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JTH

https://jthkkss.com/
e-ISSN 2805-4431
DOI: https://doi.org/10.53797/jthkkss.v2i2.6.2021

The Effect of Carpenal Media on Metacognitive Abilities in Human Growth and Development Material for Elementary School

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Available online 24 December 2021

Abstract: Learning media is closely related to the learning process with the Merdeka curriculum, because the existence of learning media really helps clarify and visualize theories or material in subjects that are easier to understand. So, to create a pleasant learning atmosphere and broaden students' horizons, learning media is a support for these learning activities. As in this research, in class V of SD Nganguk there are still minimal learning activities carried out using learning media so that students' metacognitive abilities are lacking, students even complain about this because the learning tends to be monotonous, so students feel bored and not enthusiastic about the learning process. Thus, researchers found a solution, namely the existence of KARPENAL media, which can certainly help overcome student boredom in learning, and make it easier for students to understand the learning material. So that learning becomes varied and more fun. Therefore, the researcher conducted research to test how much influence KARPENAL media had on metacognitive abilities in fifth grade students at Nganguk Elementary School using the Pre-Experiment One Group Pretest-Posttest quantitative research method. Apart from that, the researcher tested the data using the T test with the help of the SPSS application. .20 where in the results of the analysis before treatment using KARPENAL media students' metacognitive abilities were still at 60-70%, which is different from the posttest score after treatment using KARPENAL media which produced a value of 75-86% with the results of the t test in SPSS 20 statistical data which If results are obtained with a significance value of 0.000 <0.05, it can be concluded that there is a significant difference. Shows the influence of KARPENAL media on students' metacognitive abilities.

Keywords: Learning Media, Media Influence, Metacognitive Ability

1. Introduction

Education is very important for social and national life and has a big influence on the mindset of a country's next generation. Good education allows individuals to improve the standard of living for themselves, their families and the community around them (Rizkianti et al., 2024). One thing that is closely related to education is the curriculum. The definition of curriculum itself is a unit that is closely related to educational goals. Because each curriculum has different stages, achieving an educational level also involves different aspects.

There are various types of curriculum, one of which is the independent curriculum. This curriculum works quite well at all levels of education in Indonesia, especially in elementary schools. The independent curriculum emerged to overcome educational problems during the pandemic which began in 2020-2021 (Ardianti & Amalia, 2022). Therefore, the government is developing new policies that provide conceptual freedom to both educational institutions and students in carrying out the learning process. The Independent Curriculum focuses on students developing their own knowledge. In this case the teacher only acts as a bridge for students to succeed in learning. Schools in Indonesia, especially in Central Java, have also implemented the Independent Curriculum, especially at the elementary level in all classes except grades 3 and 6, but in the coming years efforts will be made at all levels of education and grade levels to apply the independent curriculum.

The content of the Independent Curriculum subjects that differentiates them from Curriculum 13 is the science and science subjects. The science subject itself is a combination or integration of science and social studies, different from the previous curriculum which separated science and social studies. Although this combination is not without reason, it

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is intended so that students can combine the natural and social environments in one unit (Dinda Sartika et al., 2023). In the Merdeka curriculum, learning systems or learning models are very diverse and can be adapted to the material, especially in the Merdeka curriculum there is also project-based learning.

Aspects of metacognitive abilities in analyzing a situation also play a role in learning dynamics. Because good learning is learning where knowledge can be impressed and can be learned from existing experience. Therefore, this metacognitive ability can be supported by using learning media. The use of media in technological development is a challenge in itself. In the past, media only took the form of books, manuals, worksheets, textbooks and simple stationery which could be used as aids in the teaching and learning process, but now with the use of media in technological developments, students can utilize multimedia in learning activities (Fajrie et al. al., 2020). Apart from that, according to (Fajrie & Masfuah, 2018), science learning is of course more directed at the ability to think, approach, act and solve problems scientifically by developing basic skills in observation, hypothesis, measurement, classification, communication and scientific processes (discovery) and action processes. As part of the learning system, media also plays a very important role in the learning process. The use of learning media aims to increase students' understanding of learning. After deciding which media to use, in the end you must also be able to convey understanding to students effectively during the learning process. Learning media refers to anything that is used specifically to convey or distribute learning content so that students can learn more effectively and efficiently (Rahma et al., 2023).

The current condition of education, with the rapid development of technology, allows for the use of more sophisticated and interactive media (Mustofa et al., 2021). However, in reality it turns out that there are still many who have not been able to optimally optimize the sophistication of digitalization by utilizing it in the world of education. By utilizing digital technology as a partner in the learning process, teachers have the opportunity to create interesting and interactive learning experiences for their students (L. D. Putra & Pratama, 2023). This can be pursued optimally so that the learning process is more effective in attracting students' attention and focus so that students can better understand the material being presented. One way to create quality education is to meet the needs of teachers when carrying out teaching and learning activities as well as their insight into the technology they want to use, student enthusiasm is also an indicator of the quality of learning (Meliyani et al., 2022). Based on the first observation, namely observations and interviews at Nganguk State Elementary School, specifically grade 5 elementary school, several pieces of information were found on Friday, March 8 2024. Namely (1) the fifth grade teacher implemented the Merdeka curriculum, and (2) the media used tended to be simple and often used. concrete object. (3) Various learning models have been implemented, but they have not been optimal. (4) Active students tend to be active, and passive students cannot concentrate on learning.

Problems arising from the information obtained during initial observations are caused by several factors: First, the media used in the learning process is relatively simple so that students' understanding is not very optimal. Second, the teacher's explanations are too focused on books and are not related to everyday life. Third, the method used is not appropriate to the material discussed. Fourth, teachers rarely use tactics such as distributing icebreakers which make students feel bored and not pay attention to the ongoing learning. Therefore, media is needed that can support students' understanding to achieve a learning goal. To avoid this problem, the right way is to find out the extent of students' discovery abilities in their understanding of the material, so to get around this, researchers are interested in using interactive digital-based learning media such as short analysis cards (KARPENAL) found in grade 5 science development materials. Learning with this media is expected to have an impact on students' understanding and metacognitive abilities regarding human growth and development as well as the characteristics of entering puberty, therefore students will be presented with media with digital cards equipped with pictures and quizzes to test their understanding regarding the material.

The reason researchers use interactive digital-based KARPENAL (Analysis Short Cards) learning media is that students actually want digital-based learning media, because students always use basic learning with simple concepts with minimal concrete media. In fact, science and science learning should be done in a more interesting way, so that students' logical thinking and cognitive skills will develop optimally. Therefore, it is hoped that this media can have a significant influence on students' abilities in metacognition, such as their abilities which include planning, monitoring and evaluating the results being analyzed. Previous research has also investigated the impact of Android-based learning media on students' understanding, (Putra, 2017) investigated the impact of using Android application-based learning media on student learning outcomes, and the use of Android applications was stated as follows: The solubility results show that the use of Android-based learning media Android applications have a significant influence on student learning outcomes. The biserial correlation coefficient with a significant category is 0.77 and the coefficient of determination is 60.16, which shows that the use of Android application-based learning media has a positive effect on the learning process, as the results of the data included in this study show that there is 80.05%.

The next research is from Tarpan Suparman, and Harmawati (2023) with the title "The Influence of KOKOSIS Media on Understanding Science Learning Concepts in Elementary Schools" stating that the use of KOKOSIS media (Ecosystem Box) has a significant influence on learning outcomes for Class V Ecosystem Material at SDN Kertasari 03 Based on the post-test results, the average post-test results were higher than the initial test results. The average pre-test score was 51.60, while the post-test score was 77.60. This shows an improvement after using KOKOSIS (Ecosystem Box) media. This proves that the use of KOKOSIS media (ecosystem box) influences the understanding of science learning concepts in ecosystem material at SDN Kertasari 03 Class V.

Wahyuningsih, et al (2024) with the title "The Effect of Using Augmented Reality Media in Class IV Science Learning on Students' Critical Thinking Ability". The research subjects were students, teachers and principals of class VI SD N 2 Bhatulsari, totaling 20 students. The method used in this research is descriptive and qualitative. Data analysis techniques include data collection techniques using observation, interviews, and documentation, as well as collection, reduction, presentation, and drawing conclusions. The science learning score increased from 58.7 before augmented reality media to 82.7 after augmented reality media. Course completion rates increased from 45.8% to 83.3%. Interviews with students revealed that they enjoyed learning with augmented reality media. The results of interviews with teachers show the use of interactive media, such as augmented reality, to help students visualize abstract concepts in a more realistic and interesting way. Based on this background, the researcher wants to know how the use of interactive digital-based learning media affects students' understanding or metacognitive abilities in science and science subjects, especially human growth material in grade 5 elementary school, in Chapter 5 Topic C. Therefore, researchers are interested in conducting research entitled " The Effect of Carpenal Media On Metacognitive Abilities In Human Growth And Development Material For Elementary School".

2. Methodology

The approach in this research uses a quantitative experimental approach, where in this research a treatment will be given to test how much influence KARPENAL media has on students' metacognitive abilities. The population in this study were Nganguk Kudus Elementary School students, with the research sample being all class V students with a total of 16 students. This research is included in the pre-experimental type in the form of a one group pretest-posttest research design with questionnaire data as a reference for assessing students' metacognitive abilities which have been adjusted to indicators covering metacognitive abilities as a benchmark for success. By using a pre-experimental research, one group pretest-posttest research design, the results of the treatment can be known more accurately, because a comparison can be made with the situation before the treatment was given (Sugiono, 2016, p: 110). The flow of this research process can be explained through the following graphic image:

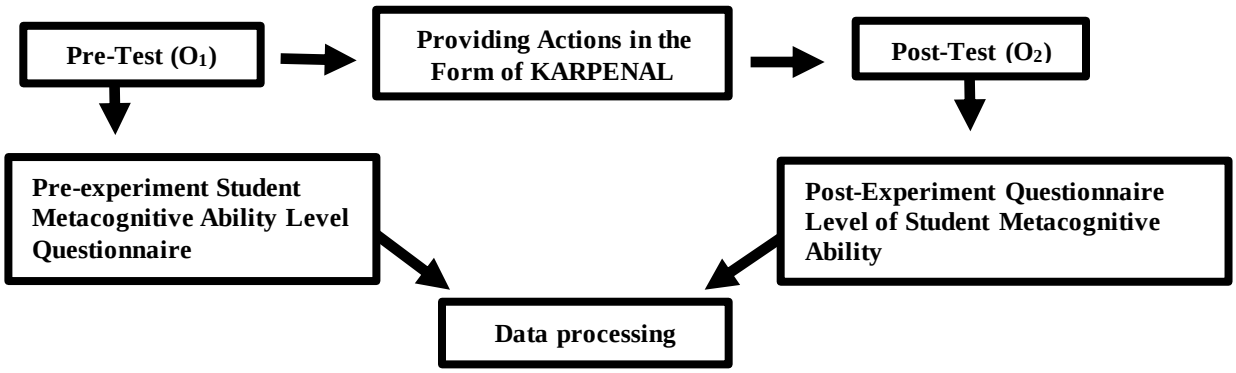

Figure 1: Research Flow

This research focuses on the application of interactive digital-based KARPENAL media at Nganguk Elementary School in science and science learning in class V. The data collection technique in this research was carried out in two stages, namely before the application of the media and after the application of the media in the form of pretest and posttest questionnaires to determine the level of students' metacognitive abilities in learning science. At the later stage of data processing, from the results of the pretest and psotest the level of metacognitive understanding of students will be compared by carrying out a t test using statistical calculations in SPSS 20 to find out how much influence the use of KARPENAL media has on students' metacognitive understanding in science learning in class V of Nganguk Elementary School. The hypothesis in this research is to test how big the influence of KARPENAL media is on the metacognitive abilities of class V students with a significance level. Data is said to have influence if the significance level is <0.05 then Ha is accepted and Ho is rejected.

Research hypothesis:

• Ho: There is no influence of KARPENAL media on students' metacognitive abilities in the material on human growth and development in class V of Nganguk Kudus Elementary School.

• Ha: There is an influence of KARPENAL media on students' metacognitive abilities in the material on human growth and development in class V of Nganguk Kudus Elementary School.

3. RESULTS AND DISCUSSION

1.1 RESULTS

The data in this research focuses on the percentage results of pretest and posttest scores in the form of questionnaires produced during pre-experiment and post-experiment science learning using interactive digital-based media KARPENAL. The pretest carried out before the experiment (Pre-experiment) is intended to determine students' initial abilities before being given treatment with the media. The posttest carried out after the experiment (Post Experiment) was used to find out how much influence the media had on learning. The following is a summary of the normality test results on the pretest and posttest in this study:

Table 1: Data Normality Test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
PRETSET	.183	16	.157	.913	16	.130
POSTEST	.152	16	.200*	.977	16	.940

Hypothesis:

• If the significance value is <0.05 then the data is not normal

• If the significance value is > 0.05 then the data is said to be normal

Based on the normality test table, the hypothesis is obtained that the data is said to be normal if the sign value is > 0.05 and in this table the normality test results show results of 0.157 and 0.2, so the data is said to be normal. Meanwhile, to test how much influence learning media has on students' metacognitive abilities and whether there is a relationship between the use of learning media and students' metacognitive abilities, researchers conducted a t test by testing paired sample correlations and paired sample tests as follows:

Table 2: Paired samples correlation

		N	Correlation	Sig.
Pair 1	PRETSET & POSTEST	16	.643	.007

Hypothesis results:

• If the significance value is <0.05 then there is no correlation

• If the significance value is > 0.005 then there is a correlation

Based on this table, it can be said that the data has a correlation or there is an interrelated relationship, because the significance value is 0.007, where 0.007 is greater than 0.005, it can be said that there is a correlation.

Table 1.3 Paired T Test

		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PRETSET – POSTEST	-10.43750	4.38130	1.09533	-12.77213	-8.10287	-9.529	15	.000

Hypothesis results:
• If the significance value is <0.05 then there is a significant difference between students' metacognitive abilities in the pretest and posttest data.
• If the significance value is > 0.05 then there is no significant difference between students' metacognitive abilities in the pretest and posttest data.

Based on the table above, if the significance value is 0.000 <0.05, it can be concluded that there is a significant difference between students' metacognitive abilities in science material using KARPENAL learning media in the pretest and posttest results.

1.2 DISCUSSION

Research on the influence of KARPENAL media on students' metacognitive abilities in human development material resulted in a significant influence produced by KARPENAL Media as variable X where this media is a variable that influences metacognitive abilities (variable Y). The use of quantitative research methods with the type of pre-experimental one group pretest posttest carried out by researchers makes it easier to collect data through pretest activities before the media is applied, and posttest activities after the learning media is applied. Through the results obtained from the pretest and posttest, researchers can examine more specifically the level of significance of the influence of media on students' metacognitive abilities of 0.000 < 0.05, thus this research has succeeded in proving that there is an influence in the use of KARPENAL learning media on students' metacognitive abilities.

As in theory (Sugiyono, 2018), pre-experimental research is carried out at the stage of giving questionnaires both before giving treatment and after giving treatment so that an outline can be drawn whether there is an influence of a treatment on the problem. This is also confirmed by previous research by Putra (2017) with the title "The Effect of Using Android Application-Based Learning Media on Student Learning Outcomes" stating that the use of Android application-based learning media on student learning outcomes in solubility material and solubility product results shows that the use of Android application-based learning media has a significant influence on student learning outcomes. The biserial correlation coefficient with a significant category is 0.77 and the coefficient of determination is 60.16, indicating that the use of Android application-based learning media has a positive impact on the learning process, this is shown by the results of the data included in the survey being 80.05%.

This research succeeded in answering the questions from the initial hypothesis with the results of the influence of the use of interactive digital learning media KARPENAL (Analysis Short Cards) on students' metacognitive abilities from the pretest and posttest activity process with the pre-experimental one group pretest posttest research method for students in class V science and science learning at Nganguk Elementary School. with a significance value of 0.000 < 0.05 in science material using KARPENAL learning media. Constructivism is a theory about how students build knowledge from their experiences (Nurfatimah, 2019). According to Piaget (1971), constructivism is a system that explains how students as individuals adapt and increase their knowledge. This is in line with this research, where students try to learn from events and new things around them through the existence of a new interactive digital-based learning media in the form of KARPENAL media to develop their metacognitive abilities, so that it will have its own impact or influence compared to conventional learning or just use the available media.

4. CONCLUSION

The conclusion in this research is that the use of KARPENAL media is proven to have a significant influence on students' metacognitive abilities. This was proven by the pretest using a questionnaire before the treatment using KARPENAL media. Students' metacognitive abilities were still at 60-70%, which was different from the posttest score after treatment using KARPENAL media which produced a value of 75-86% with the t test results in SPSS statistical data. 20 results obtained with a significance value of 0.000 <0.05, it can be concluded that there is a significant difference. Shows the influence of KARPENAL media on students' metacognitive abilities.

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