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ENHANCING SCIENCE EDUCATION: INVESTIGATING THE IMPACT OF MEDIA CONCEPT MAPS AND MEDIA POSTERS ON LEARNING OUTCOMES IN FIFTH-GRADE SCIENCE AT ATTUFIQ PALANRO ELEMENTARY SCHOOL, BARRU

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ABSTRACT

This research examines the effectiveness of implementing concept maps and poster media in enhancing student learning outcomes in natural science subjects for fifth-grade students at Attufiq Palanro Elementary School in Barru. The study aims to assess the use of concept maps and posters in the context of natural science education at the primary school level. Additionally, it seeks to determine the differences in learning outcomes between concept maps and poster media among fifth-grade students. The research adopted a comparative experimental design, utilizing the non-equivalent control group method. The target population consisted of all fifth-grade classes at Attufiq Palanro Elementary School, with 76 students. The research sample included 20 students from Class V A and 20 from Class V B, selected using a multi-stage random sampling technique. Multiple-choice and essay tests were employed as instruments to assess student learning outcomes. The collected data was analyzed using descriptive and inferential analysis techniques. The results obtained from the descriptive analysis indicate that the average learning outcome for students who utilized concept map media was 72.75, while the average outcome for students who used poster media was 80.8. The inferential analysis, including hypothesis testing and Levene's test, yielded a significance value (2-tailed) of 0.005, which is lower than the predetermined significance level of 0.05. Therefore, it can be concluded that there is a significant difference in learning outcomes between Class V A and Class V B.

Keywords: Outcomes; concept map; poster; media

1. INTRODUCTION

Education is a vital sector for development in Indonesia and an integral part of human life. No individual in this world can live without education, as it is essential for sustainability, defense, and personal growth. As stated in Law No. 20 of 2003 concerning the National Education System, education is a deliberate and planned effort to create a conducive learning environment and process where students actively develop their potential, including religious and spiritual strength, self-control, personality, intelligence, noble character, and the skills required by themselves, society, the nation, and the state.

The quality and effectiveness of education have a significant impact on the advancement of the nation and its human resources. Therefore, the active involvement of the government in education, particularly for elementary school students, is crucial for future development.

Learning is an intentional or unintentional activity carried out by individuals, resulting in personal growth from a state of ignorance to knowledge, from immobility to mobility, from illiteracy to literacy, and so on. Learning is a continuous process that involves various elements such as human resources, materials, equipment, facilities, and procedures, all of which influence each other to achieve educational objectives.

Concept maps serve as a platform to enhance students' learning experiences and comprehension. A concept represents a unit of meaning that encompasses several objects sharing similar characteristics. Concepts are abstracted from real-life events. Concept maps are a useful technique for taking notes and highlighting key lines, ideas, or keywords.

Posters are simplified visual illustrations in large sizes, specifically designed to capture students' attention by conveying main ideas, facts, or events. They combine simplicity and dynamism with the primary functions of motivating, stimulating creativity, generating interest, aiding memory, and advertising. Additionally, posters aim to attract people's attention to promote the purchase of a product.

Initial observations conducted in Attaufiq Palanro's fifth-grade science class at the research location revealed a lack of awareness among students regarding the use of concept maps and poster media during lessons. Students were overly reliant on textbooks and struggled to conclude the theories presented, often resorting to rote memorization. This approach, particularly when accompanied by monotonous teaching, hampers the quality of education and creates an uncomfortable learning environment.

Elementary students can benefit from utilizing concept maps and poster media to focus on the main points or ideas conveyed by their teachers. When fully implemented,

these two methods can enhance the learning experience and yield better results. Considering the advantages outlined above, it is evident that concept maps and media posters can be effectively applied to science subjects.

Previous research conducted by Niendy Kurnia Djasmita, titled "The Influence of Visual Media-Based Concept Map Learning Methods on Creative Thinking Ability and Learning Motivation of Class X Students," supports this claim. The study concluded that there was a significant impact on the post-test results of creative thinking ability and learning motivation in both the experimental and control classes. The posttest scores in the experimental class surpassed those in the control class, indicating a higher level of creative and innovative thinking skills among students. The process of creating concept maps based on the material they read increased their understanding and enabled them to utilize the maps during exams. Furthermore, students became more creative in their biology learning process, and learning through concept maps enhanced their thinking abilities.

Another research by Erni Susilawati, titled "Development of Poster Media as a Supplement to Learning Solar System Material Physics in Class VII Middle School Students," involved field trials conducted at SMP N 1 Wonosobo, SMPN 2 Wonosobo, and SMP PGRI 1 Wonosobo. The poster media developed received a score of 4.1 and an eligibility percentage of 83% in the "very interesting" category. Educators at SMPN 1 Wonosobo, SMPN 2 Wonosobo, and SMP PGRI 1 Wonosobo also expressed a high level of interest, with an eligibility percentage of 81% in the "very interesting" category. The developed poster media proved beneficial for students.

Given the information provided, the researcher aims to investigate "The Impact of Concept Map and Poster Media on Learning Outcomes in Fifth-Grade Science at Attaufiq Palanro Elementary School in Barru."

2. METHODS

The type of research used in this study was comparative experimental research with an experimental method using a non-equivalent control group design. The population in this study was all of the fifth-grade students at Attaufiq Elementary School, totaling 76 students. The sample for this study was taken from class fifth grade A, consisting of 20 students, and class fifth grade B, consisting of 20 students. The sampling technique used was the multi-stage random sampling technique. The instruments used to measure student learning outcomes were multiple-choice tests and 10-item essays. The data analysis techniques employed were descriptive statistical analysis and inferential analysis. The data analysis was performed using IBM SPSS (Statistics Product Service Solution) Version 29.

3. RESULTS AND DISCUSSION

Based on the results of the research that was conducted at Attaufiq elementary school on class fifth-grade A students, the researcher collected and processed data from multiple choice tests and essays using Concept Map media through the pretest and posttest learning outcomes, the results were obtained:

Table 1. Descriptive Statistical Value of Pretest and Posttest Results in Experimental Class 1 (fifth-grade A) using Concept Map media

	statistical value	
Statistic	**Pretest**	**Posttest**
Lowest value	40	65
The highest score	70	90
Average value	54,3	72,75
Standard deviation	9,85	7,60

Based on table 1 above, it can be seen that the pretest for Experiment 1 class (fifth-grade A) Media Concept Map maximum score obtained before treatment was carried out was 70, while the lowest score was 40 and the average value obtained was 54,3 with a standard deviation of 9,85. Posttest results of experimental class 1 ((fifth-grade A) Concept Map Media The maximum score obtained after treatment was 90, while the lowest score was 65 and the average value was 72,75 with a standard deviation of 7,60. Based on the results of the pretest and posttest in the experimental group 1 (VA) it was obtained that the average value of science learning outcomes increased after the treatment, with an average pretest of 54.3 and an average posttest score of 72,75 with a difference of 18,45.

Table 2. Descriptive Statistical Value of Pretest and Posttest Results in Experimental Class 2 ((fifth-grade B) using Poster media

	statistical value	
Statistic	**Pretest**	**Posttest**
Lowest value	40	66
The highest score	68	91
Average value	72,75	80,8
Standard deviation	8,52	62

Based on table 2 above, it can be seen that the maximum score obtained before being treated in experimental class 2 ((fifth-grade B) was 68, while the lowest score was 40 and the average value obtained was 72,75 with a standard deviation of 8.52. Results from Posttest experimental class 2 (fifth-grade B) Media Poster maximum score obtained

after treatment in experimental class 2 (fifth-grade B) was 91, while the lowest score was 66 and the average value was 80,8 with a standard deviation of 62.

Based on the results of the pretest and posttest in the experimental group 2 (fifth-grade B) it was obtained that the average value of science learning outcomes increased after the treatment was carried out with an average pretest of 72,75 and an average posttest score of 80.8 with a difference of 8,05.

Table 3. Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance				95% Confidence Interval of the Difference	
		F	Sig.	t	Df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
student learning outcomes	Equal variances assumed	.016	.901	-3.012	38	.002	.005	-7.150	2.374	-11.956	-2.344
	Equal variances not assumed			-3.012	37.999	.002	.005	-7.150	2.374	-11.956	-2.344

Significance test of α 0.05. where the significant value of the pretest learning outcomes with concept map media is obtained at 0.200. posttest learning outcomes with concept map media obtained by 0.200. pretest learning outcomes with poster media obtained by 0.200. The posttest learning outcomes with poster media were obtained at 0.200. because the significance value obtained is greater than α > 0.05, it can be concluded that it can be normally distributed.

Table 4. Homogeneity test result

Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
student learning outcomes	Based on Mean	.012	1	37.806	.912
	Based on Median	.022	1	38	.883

	Based on Median and with adjusted df	.016	1	38	.901
	Based on trimmed mean	.012	1	38	.912

Based on table 4 the results of the data homogeneity test after the use of concept map media and poster media with the Levene Test statistics obtained a significance value of 0.912 and a significance level value of 0.05 obtained is greater than α (0.912 > 0.05), because the significant value is greater than α 0.05, it can be concluded that the data is homogeneous or has similarities.

Tabel 5. Hypotheses test

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance				95% Confidence Interval of the Difference	
		F	Sig.	t	Df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
student learning outcomes	Equal variances assumed	.016	.901	-3.012	38	.002	.005	-7.150	2.374	-11.956	-2.344
	Equal variances not assumed			-3.012	37.999	.002	.005	-7.150	2.374	-11.956	-2.344

Table 5 results of the hypothesis test data after the use of concept map media and poster media with statistics obtained a significance value of 0.005 and a significance level value of 0.05 the significance value obtained is smaller than α (0.005 > 0.05), or the value of Sig. (2-Tailed) = 0.000 H0 is rejected and H1 is accepted because Sig (2-Tailed)) < or (0.005 <0.05) because the significant value is smaller than α 0.05, it can be concluded that there can be a significant difference in the results learning in class VA and VB students.

The research employed the t-test formula to test the hypothesis regarding the influence of learning media, specifically concept map media and poster media, on student learning outcomes. Before conducting the t-test, both the normality test and homogeneity test were conducted. The normality test aimed to determine whether the

data on science learning outcomes followed a normal distribution, while the homogeneity test aimed to assess if the two classes came from a homogeneous population.

Analysis of the data using the one-sample Kolmogorov-Smirnov Test for class fifth-grade A taught using concept map media yielded a sig (2-tailed) value of 0.200 > 0.05. This result indicates that the score data on student learning outcomes for fifth-grade A, taught with concept map media, followed a normal distribution. Similarly, analysis of the data for class fifth-grade B taught using poster media, resulted in a sig (2-tailed) value of 0.200 > 0.05, indicating a normal distribution of learning achievement scores for class fifth-grade B taught with poster media.

The homogeneity test, which aimed to assess the similarity of the two groups, yielded a significant value of 0.912 for the homogeneity of concept map media and 0.883 for the homogeneity of poster media. Both values were greater than 0.05, leading to the acceptance of the null hypothesis (H0), indicating that the learning outcomes data came from a homogeneous population in both groups.

Next, a t-test was conducted to compare the use of concept map media and poster media. The calculated sig. value was 0.005 at an error level of 0.05, with a degree of freedom (df) value of 38. Based on the hypothesis testing, if the sig. count > t-table, H0 is accepted and H1 is rejected; if the sig. count < t-table, H0 is rejected and H1 is accepted. In this study, H0 was rejected and H1 was accepted, indicating a significant difference between the learning outcomes of fifth-grade students taught using concept map media and poster media, as supported by statistical data showing the average value of the two media uses. These findings provide evidence that both concept map media and poster media are effective in improving student learning outcomes.

The above discussion is further supported by previous research conducted by Yuliana, Mashudi, and Achmadi, titled "Effectiveness of Concept Map Models in Enhancing Creativity and Student Learning Outcomes." This study provides evidence that the utilization of concept map models is highly effective in facilitating the learning process and improving student outcomes.

Similarly, the findings regarding the effectiveness of poster media align with the research conducted by Rosdiana, Munirah, and Nurul Hadmawati, titled "Utilization of Poster Learning Media Based on a Scientific Approach to Enhance Students' Cognitive Abilities." This study, published in a reputable journal, confirms the significant impact of poster media in enhancing students' cognitive abilities.

The consistency between these previous studies and the present research underscores the effectiveness of both concept map models and poster media in promoting student learning outcomes and cognitive development. Overall, concept map

and poster media have a positive impact on learning outcomes by promoting deeper understanding, critical thinking skills, engagement, communication, and retention of knowledge. Integrating these media into educational practices can enhance the learning experience and contribute to improved academic achievement.

CONCLUSION

Based on the results and discussion of this research, it can be concluded as follows: 1) The learning outcomes of students in science subjects with Solar System material that are taught using concept map media with statistical data in fifth-grade A MI Attaufiq Palanro are taught with an average value of student learning outcomes, namely 71.65, which is very good so that student learning outcomes can increase after using this concept map media. 2) The learning outcomes of students in science subjects with Solar System material that are taught using poster media with statistical values in fifth-grade BMI Attufiq, which are taught with an average posttest score of 80.8, which is very good, so that student learning outcomes can increase after using this media poster. 3) There is a significant difference in the use of media taught with concept map media and poster media on the learning outcomes of students in fifth-grade A and fifth-grade B, MI Attaufiq. The learning achievement of students in fifth-grade B using poster media was better than that in fifth-grade A, which was taught using concept map media, but both media showed an increase in learning outcomes achieved by students after using the learning process.

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