Al-Fikru: Jurnal Pendidikan dan Sains
5(2), 2024, 281-290
Available at:https://ejournal.unzah.ac.id/index.php/alfikru

Paired t-test analysis to determine the effect of smart paperboard learning media on student learning outcomes

Dian Kusuma Wardani*, Shinta Widyawati
KH. A. Wahab Hasbullah University, Indonesia
e-mail: dianwardani@unwaha.ac.id, shinwid09@gmail.com
*Corresponding Author

Received: 5 December 2024; Revised: 20 December 2024; Accepted: 31 December 2024

Abstract: This research aims to analyze the application of Smart Paperboard learning media at PGRI Megaluh High School in increasing students' understanding of Islamic Religious Education subjects. The research method used is a quantitative approach with an experimental design, where the experimental group uses Smart Paperboard and the control group uses conventional methods. Data was collected through comprehension tests before and after learning, as well as questionnaires to measure student responses to the use of this media. The data collection techniques used in this research are tests, observation and documentation. Analysis of the data used in this research uses normality tests and hypothesis testing. The research results show that the average value of the media validation results used is 93.75% with appropriate qualifications. With a total of 20 multiple choice questions in the pre-test and post-test given to students, the calculation results obtained were an average pre-test score of 58.8 and a post-test of 85.2, an increase in the average student score. With the results of the analysis using the data normality test, the results obtained were 0.910 > 0.005, it can be concluded that the data is normally distributed. t test (paired) shows that the significant value is 0.00 < 0.05. So, it can be said that there is an influence of smart paperboard learning media on student learning outcomes in PAI subjects at SMA PGRI Megaluh Jombang.
Keywords: Smart Paperboard, student understanding, Islamic Religious Education, learning media

How to Cite: Wardani, D. K., & Widyawati, S. (2024). Paired t-test analysis to determine the effect of smart paperboard learning media on student learning outcomes. *Al-Fikru: Jurnal Pendidikan dan Sains*, *5*(2), 281-290. https://doi.org/10.55210/al-fikru.v5i2.1870

Introduction

Smart Paperboard is a learning medium that combines the concept of a traditional whiteboard with advanced digital technology. This media creates an interactive learning experience, allowing students and teachers to interact directly with learning content. Smart Paperboard consists of a whiteboard with interactive features and digital connectivity. Smart Paperboard can connect to other electronic devices such as computers, tablets and projectors, making it easier to view and share digital content.

Smart Paperboard can be used using specific lessons created to take advantage of its interactive features. These applications include interactive exercises, educational games, or simulations that help increase student engagement and understanding. Smart Paperboard is equipped with a digital storage feature that allows users to store and access learning content digitally. Teachers can organize and manage learning materials more efficiently. Smart Paperboard generally has a recording feature that allows users to record and show learning sessions. These recordings can be used to review material, share it with absent students, and serve as a reference for individual study.

The benefit of using Smart Paperboard for learning is that students can actively participate and interact directly with the learning content so they are more involved in their learning. Students deepen

their understanding of taught concepts by writing, drawing, and interacting visually, and they collaborate, discuss, and collaborate actively in groups. Smart Paperboard can also be used in a variety of learning spaces, including traditional classrooms, learning centers, and self-paced learning environments.

In this situation, there are schools that experience obstacles in the PAI learning process, which has a significant impact on students' ability to achieve learning goals. The problem is that students are not interested in participating in PAI learning. Therefore, efforts are needed to overcome this problem. Of course, teachers are the biggest contributors to this, but students must also be willing to support these efforts. One of the reasons why students are not interested in studying PAI is the monotonous learning atmosphere. This is because some teachers really master the subject matter and can communicate it well to students, but the learning environment is boring and students do not want to respond to the subject matter positively. Low student activity means students have not fully mastered the learning material (Kusuma, et al., 2023).

Students understanding of Smart Paperboard media can vary depending on their experience and image of the technology. There are several factors that can influence students' understanding of Smart Paperboard media, students who are accustomed to using technology in learning. They may have a better understanding of the Smart Paperboard medium. Students who receive adequate coaching and guidance in using Smart Paperboard media tend to have a better understanding.

This training includes an introduction to basic functionality, navigating the user interface, and using special features. Students have limited access to Smart Paperboard media, and limited use can have an impact on understanding. Limited exposure to these media can prevent students from realizing their potential to improve learning. However, students with little specialized knowledge require significant guidance and support. The level of students' understanding of Smart Paperboard media can be influenced by students' motivation and interest in using this technology. In this case, the role of educators and educational institutions influences the use of media which allows students to obtain maximum benefits in supporting their learningprocess.

The ultimate goal of implementing learning activities in schools is learning outcomes. Learning outcomes can be improved through conscious efforts that are carried out systematically and bring about positive changes, which is called the learning process. The process ends with the achievement of student learning outcomes. Student learning outcomes in your class are collected in the Student Learning Outcomes collection. All learning outcomes are the result of interactions between learning and teaching actions (Asyirat, 2024).

Methods

Types of research

This research uses quantitative research methods with the type of research, namely experimental research. Quantitative research is research with tools for data processing using statistics, therefore the data obtained and the results obtained are in the form of numbers (Sahir, 2021).

The type of research used in this research is the Quasi Experimental or Quasi Experimental method. This form of experimentation is a development of true experimental design, which is difficult to implement. This method has many control groups, but cannot fully function to control external variables that influence the implementation of the experiment. The type of research used in this research is the Quasi Experimental or Quasi Experimental method. This form of experimentation is a development of true experimental design, which is difficult to implement. This method has many control groups, but cannot function fully to control external variables that influence the implementation of the experiment (Sidik, 2021).

Variables and Operational Definitions

a. Free variable

The independent variable of this research is smart paperboard learning media

b. Dependent variable
The dependent variable in this research is student understanding.

c. Operational definition
Smart paperboard learning media is a learning media that combines traditional whiteboard concepts with sophisticated digital technology. Student understanding is the ability to understand, absorb and remember information obtained in depth.

Population and sample

a. Population
the entire research object consisting of humans, objects, animals, plants, symptoms, test scores, or events as data sources that have certain characteristics in a study. Some of the population uses sampling techniques. Probability sampling (or random sampling) is a sampling technique that gives each element (member) of the population an equal opportunity to be selected as a sample member (Hardani et. al., 2024).

b. Research Hypothesis
A hypothesis is an interim answer to a research case whose truth must be tested empirically. A hypothesis states what interactions we are looking for or want to study.

Data collection technique

1. Test
A test is an instrument or sense to measure someone's behavior. In this study, the test was carried out 2 times, namely the initial test & the final test.
2. Observation
Observation is a data collection technique that allows researchers to be in the field, observe the symptoms being investigated, and describe the problems that arise.
3. Documentation
The documentation method is used to collect data about the results of student work on exam questions related to student understanding. The research instrument used in this research was a comprehension test.

Data analysis

Data analysis requires researchers a powerful tool to explore and understand the meaning of research data. This makes it possible to obtain meaningful and relevant insights that can be used to deepen understanding of the topic/object being researched and support decision making in research.

1. The normality test is carried out to check whether the sample is normally distributed. The normality test used is Kolmogorov Smirnov. The testing steps are as follows:
H_0: data spreads following a normal distribution
H_1: The data spread does not follow a normal distribution.
If X_2 count $\leq X_2$ table, then H_0 is accepted
If X_2 count $\geq X_2$table, then H_0 is rejected.
After testing the normality of the data, the next step is hypothesis testing.
2. Hypothesis Test
The steps for hypothesis verification are as follows.
H_0: Smart cardboard learning media has no effect on student learning outcomes in PAI subjects (Priyanda, R, 2022).
H_1: Smart cardboard learning media has an impact on student learning outcomes in PAI subjects.

Next, carry out a hypothesis test using the t-test.
T test formula

$$t = \frac{\overline{x1} - \overline{x2}}{\sqrt{\frac{s1^2}{n1} + \frac{s2^2}{n2} - 2r\left[\frac{s1}{\sqrt{n1}}\right] - \left[\frac{s2}{\sqrt{n2}}\right]}}$$

Results and Discussion

This research was conducted at SMA PGRI Megalu in the 2023/2024 academic year. The details of the number of class XI students were 25. The main discussion discussed in this material is the topic of Islamic religious education. This research was conducted to determine the application of Smart Paperboard learning media to student understanding. The researcher conducted two tests, namely before introducing Smart Paperboard learning media and after introducing Smart Paperboard learning media.

The results of the study indicate that the Smart Paperboard learning materials and media are suitable for comprehensive use. This is evidenced by the results of verification by material experts and media experts. The researcher used two special validators for material and two special validators for media to conduct validation. The first material verifier was Dr. Didin Sirojuddin, M.Pd.I, and the second material verifier was Muhammad Fodhil, M.Pd. Next, Khoirun Nisa', M.Pd.I. was appointed as the first media verifier and Rohmah, S.Pd, M.Pd. as the second media verifier.

Validation of the question grid was carried out by lecturers of Islamic Religious Education at KH.A.Wahab Hasbulloh University, Tambakberas Jombang. Validation was carried out through a questionnaire in the form of pre-test and post-test questions given to class XI students of SMA PGRI Megaluh Jombang. The following are the results of the validation of the question grid.

Table 1. Validation of Question Grid by Dr. Didin Sirojudin, M.Pd.I

No	Aspect	Amount	Average	Percentage
1	Material Domain	13	3.25	81%
2	Construction Domain	27	3.51	84%
3	Language Domain	17	3.40	85%
Average				**83.3%**

Table 2. Validation of Question Grid by Muhammad Fodhil, M.Pd

No	Aspect	Amount	Average	Percentage
1	Material Domain	13	3.25	81%
2	Construction Domain	25	3,25	78%
3	Language Domain	16	3.20	80%
Average				**79,6%**

Table 3. Validation Results by Two Validators

No	Aspect	Amount	Average	Percentage
1	Dr. Didin Sirojudin, M.Pd.I	57	3.35	83%
2	Muhammad Fodhil, M.Pd	54	3.20	80%
Average				**81,5%**

Based on the results of the report dated May 22, 2024 by Dr. Didin Sirojudin, M.Pd.I and Muhammad Fodhil, M.Pd based their measurements on three aspects: material, structural, and language. The results achieved in these three aspects were good with an average of 81.5%. It can be concluded that this question grid framework is feasible and can be used for research.

The results of the media validation were carried out by the Lecturer of Islamic Religious Education, KH University. A. Wahab Hasbulloh Tambakberas Jombang. as follows:

Table 4. Media Validation Results by Validator

No	Aspect	Amount	Average	Percentage
1	Hidayatur Rohmah, S.Pd.,M.Pd	38	3.80	95%
2	Khoirun Nisa, M.Pd.I	37	3.70	92,5%
Average				**93,75%**

Based on the results of the validation of learning media conducted on May 22, 2024 by Hidayatur Rohmah, S.Pd., M.Pd and Khoirun Nisa, M.Pd.I, through 10 elements that were measured, namely easy-to-find materials, synchronous media design, attractive media design, having a simple form, synchronous media using functions, easy media creation, media that does not require a lot of costs, media that is not dangerous, media can be stored and used repeatedly and media can spread students' interest in learning. The results obtained based on the three aspects were good with an average of 93.75%. So it can be drawn. The conclusion is that the learning media is feasible and can be used in research.

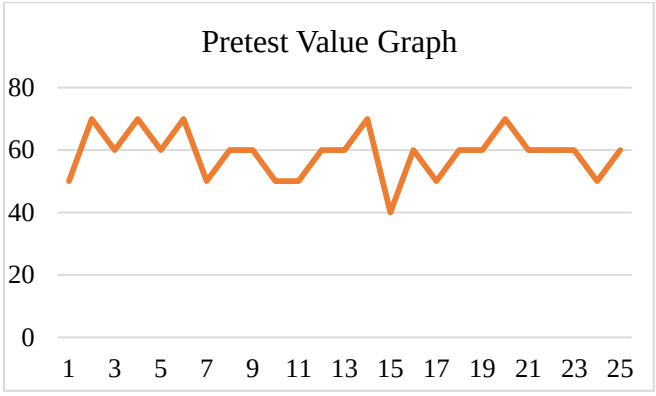

Figure 1. Pretest Score Graph

Students' understanding of Islamic Religious Education subjects before using Smart Paperboard learning media at SMA PGRI Megaluh can be explained based on Figure 4.1, it is known that the lowest pretest score is 40 which can be seen in student number 15 & the highest pretest score is 70 which can be seen based on student numbers 2, 4, 6, 13 & 20. The average pre-test is 58.8.

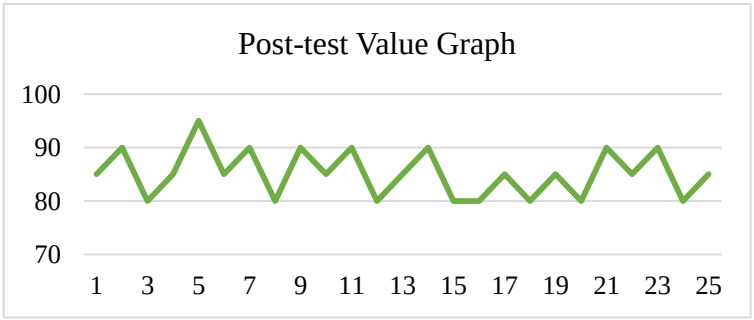

Figure 2. Post-Test Score Graph

Students understanding of Islamic Religious Education subjects after using Smart Paperboard learning media at SMA PGRI Megaluh can be explained in Figure 4.2. The minimum post-test score is 80. This can be seen in students 3, 8, 12, 15, 16, 18, 20, and 24. While the highest score in the post-test of 95 points is found in student number 5. The average post-test score is 85.2.

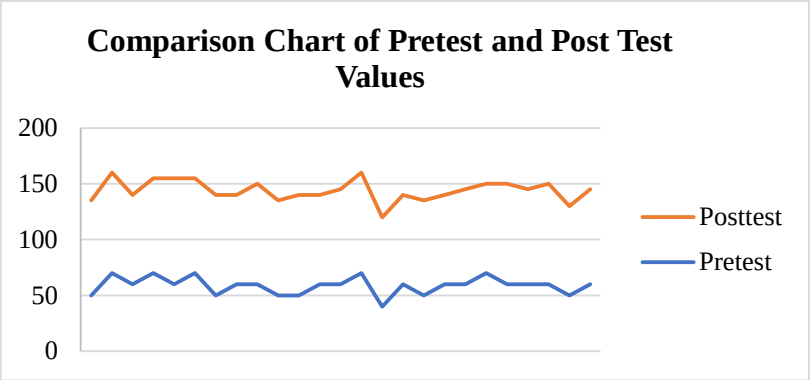

Figure 3. Comparison Graph of Pretest and Post Test Values

Based on Figure 4.3, it can be seen that there is a difference in the results of the pretest & post test scores in grade XI students of SMA PGRI Megaluh, showing that SMA PGRI Megaluh students in the use of Smart Paperboard learning media in a sample of 25 students experienced an increase. This is evidenced by using the pre-test results without using Smart Paperboard learning media, the output was 58.8 and after using Smart Paperboard learning media, the students' post-test output increased and the output was 85.2.

The Effect of Implementing Smart Paperboard Learning Media at SMA PGRI Megaluh

Normality Test

The normality test used is the Kolmogorov-Smirnov test. The following are the results of the normality test of this study.

Table 5. Normality Test Results

		Nilai Residual
N		25
Parameter Normal[a,b]	Mean	,0000000
	Std. Std. Deviation	5,87320488
Most extreme difference	Absolute	,112
	Positive	,112
	Negative	-,096
Normality Test		,562
Significant Value		,910

Based on the results in Table 4.5, the significance value is 0.910 > 0.005. This shows that the data in this study are normally distributed and can be continued with the next test, namely the paired t-test.

t-test

Table 6. Paired t-Test Results

	Rata-rata	N	Std. Deviasi	Std. Error Mean
pre test	58,80	25	7,810	1,562
post test	83,40	25	6,570	1,314

Based on table 4.6, it can be seen that the average value of the Islamic Religious Education subject before using the Smart Paperboard learning media is 58.80. While the average value of the Islamic Religious Education subject after using the Smart Paperboard learning media is 83.40. This shows that the Smart Paperboard learning media has an influence on students' understanding of the Islamic Religious Education subject, as evidenced by a 24.60% increase in the pretest score conducted by the researcher.

Table 7. Paired t-Test Results

	Paired Differences							
				95%Confidence Interval of the Difference				
	Mean	Std, Deviasi	Std. Error Mean	Lower	Upper	t	df	Significant Value
pre test-post test	-24.600	7.627	1.525	-27.748	-21.452	-16.128	24	.000

From Table 4.7, the significance value is 0.000 > 0.05. This shows that the research hypothesis has proven to have an effect on the implementation of smart cardboard learning media at SMA PGRI Megaluh.

Smart Paperboard Learning Media and Question Validation Results

From the results of the material verification by two verifiers, namely Dr. Didin Shirojudin and Muhammad Fodil M.Pd. First, Dr. Didin Shirojudin obtained an average score of 83.3% and emphasized that the discussion material must include the achievements of several caliphs. On the other hand, the average score of Muhammad Fodhil, M.Pd. reached 79.6%, this shows that improvements are needed by including questions in the hadith format that are in accordance with the material and efforts need to be made to avoid repeating answer choices. Therefore, from the two expert material validators, an average of 81.5% was obtained which met the requirements and could be used with improvements made according to the verifier's suggestions. Next, the results of the media verification by two verifiers, namely Khoirun Nisa' M.Pd.I and Hidayatur Rohmah, S.Pd, M.Pd. First, Khoirun Nisa' M.Pd.I verification results reached an average of 92.5% indicating the need for improvement in terms of the cleanliness of documents published in the media. Second, by Rohmah, S.Pd, M.Pd., got an average of 95% for her suggestion that the media be duplicated and the media cover be replaced with newspaper with less writing.

From the output of the validation of materials and media carried out by the validator, an average of 81.5% was obtained for material validation and 93.75% for media validation. So it can be concluded that the material and media are suitable for use using improvements according to the suggestions given by the validator.

Discussion

Students Understanding of Islamic Religious Education Subjects Before Using Smart Paperboard Learning Media.

Students understanding of Islamic Religious Education subjects before using Smart paperboard learning media, students may be accustomed to using more conventional learning methods, such as lectures or the use of textbooks. Before using interactive media, students may be less involved in discussions or simple activities that can increase their understanding. The Islamic Religious Education material taught can be too formless or difficult to understand without concrete models or practical applications. This can hinder student understanding. The role of teachers in explaining the material and providing guidance is very important. Teachers must be able to explain well and provide relevant models that can help students understand the material better.

Studentsunderstanding before the application of Smart paperboard learning media, a pre-test is needed. The pre-test or initial test is carried out to find out whether the class has the ability or not. The pre-test was carried out in one class whose research subjects were tested, namely class XI SMA PGRI Megaluh Jombang. The questions used were multiple choice using a total of 20 questions. From this pre-test, an average of 58.8 was obtained.

These results indicate that the use of smart paperboard media is in sync with Kristanto's theory (2016) which states that the function of learning media is to make the learning process clearer and

more interesting. Media can display coverage through sound, images, movements and colors, both naturally and manipulated, as a result helping teachers to create a learning atmosphere that is more lively, not monotonous and not boring. With media, there will be active two-way communication, while without media, teachers tend to talk one way (Kritanto, 2016).

Students Understanding of Islamic Religious Education Subjects After Using Smart Paperboard Learning Media

The purpose of the post-test is to measure the impact of the application of Smart paperboard media on the observed variables. The post-test was conducted in a class that was previously given a pre-test, namely class XI. From the application of Smart paperboard learning media, there was an increase in student learning output in Islamic Religious Education subjects. The post-test output of class XI students obtained an average of 85.2. Evidently, the average post-test was higher than in the pre-test homogeneity. So it can be concluded that the application of smart paperboard learning media can increase student learning output in Islamic Religious Education subjects.

The results show that students' understanding of Islamic Religious Education subjects is in line with Bloom's theory in Utami Munandar. This understanding is the ability to remember and use information without having to use it in new and inconsistent situations. Bloom also stated that understanding is one of the cognitive targets that is not in line at the second level after knowledge in understanding, the skills needed are the skills of translating, connecting, and interpreting (Yonanda, 2017).

This research is the same as Darajat's theory (1993) which shows that the aim of Islamic religious education is to foster and develop students in knowing the true beliefs and also practicing them as religious skills in many dimensions of life (Firmansyah, 2019).

The Effect of Implementing Smart Paperboard Learning Media on Students' Understanding of Islamic Religious Education Subjects at SMA PGRI Megaluh

The use of Smart Paperboard learning media has a number of significant impacts on the teaching and learning process. Smart Paperboard allows students to become active participants in their learning. Interactive features allow students to participate in discussions, answer questions, and complete activities that are more involved with the material. This media helps students understand complex concepts by presenting information visually. Visualizations can be in the form of graphs, charts, videos, and animations that make learning more interesting and easier to understand. Learning that utilizes various senses (sight, hearing, kinesthetic) can improve students' memory.

The results of calculating the average pre-test scores before and after the test, obtained an average of students increased from 58.80 points before the test to 83.40 points after the test. Before the researchers analyzed the data, they tested whether the data was normal. The data normality test produced 0.910> 0.005 so that the data was normally distributed. Meanwhile, from the results of the analysis using the t-test (paired), a significance value of 0.00 <0.05 was obtained, so it can be concluded that the use of smart cardboard learning media has an effect on the learning outcomes of students of class XI SMA PGRI Megaluh Jombang.

This study is related to the study "The effect of smart board learning media on students' early reading ability in Indonesian language in elementary school Indonesian language subjects" conducted by Rosalina Putri and Kasriman. This study shows that students in classes using smart board media experience an increase in learning interest. The results of the study obtained the following data: Hypothesis testing using the t-test formula, namely 3.228> 2.002, meaning the effect of smart board learning media on the early reading comprehension of first-grade students in Indonesian language subjects at SD Pulau Harapan (Putri, 2022).

This study is in accordance with the research conducted by Fran Richard Langka with the title of the study "Development of Smart Board Algebra Learning Media for One Variable Linear Equation Material". The results of this study are that this smart board media is a valid media to be used as a tool to convey material with an average percentage of 88.9%. In terms of material, the use of this media is very influential with an average percentage of 95%. From the results of filling out the student questionnaire, this smart board media got an average percentage of 93.25% (Langka, 2023).

This study is also in accordance with Siti Herniyati's research entitled "Development of Smart Board Media to Improve Students' High-Level Thinking Skills in Pancasila Material". From the results of the pre-test and post-test, the learning score before using Smartboard media was 53.21, but after using Smartboard media, the students' skill scores increased to an average of 89.28. These results show an increase in the skills of class VII students after using Smartboard media by 36.07% (Herniyanti, 2023).

Conclusion

Based on the research results of SMA PGRI Megaluh Jombang researchers, it can be concluded that the use of smart cardboard learning media really helps the teaching and learning process of teachers and students. The mean value determined from the validation results of the media used is 93.75 which meets the requirements. Of the total of 20 multiple choice questions given to students in the pre-test and post-test, the average score in the pre-test was 58.8 points and in the post-test 85.2 points. Student grades also increased in average score. The results of the analysis using the data normality test were 0.910 > 0.005. It can be concluded that the data is normally distributed. The paired t test shows a significance of 0.00<0.05. Therefore, it can be said that the smart cardboard learning media has an impact on student learning outcomes in PAI subjects at SMA PGRI Megaluh Jombang.

References

Amruddin, Priyanda, R. *Metodologi Penelitian Kuantitatif*. Pradina Pustaka, 2022. https://books.google.com/books?hl=en&lr=&id=B5t1EAAAQBAJ&oi=fnd&pg=PT5&dq=info:wLGm472RkToJ:scholar.google.com&ots=mE12F0noOP&sig=2gYufmnvNVJ3HBf-qyFoB5-Ddw4. Diakses pada 18 April 2024.

Firmansyah, Mokh. Iman. Pendidikan Agama Islam : Pengertian, Tujuan, Dasar, Dan Fungsi. *Ta'lim*: Jurnal Pendidikan Agama Islam, 17(2), 2019, 79-90. https://ejournal.upi.edu/index.php/taklim/article/view/43562. Diakses pada 8 Mei 2024.

Hardani, dkk, *Metode Penelitian Kualitatif & Kuantitatif*, Yogyakarta: CV. Pustaka Ilmu GroupYogyakarta.https://eprints.iainukebumen.ac.id/id/eprint/87/4/7.%20DAFTAR%20PUSTAKA.pdf. Diakses pada 11 Mei 2024.

Herniyanti, Siti. "Pengembangan Media Papan Pintar Untuk Meningkatkan Keterampilan Berpikir Tingkat Tinggi Siswa Pada Materi Pancasila." *Skripsi* (2023): 2023. http://repository.uinbanten.ac.id/13217/. Diakses pada 20 Mei 2024.

Kritanto, Andi. *Media Pembelajaran*. Surabaya: Bintang Surabaya, 2016. https://scholar.google.co.id/citations?view_op=view_citation&hl=en&user=096t5qYAAAAJ&citation_for_view=096t5qYAAAAJ:d1gkVwhDpl0C. Diakses pada 30 Mei 2024.

Langka, Fran Ricard, and Danang Setyadi. "Pengembangan Media Pembelajaran Papan Pintar Aljabar Untuk Materi Persamaan Linear Satu Variabel." *Math Didactic: Jurnal Pendidikan Matematika* 9, no. 2 (2023): 335–347. https://jurnal.stkipbjm.ac.id/index.php/math/article/view/2146. Diakses pada 31 Mei 2024.

Putri, Rosalina, and Kasriman. "Pengaruh Media Pembelajaran Papan Pintar (Smart Board) Terhadap Kemampuan Membaca Permulaan Peserta Didik Pada Mata Pelajaran Bahasa Indonesia Kelas 1 Sekolah Dasar." *Jurnal Cakrawala Pendas* 8, no. 4 (2022): 1181–1189. https://ejournal.unma.ac.id/index.php/cp/article/view/2716. Diakses pada 6 Juli 2024.

Sahir, Syafrida Hafni. *Metodologi Penelitian*. Yogyakarta: Penerbit KBM Indonesia, 2021. https://repositori.uma.ac.id/bitstream/123456789/16455/1/E-Book%20Metodologi%20Penelitian%20Syafrida.pdf. Diakses pada 9 Juli 2024.

Sidik, P., dan Sunarsi, D. *Metode Penelitian Kuantitatif*. Tangerang: Pascal Books, 2021.https://books.google.co.id/books/about/METODE_PENELITIAN_KUANTITATIF.html?hl=id&id=9dZWEAAAQBAJ&redir_esc=y. Diakses pada 15 Juli 2024.

Wardani, Dian Kusuma, et al. "PENERAPAN MODEL PEMBELAJARAN TEAM GAME TOURNAMENT PADA SISWA KELAS VIII." PROSIDING SEMINAR NASIONAL PENELITIAN DAN PENGABDIAN KEPADA MASYARAKAT (SNPPM) UNIVERSITAS MUHAMMADIYAH METRO. Vol. 5. No. 1. 2023.

Yonanda, Devi Afriyuni. Peningkatan Pemahaman Siswa Mata Pelajaran Pkn Tentang Sistem Pemerintahan Melalui Metode M2M (*Mind Mapping*) Kelas IV MI Mambaul Ulum Tegalgondo Karangploso Malang. *Jurnal Cakrawala Pendas*, 3 (1), (2017), 53-63. https://eprints3.upgris.ac.id/4605/1/Nana%20Hexada%20Dewi%20Pramesthi.pdf. Diakses pada 10 September 2024.

Asyirat Masruroh Yohana & Wardani Kusuma Dian. (2024). *Efektivitas Penerapan Model Pembelajaranteam Game Tournament(Tgt) Pada Hasil Belajar Siswa*. Al Furqan :Jurnalagama, Sosial, Dan Budaya, 3 (4).