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THE EFFECT OF USING POWTOON MEDIA ON ELEMENTARY SCHOOL STUDENTS' MATHEMATICS LEARNING OUTCOMES ON TIME MEASUREMENT MATERIAL

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Abstract

Elementary school students tend to experience boredom when studying mathematics, because teachers have not used interesting learning media so that student learning outcomes decrease. This research aims to determine the effect of using Powtoon media on mathematics learning outcomes on the topic of time measurement for fifth grade elementary school students. This type of quantitative research uses the Pre-Experiment Design method with One Group Pre-Test Post-Test Design. The data collection technique was a written test with a saturated sample in class V, totaling 15 students. Data analysis uses Non-Parametric Inferential Statistics with the Wilcoxon Signed Rank Test and Descriptive Statistics. This research uses a data normality test with the Shapiro Wilk Test. Before being given treatment, the average pre-test score for students was 58.66% and after being treated with Powtoon media there was a significant increase with the average post-test score increasing to 76.00%. The results of the Wilcoxon Signed Rank Test show the value of Asymp.Sig. (2-tailed) is 0.002. Because this value is less than <0.05, Ha is accepted. It can be concluded that the use of Powtoon media has an influence on mathematics learning outcomes on the topic of measuring time for class V students. This research includes increasing the use of interactive learning media in the educational process, provides empirical evidence about the effectiveness of Powtoon media in improving student learning outcomes, which can be used as a reference for teachers and curriculum developers to improve the quality of mathematics learning.

Keywords Powtoon Media, Learning Outcomes, Time Measurement

INTRODUCTION

Mathematics learning is a teaching process designed to stimulate students' creative thinking and increase understanding of mathematical concepts. The goal is to foster critical, logical, and systematic thinking, enabling students to understand, relate, and apply mathematical concepts effectively(Putri Utami & Alan Dheri Cahyono, 2020). In addition, mathematics learning aims to develop students' abilities in solving various problems, designing relevant mathematical models, and interpreting the results obtained(Ministry of Education and Culture, 2006). Mathematics education in Indonesia still faces various challenges. Data shows that Indonesia's ranking in international assessments such as the Program for International Student Assessment (PISA) and UNESCO reports is very low. For example, in 2018, Indonesia's mathematics score was ranked 73rd out of 78 countries in PISA, and in 2015, the quality of mathematics education in Indonesia was ranked 34th out of 38 countries according to UNESCO. Furthermore, a survey by the National Center for Education Statistics in 2016 showed that Indonesia was ranked 39th out of 41 countries in mathematics learning.(Firmansyah et al., 2022).

Most elementary school students consider mathematics to be a complex and abstract subject, with confusing symbols and formulas. This difficulty causes low student learning outcomes in mathematics subjects(Amallia & Unaenah, 2018; Anggraeni et al., 2020; Ningsih et al., 2022; Utami & Cahyono, 2020). This is in line with research conducted at SDI Al Mu'awanah Surabaya, where students experienced difficulties in learning mathematics due to teachers not utilizing digital media in class V during the learning process, resulting in 87% of students experiencing a decline in mathematics learning outcomes. To overcome this problem , teachers play an important role in creating an interesting and enjoyable learning environment(Setyadi, 2017). One potential approach is to utilize technology-based learning media, such as Powtoon. Powtoon is an online platform used to create animated video presentations, which can make learning more interesting and interactive(Final, 2022).

Powtoon provides various animation features that are used to package information into interesting videos, thereby increasing student enthusiasm during the learning process(Ariyanto et al., 2018). Learning media such as Powtoon also has a positive impact by combining visual and audio elements which improve students' ability to remember material during the learning process.(Qurrotaini et al., 2020). By using Powtoon, it is hoped that students can be more focused

and interested in the learning process, thereby ultimately improving learning outcomes. Powtoon is a multimedia tool that allows teachers to create engaging and interactive animated presentations. Using Powtoon in mathematics learning can stimulate students' interest by presenting concepts that are difficult to understand in a visual and fun way(Asih & Ujiti, 2021; Destiasa et al., 2023; Saputra & Mampouw, 2022; Tyaningsih et al., 2023). Interesting animations and visualizations help keep students' attention longer, reducing boredom that often occurs in conventional learning. Powtoon also allows material to be presented in the form of stories or scenarios that are relevant to students' daily lives, making learning more meaningful. For example, the concept of measuring time can be conveyed through animations that depict daily activities that involve measuring time, so that students can understand its practical application. Additionally, Powtoon can be used to provide concrete examples and simulations that strengthen understanding of concepts(Subkan & Winarno, 2020; Tiwow, Wongkar, & ..., 2022). The interactivity in Powtoon allows students to actively participate in learning, whether through interactive quizzes, animated assignments, or other activities that encourage direct engagement.

This research aims to determine the impact of using Powtoon media on elementary school students' mathematics learning outcomes on the topic of Time Measurement. It is hoped that the results of this research can become a reference for other schools, especially at the elementary level in Indonesia, to apply Powtoon media in the learning process.

METHOD

This research uses a quantitative pre-experimental method with a one-group pre-test and post-test design. The data collection technique uses a written test consisting of a test instrument and a test grid. It is hoped that this research can be an option for teachers in utilizing digital media such as Powtoon to improve mathematics learning outcomes. The data analysis technique in this research uses inferential statistics and descriptive statistics. Normality testing uses non-parametric methods with the Shapiro-Wilk test because the data set is less than 50 with a significance level of less than 0.05.

FINDINGS AND DISCUSSION

Findings

This research was conducted in class V of SDI Al Mu'awanah Surabaya which is located on Jalan Sememi Jaya No. VIII, Benowo District, Surabaya City, East Java Province. This research uses

Powtoon Mathematics Media on the topic of Time Measurement which is taught to fifth grade students. The following is an example of data findings from this research;

Table 1. Research Sample Data

Gender	Population size	Class
Man	8	V (Five)
Woman	7	V (Five)
Amount	15	V (Five)

A sample is a part that represents a number of characteristics in a population. According to Sugiyono,as quoted in Setyadi, (2021)The sample is a portion of the population selected by the researcher. In this research, the sampling technique used is non-probability sampling, that is, all members of the population are taken as research samples through the census method or saturated sample.

From the previous explanation it can be concluded that this research only used one group of class V students as a sample to represent the entire population, so the researchers chose 15 class V students as the research sample. This research was conducted in two sessions, namely pretest and posttest. Learning activities from start to finish are carried out directly by researchers.

1. Learning Results Before and After Using Powtoon Media

This research is a pre-experimental research which aims to determine the effect of powtoon media on the learning outcomes of class V students at SDI Al Mu'awanah Surabaya. The research design used was One Group Pre-test and Post-test. The experiment was carried out on one group which was given a pre-test, then received treatment via Powtoon media, and finally was given a post-test. The following is a summary of the results of mathematics learning completion before and after using Powtoon media;

Table 2. Recap of Pre-test and Post-test Score

No	Name	Pretest Score	Post Value
1	A A	60	80
2	RD	60	40
3	No	60	80
4	Br	40	60
5	WS	40	60
6	day	60	80
7	No	60	80
8	BS	40	60
9	ml	60	80

10	F.S	80	100
11	LT	80	100
12	SB	40	80
13	they	60	80
14	A	80	80
15	S.A	60	80

Results

Based on table two above, it is a summary of the pre-test and post-test scores that have been completed by class V. The following are the average student learning outcomes as follows;

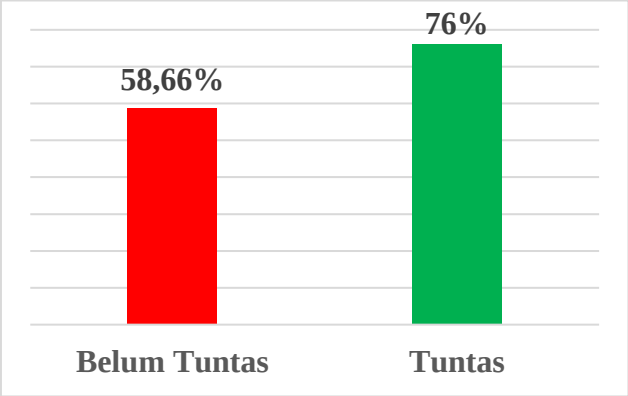

Figure 1. Average Learning Completeness

Based on the image presented above, information can be obtained regarding the average mathematics learning mastery score. The average percentage of students who have not achieved completion is 58.66%, while the average percentage of students who have achieved completion is 76%. It can be concluded that student learning outcomes increase after using Powtoon media.

a Student Learning Results Before Using Powtoon Media

Based on the pre-test results obtained in the experimental class, the frequency distribution data is presented in the following table;

Table 3. Distribution of Initial Scores (Pre-Test)

Mark	Frequency
85-100	-
70-85	3
55-69	8
0-45	4
Amount	**15**

Based on table 3, the distribution of initial pretest scores obtained in class V can be depicted in the following table and graph:

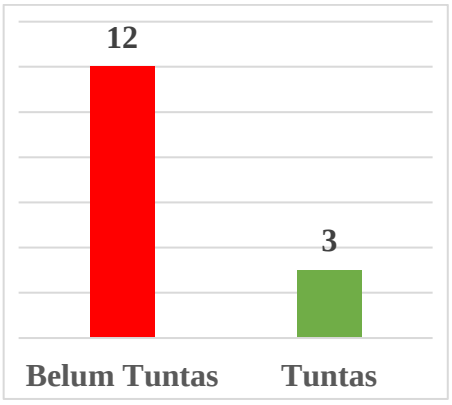

Figure 2. Pretest Completeness Results

Figure two above shows that the learning results of all class V, totaling 15 students, produced the following data: 80% or 12 students were classified as not yet advanced, while 20% or 3 students were classified as not yet advanced, while 20% or 3 students were classified as not yet advanced. as Proficient in Mathematics. The graph shows the pretest scores obtained by class V students as follows;

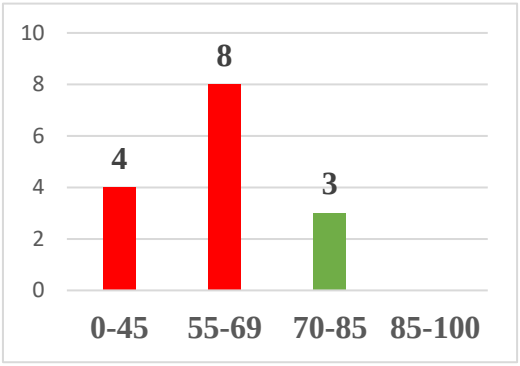

Figure 3. Initial Score Graph (Pre-Test)

Based on the third picture above, it can be concluded that the pre-test results of the experimental group in Class V are as follows: 4 students got scores between 0-45, 8 students got scores between 55-69, 3 students got scores between 70-85, and no there are students who get scores between 85-100. Based on statistical calculations (Table), the results obtained are as follows:

Table 4. Initial SPSS Test Score (Pre-Test)

Descriptive statistics

	N	Minimum	Maximum	Means	Std. Deviation
Prates	15	40.00	80.00	58.6667	14.07463
Valid N (list)	15				

From table 4 above, it can be seen that the number of students who took the pretest (N) was 15 students with a minimum score of 40, a maximum score of 80, a mean of 58.66, and a standard deviation of 14.074.

b Student Learning Results After Using Powtoon Media

Post Test results in the experimental class are presented in table form to describe and clarify the data obtained from the research findings. The distribution of post-test results can be seen in the following table:

Table 5. Final Score Distribution (Post-Test)

Mark	Frequency
85-100	2
70-85	9
55-69	3
0-45	1
Amount	**15**

Based on table 5, the frequency distribution of pretest results obtained from the experimental class can be depicted in the following table and graph:

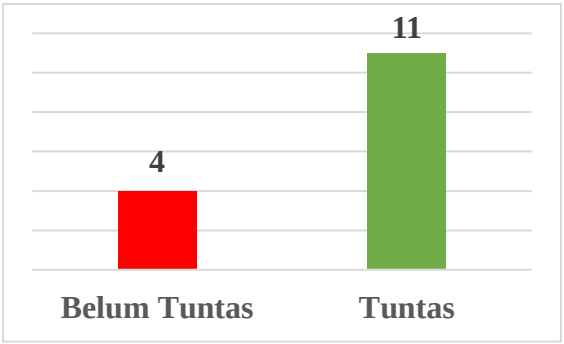

Figure 4. Posttest Completeness Results

In figure four above, the posttest completion results show that 26.6% or 4 students were declared Complete and 73.4% or 11 students were declared Complete in mathematics learning. The posttest score graph is as follows;

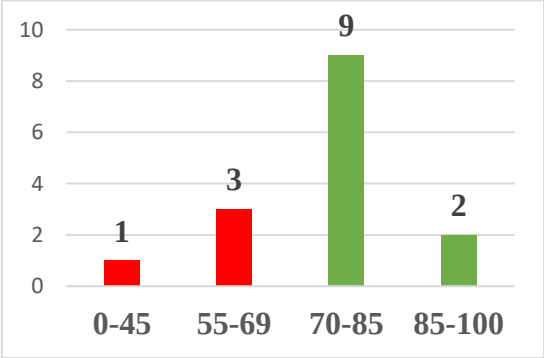

Figure 5. Final Score Graph (Post Test)

Based on Figure 5 above, it can be concluded that the post-test results for the class V experimental group are as follows: 1 student got a score between 0-45, 3 students got a score between 55-69, 9 students got a score between 70-85, and 2 students got a score between 85-100. Meanwhile, for statistical calculations, the results obtained are as follows:

Table 6. Final SPSS Test Score (Post-Test)

Descriptive statistics

	N	Minimum	Maximum	Means	Std. Deviation
Posttest Valid N (list)	15 15	40.00	100.00	76,0000	15.49193

From table six above, it can be seen that the number of students who took the posttest (N) in the experimental class V was 15 people, with a minimum score of 40, a maximum score of 100, an average score of 76, and a Standard Deviation. (SD) of 15,491.

Discussion

1. Student learning outcomes before and after using Powtoon media

The high proportion of students who obtained low scores indicates the need for additional attention in the process of learning the concept of time measurement. More intensive learning efforts, alternative teaching strategies, and interesting learning media are needed so that students can achieve a better understanding of the material and improve their learning outcomes. Researchers

analyzed that fifth grade students still did not fully understand the topic of measuring time in mathematics.

One way to increase students' understanding is through interesting technology-based media such as Powtoon. Powtoon is an online platform that offers various interesting animation features for creating video messages. Users can smoothly create animated presentations via the internet with a variety of interesting features. This platform also facilitates time management(Anjarsari et al., 2020). Based onMelda Tiara, (2023), Powtoon as an audiovisual media has succeeded in increasing students' understanding and enthusiasm for learning.Rahman, (2021) states that learning outcomes reflect individual achievements in improving skills through various activities that require cognitive, affective, psychomotor and other elements. Likewise research conducted by Miudi & Supriansyah, (2023) showed that using Powtoon as a learning platform correlated with higher student progress in learning outcomes.

From the statements above, it can be concluded that Powtoon is a digital learning media that is suitable for use by teachers as an alternative method for delivering learning, raising students' enthusiasm for learning and improving academic achievement in elementary schools. Based on mathematics learning results on the topic of measuring time, the average post-test score for proficient students was 76%, higher than the average pre-test score for non-proficient students of 58.66%. This increase shows that using Powtoon helps fifth grade students learn better. By utilizing technology, teachers can teach in an interesting and interactive way so as to attract students' interest and understanding of the lesson. Therefore, Powtoon creates a pleasant learning atmosphere.

In conclusion, this research shows that Powtoon is effective in increasing students' understanding of the topic of time measurement in mathematics. This suggests that future research could explore broader applications in other mathematical topics and consider evaluating affective and psychomotor aspects along with cognitive aspects. These findings contribute positively to improving student learning outcomes, especially in elementary school mathematics subjects.

2. Influence of Learning Outcomes of Class V Students at SDI Al Mu'awanah

Based onTiwow et al., (2022), the interaction between learning media and students' learning interests influences learning outcomes. Choosing the right learning media to increase student interest can significantly influence their learning outcomes. The use of Powtoon media also helps clarify ideas that are not concrete, thereby reducing the use of excessive words in the learning process.(Evi Deliviana, 2017). Therefore, when choosing learning media, it is important to consider

students' interests because the impact on mathematics learning outcomes depends on students' learning interests.

From the results of the Wilcoxon Signed Rank Test calculations, there are several findings that are relevant to the research, as follows. First, there was 1 student who showed a decrease in learning outcomes from pretest to posttest which was indicated by a Negative Rating. This shows that 1 student obtained lower learning outcomes on the posttest compared to the pretest, with a Mean Rank of 7.00 and a total Sum Rank of 7.00. Second, 13 students showed an increase in learning outcomes from pretest to posttest which was reflected in Positive Ratings with a Mean Rank of 7.54 and a Sum of Ranks of 98.00. Third, there was one case where a student obtained the same score on the pretest and posttest, which was indicated by Ties. Even though it is only one case, this shows the consistency of student learning outcomes. The majority of class V students experienced an increase in average learning outcomes of 17.4% from the average pretest score of 58.6% to 76% in the posttest after participating in Powtoon-based learning. This shows that the use of powtoon media influences the learning outcomes of class V students.

From the results of the Wilcoxon Signed Rank Test in this research, it can be concluded that the majority of students show high enthusiasm when learning with Powtoon media, because Powtoon can change students' abstract understanding into concrete concepts thereby improving student learning outcomes. Although there are cases of decreased learning outcomes, this serves as feedback to evaluate and improve teachers' teaching strategies to utilize digital media such as Powtoon for overall student learning outcomes. It is also hoped that this research can become a basis for further educational innovation in future research.

This research shows that the use of Powtoon media has a significant positive impact on elementary school students' mathematics learning outcomes on the topic of measuring time. This finding is supported by data showing an increase in the average score from 58.66% on the pre-test to 76.00% on the post-test. The results of the Wilcoxon Signed Rank Test analysis show the value of Asymp.Sig. (2-tailed) of 0.002, which means there is a significant increase in student learning outcomes after using Powtoon. These findings are in line with the constructivist learning theory put forward by Piaget and Vygotsky, which emphasizes the importance of active and meaningful learning experiences in developing conceptual understanding.(Piaget, 1964). Powtoon as an interactive learning media allows students to be actively involved in the learning process, increasing student interest and motivation. Apart from that, research by Setiawan and Putri (2021) in the

journal "Mathematics Education" also found that the use of animation in mathematics learning can help students understand abstract concepts better. They found that animation helps in visualizing concepts, making it easier for students to understand and remember the material being taught. The use of Powtoon is also in line with Mayer's multimedia theory, which states that a combination of text and images can improve student understanding better than text alone. Powtoon combines visual and auditory elements, which can help strengthen memory and understanding of concepts(Toharudin, 2023).

Thus, the findings of this research not only show the effectiveness of Powtoon media in improving students' mathematics learning outcomes, but are also supported by previous theory and research. This provides a strong basis for the application of Powtoon media in elementary schools in Indonesia to improve the quality of mathematics learning. It is hoped that wider implementation of interactive learning media can overcome the challenges of conventional learning and produce significant improvements in learning outcomes.

CONCLUSION

This research aims to determine learning outcomes before and after using Powtoon media, as well as determine the impact of using Powtoon on learning outcomes on the topic of time measurement in class V students at SDI Al Mu'awanah Surabaya. Based on the data analysis and hypothesis testing carried out, the following conclusions can be drawn to answer the research questions. First, the student learning results before using Powtoon on the topic of measuring time in class V at SDI Al Mu'awanah Surabaya were in the Unsatisfactory category. This is proven by the average pretest score of 58.66%. However, after using Powtoon, student learning outcomes showed an improvement as indicated by an average posttest score of 76%, which shows satisfactory mathematics learning. Second, the use of Powtoon has a significant impact on improving learning outcomes on the topic of time measurement in class V mathematics at SDI Al Mu'awanah Surabaya. To determine the impact of Powtoon, the Wilcoxon Signed Rank Test was carried out. The Wilcoxon Signed Rank Test decision criterion states that if Asymp. signature. (2-tailed) value is less than <0.05, then Ho (null hypothesis) is rejected and Ha (alternative hypothesis) is accepted. From the results of the Wilcoxon Signed Rank Test using SPSS 26, a value of 0.002 was obtained. This shows that 0.002 is smaller than <0.05 so it can be concluded that Ho is rejected and Ha is accepted. Therefore, it can

be concluded that the use of Powtoon has a significant influence on learning outcomes on the topic of measuring mathematical time.

REFERENCE

Amallia, N., & Unaenah, E. (2018). Analysis of mathematics learning difficulties in third grade elementary school students. Attadib: Journal of Elementary …. https://jurnalfai-uikabogor.org/index.php/attadib/article/view/414

Anggraeni, ST, Muryaningsih, S., & ... (2020). Analysis of factors causing difficulties in learning mathematics in elementary schools. Research Journal…. http://jurnalnasional.ump.ac.id/index.php/jrpd/article/view/7929

Anjarsari, E., Farisdianto, DD, & Asadullah, AW (2020). Development of Powtoon Audiovisual Media in Mathematics Learning for Elementary School Students (Vol. 5, Issue 2).

Ariyanto, R., Kantun, S., & Sukidin. (2018). Using Powtoon Media to Increase Student Interest and Learning Outcomes in the Basic Competency of Describing Economic Actors in the Indonesian Economic System (Case Study of Class VIIID Nurul Islam Jember Even Semester 2017/2018 Academic Year). Journal of Economic Education: Scientific Journal of Education, Economics and Social Sciences, 12(1), 122. https://doi.org/10.19184/jpe.v12i1.7622

Asih, TS, & Ujiti, PR (2021). Innovation in learning videos assisted by the Powtoon application on the subject of perimeter and area of flat shapes. PGSD Undiksha pulpit. https://ejournal.undiksha.ac.id/index.php/JJPGSD/article/view/36665

Destiasa, EI, Stevani, F., & Irhadtanto, B. (2023). Experimentation of Powtoon Animation Video Based Learning Media on Learning Achievement. JLEB: Journal of Law…. http://www.rayyanjurnal.com/index.php/jleb/article/view/1042

Evi Deliviana. (2017). Powtoon Application as a Learning Media. Makassar State University Publishing Agency.

Firmansyah, Irnandi, I., Purwati, & Haryanto. (2022). Mathematics Problem Solving Ability of Grade VI Students of Public and Private Elementary Schools During the Pandemic. Pendas Cakrawala Journal, 8(2), 420–427. https://doi.org/10.31949/jcp.v8i2.2132

Ministry of Education and Culture. (2006). Regulation of the Minister of National Education of the Republic of Indonesia No. 22 of 2006.

Melda Tiara. (2023). The Influence of Powtoon Audiovisual Learning Media on Students'

Understanding of Concepts in Class V Science Subjects at SDN 01 Tanjung Rejo Oku Timur.

Miudi, IA, & Supriansyah, S. (2023). The Influence of Powtoon Animation Video Media on Class IV Mathematics Learning Outcomes at SDN Pejaten Timur 01. Scholar's Journal: Journal of Mathematics Education, 7(1), 372–379. https://doi.org/10.31004/cendekia.v7i1.1670

Muakhirin, B. (2022). Powtoon Video Media to Improve Elementary School Science Learning Outcomes Material on Plant Vegetative Propagation. In Journal of Educational Evaluation (Vol. 13, Issue 1).

Ningsih, SK, Amaliyah, A., & Rini, CP (2022). Analysis of mathematics learning difficulties in second grade elementary school students. Berajah Journal. https://www.ojs.berajah.com/index.php/go/article/view/48

Piaget, J. (1964). Cognitive Development in Children: Piaget Development and Learning. Journal of Research in Science Teaching, 2(3), 176–186.

Putri Utami, Y., & Alan Dheri Cahyono, D. (2020). At Home Study: Analysis of Mathematics Learning Difficulties in the Online Learning Process. Scientific Journal of Realistic Mathematics (JI-MR), 1(1), 20–26.

Qurrotaini, L., Sari, TW, Sundi, VH, & Nurmalia, L. (2020). Effectiveness of Using Powtoon-Based Video Media in Online Learning. Http://Jurnal.Umj.Ac.Id/Index.Php/Semnaslit. http://jurnal.umj.ac.id/index.php/semnaslit

Rahman, S. (2021). The Importance of Learning Motivation in Improving Learning Outcomes. Gorontalo State University Postgraduate Proceedings of the National Seminar on Basic Education.

Saputra, TFN, & Mampouw, HL (2022). Development of learning using Powtoon media for material on systems of linear equations in two variables. ... Scholar: Journal of Mathematics Education. https://www.j-cup.org/index.php/cendekia/article/view/1203

Setyadi, D. (2017). Development of Android-Based Mobile Learning as a Means of Practicing Working on Mathematics Problems. : : Https://Www.Researchgate.Net/Publication/322575973, 33(2), 87–92. https://doi.org/10.24246/j.sw.2017.v33.i2.p87-92

Subkan, A., & Winarno, W. (2020). Development of Mathematics Learning Media through the Powtoon Application at Madrasah Ibtidaiyah (MI) Miftahut Thulab Brambang Karangawen. JIP PGMI Scientific Journal. https://jurnal.radenfatah.ac.id/index.php/jip/article/view/6129

Sugiyono, in Saputra. (2021). Application of the Mind Mapping Learning Model to Learning

Outcomes in Elementary Schools. Basicedu Journal, 5(6), 5133–5141. https://doi.org/10.31004/basicedu.v5i6.1563

Tiwow, D., Wongkar, V., & ... (2022). The influence of Powtoon animation learning media on learning outcomes in terms of students' learning interest. … Focus Action of …. https://jurnalfakarbiyah.iainkediri.ac.id/index.php/factorm/article/view/404

Tiwow, D., Wongkar, V., Mangelep, NO, & Lomban, EA (2022). The Influence of Powtoon Animation Learning Media on Learning Outcomes in View of Students' Learning Interests. Journal Focus Action of Research Mathematics (Factor M), 4(2), 107–122. https://doi.org/10.30762/factor_m.v4i2.4219

Toharudin, U. (2023). Improving Student Learning Outcomes Using Powtoon Media Apps. International Journal of Interactive Mobile…. http://repository.unpas.ac.id/67669/1/40_Improving%2BStudent%2BLearning%2BOutcomes%2BUsing%2BPowtoon%2BMedia%2BApps.pdf

Tyaningsih, RY, Arjudin, A., & ... (2023). Training on Developing Powtoon-Based Animated Video Learning Media for Mathematics Practitioners in Mataram. Devotion: Journal…. https://journal.ypidathu.or.id/index.php/abdimas/article/view/252

Utami, YP, & Cahyono, DAD (2020). Study at home: analysis of mathematics learning difficulties in the online learning process. Scientific Journal of Realistic Mathematics. https://jim.teknokrat.ac.id/index.php/pendidikanmatematika/article/view/252