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# THE EFFECT OF THE USE OF LEARNING MEDIA BASED ON PRESENTATION MEDIA ON INTEREST AND MATHEMATICAL LEARNING OUTCOMES

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#### Abstract:

This study aims to determine the effect of the use of learning media based on presentation media on learning interest and mathematics learning outcomes of students of class X MIA SMAN 1 Soppeng. The design of this study is nonequivalent control group design of a quasi-experimental. The statistical technique used is descriptive statistics and hypothesis is tested by using independent sample test and Mann Whitney sample test. Hypothesis test of learning interest uses Mann Whitney sample test, It shows that there is a difference in the average value of the increase of the mathematics learning scores which is significant between the control class and the experimental class. Testing the hypothesis of learning outcomes using the Independent sample test shows that there is a difference in the increase of students' mathematics learning outcomes that is significant between the control class and the experimental class. Therefore, the use of learning media based on presentation media has an effect on learning outcomes and interest in learning mathematics in class X MIA SMAN 1 Soppeng.

**Keywords:** Presentation Media, Mathematics Learning Interests, Mathematics Learning Outcomes

### PENGARUH PENGGUNAAN MEDIA PEMBELAJARAN BERBASIS MEDIA PRESENTASI TERHADAP MINAT DAN HASIL BELAJAR MATEMATIKA

#### Abstrak:

Penelitian ini bertujuan untuk mengetahui pengaruh penggunaan media pembelajaran berbasis media presentasi terhadap minat belajar dan hasil belajar matematika siswa kelas X MIA SMAN 1 Soppeng. Desain penelitian yaitu quasi experimental bentuk nonequivalent control group design. Data minat belajar siswa dan hasil belajar didapatkan dari kuesioner dan tes. Teknik statistik yang digunakan adalah statistik deskriptif yaitu pembuatan tabel distribusi frekuensi, menentukan interval kelas, rata-rata, presentase nilai rat-rata, standar deviasi dan kategorisasi minat dan hasil belajar serta statistik inferensial yaitu uji normalitas, homogenistas, hipotesis (Independent sample t test dan Mann Whitney Sample U Test). Pengujian hipotesis menggunakan uji Independent sample t test dan Mann Whitney Sample U Test. Hasil penelitian menunjukkan bahwa minat belajar matematika siswa kelas

eksperimen meningkat sebesar 8,88%. Hasil belajar matematika siswa kelas eksperimen meningkat sebesar 32,58%. Pengujian hipotesis minat belajar menggunakan uji *Mann Whitney Sample U Test*, menunjukkan terdapat perbedaan rata-rata nilai peningkatan skor minat belajar matematika siswa yang signifikan antara kelas kontrol dan eksperimen. Berdasarkan hasil penelitian, dapat disimpulkan bahwa penggunaan media pembelajaran berbasis media presentasi berpengaruh terhadap minat belajar matematika siswa kelas X MIA SMAN 1 Soppeng. Pengujian hipotesis hasil belajar menggunakan uji Independent sample t test menunjukkan terdapat perbedaan peningkatan hasil belajar matematika siswa yang signifikan antara kelas kontrol dan kelas eksperimen. Berdasarkan hasil penelitian, dapat disimpulkan bahwa penggunaan media pembelajaran berbasis media presentasi berpengaruh terhadap hasil belajar matematika siswa kelas X MIA SMAN 1 Soppeng.

Kata Kunci: Media Presentasi, Minat Belajar Matematika, Hasil Belajar Matematika

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Individuals. National education aims to develop the potential of students to become human beings who believe and fear God Almighty, who have good behavior, healthy, knowledgeable, capable, creative, independent, and to become citizens who are democratic and responsible. Target learning is an achievement of good students and positive behavior changes. This can be achieved by having a quality of learning process that is supported by the application of various learning elements. The optimal application of learning elements will influence the success of learning and improve the student learning achievement.

Nowadays the mathematics achievements of Indonesian students are still very worrying. Evidenced by the result of survey done by the Program for International Student Assessment (PISA) in 2015 which stated that the mathematics achievement of Indonesian students was ranked 63 out of 72 countries with an average score of 386. Based on the data of the survey it can be concluded that the condition of mathematics learning in Indonesia has not been as good as the condition of mathematics learning in other countries.

The result of preliminary observations shows that students of class X MIA SMAN 1 Soppeng were less using innovative learning media in learning mathematics, still using blackboards, textbooks or modules. It was found that the students' interest in learning mathematics was lacking, seen by other

activities that could be found in the classroom such as daydreaming, being unfocused, talking to their seatmate. The interest in learning is the tendency of the heart in learning to get information, knowledge, skills through effort, teaching or experience (Khairani, 2013). The factors that make students interested in learning are how the teachers teach, the character of the teacher, the calm and comfortable classroom atmosphere, and learning facilities. The use of learning facilities can arouse students' interest, therefore the role of the teacher as a mediator and facilitator is needed (Aritonang, 2008). Indicators that indicate interest in learning are feelings of pleasure, attraction, acceptance, and student involvement (Slameto, 2010). It can be said that someone will grow his/her interest in learning when he/she knows what benefits he will get after doing the learning process (Harsyad, Afiif, & Abrar, 2016). Schools have actually provided LCD projectors but they have never been used as a medium of learning mathematics in the classroom. The LCD projector facilities can actually encourage teachers to make presentation media by using Microsoft Powerpoint or Adobe Flash software, but this is never done.

On the other hand, the learning outcomes of students of class X MIA SMAN 1 Soppeng are not satisfactory, especially in the cognitive domain of students characterized by the presence of several students who stated their daily tests were never completed. Learning outcomes are the result of an interaction between learning and teaching (Dimyati & Mudjiono, 2013). Mathematics learning outcomes are the levels of success of students in understanding and mastering the subjects of mathematics after gaining mathematical learning experience in a certain period of time (Putri, Nursalam, & Sulasteri, 2014). Some factors that can influence the process and learning outcomes consist of raw input factors, environmental input factor, and factors that are deliberately created/designed and manipulated (Purwanto, 2007). The factors that can influence the process and learning outcomes consist of raw input factors, environmental input factors, and factors that are deliberately created/designed and manipulated (Purwanto, 2007). Based on the mathematical results of the even semester of MIA class at SMAN 1 Soppeng 2017/2018 it is shown that out of a total of 164 students, only 23 students or 14.02 were stated to have scored above the KKM score of 75 and 141 students or 85, 98 students get scores below the KKM score.

The use of media in learning will increase the effectiveness of learning. The use of learning media in the teaching and learning process can generate new desires and interests, and generate motivation to learn (Arsyad, 2015).

Learning media can improve student learning processes that are expected to improve the students' learning outcomes. One of the learning media that is very familiar with teachers now is a media based on presentation media. Learning media based on presentation media is a media that is compiled by using a computer program so that it can convey messages / learning material in the form of text, images, animation, and videos that are combined in one unit and presented by using a projector (Musfiqon & Widodo, 2015).

Based on previous research, conducted by Irawan (2013), he concludes that students' interest and learning outcomes after learning using slide presentation media increased and could be said that it is effective. The result of other study is by Juwita (2012) who concludes that the use of Microsoft Powerpoint affects students' interest and mathematical learning outcomes in triangular and quadrilateral material. The result of other study is by Z.A, Suherman, dan Utama (2013), she concludes that mathematics learning outcomes of class X students of SMA 1 Payakumbuh by using learning media compiled by using Macromedia Flash 8 is better than the mathematics learning outcomes of students who use conventional learning media.

Based on the background above, this paper focuses on the effects of the use of learning media based on presentation media towards the interests and results of mathematics learning in class X MIA SMAN 1 Soppeng on functional material.

### **RESEARCH METHODS**

This research is a quantitative approach. The research design used was a quasi experiment design that is nonequivalent control group design. This design contains a control class and an experimental class. The control class is taught without using learning media based on presentation media, while the experimental class is a class that is taught using learning media based on presentation media. Both groups were given a pretest, given treatment, and finally given the test. In addition, the teacher also observed the learning process. To make a decision on the effect of the research treatment, it was compared with the difference between the final learning interest and the early learning interest of the control class students compared to the difference between the final learning interest of the students in the experimental class and the posttest difference with the pretest control class students compared to the posttest difference with the pretest students experimental class. To make a decision about the effect of research treatment, it is done by comparing

 $(O_2 - O_1)$  to  $(O_4 - O_3)$  that is the difference between the final learning interest and the early learning interest of the control class students compared to the difference between the final learning interest of the students in the experimental class and the posttest difference between the control class pretest compared with the posttest difference with the pretest of the experimental class students

The population of this study was all students of class X MIA at SMAN 1 Soppeng, Soppeng Regency, academic year of 2017-2018. The samples were taken by purposive sampling technique. The researchers chose two classes that were considered to have interests and learning outcomes that were not significantly different with consideration of the two classes being taught by the same teacher, the same teaching method and the same learning media. The samples in this study were students of class X MIA 4 (34 people) who were selected as the control class and class X MIA 5 (35 people) who were selected as the experimental class.

The instrument used in this study is a questionnaire to measure students' learning interest, tests to measure students' learning outcomes in the cognitive domain and observation to find out the learning process. Data on the first students' learning interest and the students' pretests can be obtained before the classes were given different treatments between the control class and the experimental class. Data on the first students' learning interest and the students' posttest were obtained after the two classes were given different treatments from each other.

The statistical techniques used in this study are descriptive statistics and inferential statistics. Descriptive statistical analysis is used to obtain the description in the learning interests and student learning outcomes. Inferential statistical analysis is used to test the research hypothesis on the increasing of the learning interest and learning outcomes by using test of differences of two averages, both independent simple test if the data distribute normally or Mann Whitney test if the data do not distribute normally. Before that, the researcher first conducts a prerequisite test (normality test and homogeneity test).

### RESEARCH RESULTS AND DISCUSSION

## Description of Students' Interest in Learning in the Control Class and **Experimental Class**

The following is a table of results of descriptive analysis of data on students' interest in learning mathematics that do not use presentation media.

Table 1. Description of Initial Interest and Final Interest of The Control Class

	The lowest	The highest	Average	Std. Deviation
Initial interest	47	88	71,47	11,93
Final interest	48	91	72,56	11,99

Based on table 1, it can be seen that the lowest score and the highest score of students' initial interest in the control class are 47 and 88. The average score and standard deviations are 71.47 and 11.93 respectively. The result of the calculation of the standard deviation above show the spread of data of 11.93, which means that most of the data in the collection are plus or minus 11.93 from the average. Based on table 4.1, it can also be known that the lowest score and the highest score of the final interest of the control class students are 48 and 91. The average score and standard deviations are 72.56 and 11.99 respectively. The result of the calculation of the standard deviation above shows the spread of the data is 11.99, this means that most of the data in the collection are a plus or minus 11.99 from the average.

If the scores of the initial learning interest and the final students' interest in learning are categorized then it would be into 3 categories: low, medium and high, then the data obtained as follows.

Table 2. Categories of Students' learning interest in Control Class

Interval	Early Interest		<b>Final Interest</b>		Categories of
	Frequency Percentage		Frequency	Percentage	learning interest
		(%)		(%)	
20-46	0	0	0	0	Low
47-72	19	55,88	18	52,94	Medium
73-100	15	44,12	16	47,06	High

Based on table 2, it can be concluded that the highest percentage of early learning interest of students in control clas is in the medium category, there are 19 students (55.88%). The highest percentage of the final learning interest of the control class students is in the medium category, there are 18 students (52.94%).

The following is a table of results of descriptive analysis of data on students' interest in learning mathematics using media based on presentation media.

Table 3. Description of Early Interest and Final Interest of Experiment Class

	The Lowest	The Highest	Average	Std.
	Score	Score		Deviation
Early Interest	52	87	71,71	8,97
Final Interest	58	93	79,00	9,74

Based on the table 3, it can be seen that the lowest score and the highest score of students' Early interest in the experimental class are 52 and 87. The average score and standard deviations are 71.71 and 8.97, respectively. The result of the calculation of the standard deviation above shows the spread of the data is 8.97, this means that most of the data in the collection are plus or minus 8.97 from the average. Based on table 4.4, it can also be known that the lowest score and the highest score of students' final interest in the experimental class are 58 and 93. The average score and standard deviation are 79.00 and 9.74, respectively. The result of the calculation of the standard deviation above shows the spread of data is 9.74, this means that most of the data in the collection are plus or minus 9.7 from the average.

If the scores of students' early interest and students' final interest in learning are categorized, then there would be 3 categories, low, medium and high, then the data obtained would be as follows:

Tabel 4. Categories of Students' Learning Interest in Experimental Class

Interval	Early Interest		Final Interest		Categories of
	Frequency	Percentage	Frequency	Percentage	Learning
		(%)		(%)	Interest
20-46	0	0	0	0	Low
47-72	19	54,29	8	22,86	Medium
73-100	16	45,71	27	77,14	High

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Based on table 4, it can be concluded that the highest percentage of students' Early learning interest in the experimental class is in the medium category, there are 19 students (54.29%). The highest percentage of students' final learning interest in the experimental class is in the high category, there are 27 students (77.14%).

The result of the calculation of the increase of students' interest in learning mathematics, it is found that the highest increase in students' interest in learning mathematics after being given the treatment of learning using media-based on presentation media in class X MIA SMAN 1 Soppeng is 8.88%.

# Description of Learning Outcomes of Students in The Control Class and Experimental Class

The following is a table of results of data descriptive analysis on mathematics learning outcomes of students who do not use media based on presentation media.

	The Lowest	The Highest	Average	The Std. of
	Score	Score		Deviation
Pretest	3	98	51,56	26,96

90

48,68

26,16

Table 5. Description of Early Interest and Final Interest of the Control Class

If the scores of the pretest and posttest of students are categorized, there would be 3 categories, low, medium and high, then the data obtained are as follows.

Table 6. Categories of Learning Result of Control Class Students

Interval	Value of Pretest		Value of	f Posttest	Categories of
	Frequency	Percentage	Frequency	Percentage	Learning Result
		(%)		(%)	
0-32	11	32,35	11	32,35	Low
33-66	13	38,24	15	44,12	Medium
67-100	10	29,41	8	23,53	High

Posttest

Based on the table 6, it can be concluded that the highest percentage of pretest in of the control class students is in the medium category, there are 13 students (32.24%). The highest percentage of posttest of control class students is in the medium category, there are 15 students (44.12%).

The following is a table of results of descriptive analysis of data on mathematics learning outcomes of the students who use media based on presentation media.

	The Lowest	The Highest	Average	Std. Of
	Score	Score		Deviation
Pretest	5	100	43,54	28,89
Posttest	11	100	64,54	29,11

Table 7. Description of The Pretest and Posttest of The Experimental Class

If the score of the pretest and the posttest of the students are categorized, then there would be three categories. They are low, medium and high. The data obtained are as follows.

Table 8. Categories of Students' Learning Outcomes of Experimental Class
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Interval	Value of Pretest		Value of	Value of Posttest	
	Frequency	Percentage	Frequency	Percentage	Learning
		(%)		(%)	Result
0-32	12	34,29	6	17,14	Low
33-66	14	40	11	31,43	Medium
67-100	9	25,71	18	51,43	High

Based on the table 8, it can be concluded that the highest percentage of the students' early learning interest in the experimental class is in the medium category, there are 14 students (40%). The highest percentage of the final students' learning interest in the experimental class is in the high category, 18 students (51.43%).

The results of the calculation of the increase in the value of students' mathematics learning outcomes, it is found that the large increase in the students' mathematics learning outcomes after being given the treatment of learning using media based on presentation media in class X MIA SMAN 1 Soppeng is 32.58%.

# The Effect of The Use of Learning Media Based on Presentation Media on The Learning Interest of Class X MIA Students in SMAN 1 Soppeng

The result of normality testing of data on students' early learning interest indicates that the two groups of data normally distribute (sig = 0,200 > 0,05). Furthermore, the result of the homogeneity test shows that the data is homogeneous (sig = 0,153 > 0,05).

The test of the difference in the two averages of the data on students' early learning interest shows that  $t_{count} = -0.096$  and the cost  $t_{table} = 2.00$ . Because  $-t_{table} \le t_{count} \le t_{table}$  is  $2.00 \le -0.096 \le -2.00$ , This shows that  $H_0$  is accepted, this means that there is no significant difference in the average of interest in learning between the control class students and the experimental class students before being treated differently..

The result of normality testing of data on students' final learning interest shows that the control class data distribute normally (sig = 0,200 > 0,05) and the data of control class distribute normally (sig = 0,185 > 0,05). Furthermore, the homogeneity test result shows that the datum is homogeneous (sig = 0,236 > 0,05).

The test of the difference in the two averages of data on students' final learning interest shows that  $t_{count} = 0.017$  and cost  $t_{table} = 2.00$ . Because  $t_{count} > t_{table}$  is 2.453 > 2.00, this means that  $H_0$  is rejected and  $H_1$  is accepted or there is a different average of students' final learning interest which is significant between control class and experimental class after being given different treatment.

The result of normality test on data of the inrease of the students' learning interest shows that the group of data of the increase of students' learning interest in the control class does not distribute normally (sig = 0,000 < 0,05), while the group of data of the increase of students' learning interest in experimental class distributes normally (sig = 0,200 > 0,05).

Hypotethesis test on the data of the increase of the students' learning interest shows that  $z_{count} = -3,578$  and  $\cos z_{\alpha/2} = \pm 1,96$  (with  $\alpha = 0,05$ ).

 $H_0$  = There is no average difference of the increase of the students ' learning interest which is significant between the control class students and the experimental class students before being given different treatment.  $H_1$  = There is average difference of the increase of the students' learning interest which is significant between the control class students and the experimental class students. Because  $z_{count} < -z_{\alpha/2}$  is -3,578 < -1,96 So it can be concluded that  $H_0$  is rejected and  $H_1$  is accepted or there is average difference of the increase of score of students' interest between the control class students and the experimental class students

Based on the observation of the researchers, the control class shows a medium learning interest. This is indicated by the facts that there were still a lot of students who did not really focus on the lesson, often talked to their seatmate about other topics which were not about mathematic. It could also be seen that most students were ignorant or did not do exercises given by the researchers acting as their teachers.

The experimental class shows a high interest in learning. This could be seen from the students' interest when the researchers gave a chance to students to ask things that have not been understood, students did not remain silent with their ignorance and are eager to ask questions. It could also be seen in the involvement of students when researchers acting as teachers provided practice questions, most students worked and they looked very enthusiastic in doing it. They were also happy to learn mathematics which was indicated by a request to add more practice questions they are working on. Most students also only focused on learning and did not talk to their seatmate on topics outside of mathematics learning material.

The result of this study is in line with the theory of Asnawir dan Basyiruddin (2002) that one of the factors of learning interest is learning media, because it attracts students' attention and interest in learning and the learning process is not boring. According to Arsyad (2015) the benefits of powerpoint are the delivery of learning will be more effective and efficient, learning materials will become more interesting and learning materials can be delivered completely, concise, and fast through pointers of materials.

The result of this study is supported by Irawan's relevant research (2013) that is concluded that students' interest and learning outcomes in learning by using slide presentation media is increasing and can be said to be effective. Similarly, Juwita (2012) concludes that there is a significant effect on the use of microsoftpowerpoint on students ' interest and mathematics learning outcomes. Lestari (2011) also adds relevant research in line with the result of this study, an increase in students' interest in learning sets in mathematic.

Based on the result of inferential statistical analysis, theory and previous relevant researches as well as the result of observations above, the researchers conclude that there is an effect of the use of learning media based on presentation media on the students' interest in learning mathematics in class X MIA SMAN 1 Soppeng.

# The Effect of Using Learning Media on Students' Outcomes in Class X MIA SMAN 1 Soppeng

The result of normality test on data of students' pretest shows that the data of students' pretest in control class contribute normally (sig = 1,08 > 0,05) and data of pretest in experimental class distribute normally (sig = 1,65 > 0,05). Furthermore, the homogeneity test results show that the data are homogeneous.

Test of difference of the two averages in the pretest data of students shows that  $t_{count} = 1,191$  and  $\cos t_{table} = 2,00$ . Because  $-t_{table} \le t_{count} \le t_{table}$  is  $-2,00 \le 1,191 \le 2,00$ , this shows that  $H_0$  is accepted, this means that there is no difference of the averages of the students' outcomes which is significant between control class students and experimental class students before being given different treatment.

The result of normality test on the students pretest data shows that the pretest data of experimental class distribute normally (sig = 0.200 > 0.05) and posttest data of the experimental class distribute normally (sig = 0.074 > 0.05). Furthermore, the homogeneity test shows that the data are homogeneous (sig = 0.241 > 0.05).

Test of difference of the two averages on students final interest shows that  $t_{count} = 0.017$  and cost  $t_{table} = 2.00$ . Because  $t_{count} > t_{table}$  is -2.379 > -2.00, this shows that  $H_0$  is rejected and  $H_1$  is accepted or there is a difference between the average of the posttest which is significant between control class students and experimental class students after being given different treatment

The result of normality test on the data of the increase of the students' learning outcomes shows that the data of the increase of the control class students contribute normally (sig = 0.72 > 0.05) and the data of the increase of the class students' distribute control outcomes normally (sig = 0.200 > 0.05). Furthermore, the homogeneity test shows that the data are not homogeneous.

Hypothesis test on data of the increase of the students' learning outcomes shows that  $t_{count} = -6.119$  and  $cost t_{table} = 2.00$ .  $H_0 = there is no$ difference of the averages of the increase of the students' learning outcomes which is significant between the control class students and the experimental class students before being given different treatment.  $H_1$  = There is a difference of the averages of the increase of the students learning outcomes which is significant between the control class students and the experimental class students before being given different treatment. Because  $t_{count} > t_{table}$  is -6.119 > -2.00 so it can be concluded that  $H_0$  is rejected and  $H_1$  is accepted or there is a difference of the averages of the increase of students' learning outcomes which is significant between control class students and experimental class students after being given different treatment.

Based on the observation of the researchers, the students' learning process in the control class is in the medium level. It is characterized by students' learning activities that do not improve. There are still many students who are reluctant to work on the practice questions that are given and the result is that their quiz scores at each meeting are not very good. The attention of some students is still not focused on the lessons which is characterized by the presence of students who talk to their seatmate on topics outside of mathematics learning material. It was also seen that there were still most students who were ignorant or did not work on the practice questions given by researchers who acted as teachers.

The learning process of students in the experimental class is high, it is characterized by the improvement of student learning activities. Students become more active in working on the practice questions given, they even worked with their seatmate to answer the questions. They often asked for additional questions so that they can really understand. Their attention was increasingly focused only on the lesson which was marked by less students talked to their seatmate on topics outside of mathematics learning material.

The result of this study is in line with Slameto's theory (2010) that the right learning tools will facilitate the acceptance of learning materials given to students. If students easily accept the lesson and master it, then the learning will become active and more advanced. Teaching media can enhance the learning process of students which is expected to enhance learning outcomes achieved because according to Arsyad (2015), learning media can improve and direct children's attention so that it can lead to motivation to learn, learning media can overcome limitations of senses, space, and time.

According to Sanaky (2013) Powerpoint as a learning media can improve learning outcomes because it has advantages such as having a variety of interesting and not boring presentation techniques, allowing presentation in various color combinations, animation, sound, and can be hyperlinked, giving the recipient the possibility to note, it can be used for all class levels and is healthier compared to the blackboard.

The result of this study is supported by Deny Irawan's relevant research (2013) who concluded that interest and learning outcomes of students learning using slide presentation media increased and could be said to be effective. Similar to Juwita (2012) who concluded there was a significant effect of using microsoftpowerpoint on interest and students' mathematics learning outcomes. The result of subsequent research by Z.A, Suherman, dan Utama (2013), concluded that the results of mathematics learning in class X SMAN 1 Payakumbuh using macromedia flash 8 software as learning media is better than the students' mathematics learning outcomes who used conventional learning media .

Based on the results of inferential statistical analysis, theory and previous relevant researches as well as the results of the observations above, the researchers conclude that there is an effect of the use of learning media based on presentation media on the learning outcomes in mathematics.

#### **CONCLUSION**

The conclusion of this study is there is an effect of the use of learning media based on presentation media on students' learning interest of class X MIA in SMAN 1 Soppeng. The students' interest in learning mathematic in experimental class increases by 32.58%.

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