools. This shows that the use of hologram media is related to student learning activity. The limitations of the research that has been conducted by researchers include involving a limited number of samples, namely 28 people and only including grade IV C students, so the results can only be generalized to residents in grade IV SD Negeri 188 Pekanbaru and cannot be applied directly to other classes and schools. This study only focuses on two variables that affect student learning activities, namely the use of holographic media. Based on the results of the research that has been obtained, the suggestion in this study is that teachers should increase the use of current learning media. The learning process takes place, and other researchers are expected to be able to research other media that can affect students' learning activities.

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