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Use of Learning Media Based On PowerPoint in Improving Students' Understanding Of Grade X Economics Subject

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Abstract

This study was conducted to determine the effect of using PowerPoint-based learning media on the understanding of 10th grade students in Economics at Parulian 2 Private High School, Medan. The background of this study is the low level of students' understanding of Economics material, as indicated by the results of observations of declining grades in the last three years. One of the contributing factors is the less than optimal use of learning media by teachers, where the lecture method still dominates, making students passive and less motivated. The type of research used is quantitative research with an experimental design using a two-group pretest-posttest design. The subjects of the study were 28 students in class XA as the experimental class who were given treatment with animated PowerPoint media, and 27 students in class XB as the control class who were taught with conventional lecture methods. The research instruments consisted of an understanding test, teacher and student observation sheets, and an understanding questionnaire. The data were analyzed using descriptive statistical tests, normality tests, and simple regression tests. The results showed that there was a significant increase in students' understanding after using PowerPoint learning media. The average student comprehension score in the experimental class increased from 61.48 in the pretest to 86.50 in the posttest, while the control class only increased from 66.10 to 71.50. This demonstrates that the use of PowerPoint-based learning media can improve student comprehension more effectively than lecture methods. Therefore, it can be concluded that PowerPoint-based learning media has a positive effect on improving student comprehension in Economics. This research is expected to serve as a reference for teachers in developing more innovative and engaging learning strategies tailored to student needs.

Keywords : Learning Media, PowerPoint, Student Comprehension, Economics

INTRODUCTION

The regulation governing the standards of educational facilities and infrastructure in Article 42, Article (1) is that every educational unit is required to have facilities that include furniture, educational equipment, educational media, books and other learning resources, consumables, and other equipment needed to support a regular and continuous learning process (Rifqi Ardhiansyah, Surya Hutama, Ayu Puspitaningrum, Zahroul Fitriyah, &

Aguk Wardoyo, 2023). Likewise, Government Regulation of the Republic of Indonesia Number 45 of 2015 concerning the role of information and communication technology teachers and computer skills and information management teachers in the implementation of the 2013 curriculum explains that teachers have duties and responsibilities in carrying out their duties in teaching using (ICT) Information and Communication Technology to students. namely the development of students according to their needs, potential, talents, and interests, and the personality of students by utilizing technology-based learning media as a means to explore learning resources, as well as develop learning resources and learning media (Afriani, 2022).

Of course, the learning process is related to the process of teaching and learning interactions between educators (teachers) and students (students) by involving learning components that include: learning objectives, learning materials, methods, student teaching techniques, and evaluation of learning outcomes (Zahara & Jupri, 2022). However, in reality, there are still shortcomings in the learning process regarding the standards of educational facilities and infrastructure, one of which is the low role of teachers in the use of learning components regarding learning media which is the responsibility of educators is not yet fully good (F. N. I. Sari, Darma, & Dafrita, 2018).

Learning media used by teachers is a tool that can help the teaching and learning process which functions to clarify the meaning of the message conveyed so that learning objectives can be conveyed better (Supriadi, Okra, & Derta, 2023). The use of this learning media can also function for the efficiency and effectiveness of the learning process, the learning process becomes more interactive and improves student understanding, with all the limitations of space and time the knowledge to be conveyed can still be given to students, learning media provides the same experience for all students so that the concepts received are also the same, in addition teachers will also be more productive and can direct the information obtained by students from the media used.

Based on initial observations at Parulian 2 Private High School in Medan, it was shown that some teachers have used media as a learning tool, one of which is PowerPoint. However, many teachers still lack variety in their PowerPoint design, resulting in monotonous and boring learning materials (Syavira, 2021). This results in students easily getting bored and tired of learning, and students have difficulty understanding the material presented by the teacher. Therefore, teachers are expected to be able to create engaging PowerPoint presentations, such as adding supporting images to PowerPoint presentations and using animations that are appropriate to the learning material (Nurhidayati, Asrori, Ahsanuddin, & Dariyadi, 2019).

In general, learning media is very helpful for a teacher in carrying out learning activities in the classroom, media as a tool that can be prepared by teachers during the implementation of learning, one of which is power point-based media, but in reality, many teachers in schools are still lacking and have not been able to use Power Point-based learning media or tools in implementing learning (T. P. Sari, 2018). Teachers also rarely use

technology in the application of learning media, teachers tend to carry out learning by lecturing without the help of learning media from the beginning of learning until the end of learning, this gives a feeling of boredom, drowsiness for students and students are not enthusiastic in participating in teaching and learning activities resulting in a lack of student understanding during learning (E. Susanti, Ritonga, & Bambang, 2020).

From the above facts that the value of the subject of economics of class X experienced a significant decline, therefore to overcome this, the researcher suspects that one solution is to use PowerPoint learning media at SMA S Parulian 2 Medan. The use of PowerPoint-based learning media is expected to increase learning interactivity, clarify economic concepts, improve understanding, and connect theory with practice (Elpira & Ghufron, 2015).

Therefore, it is important to conduct this research entitled "Use of Powerpoint-Based Learning Media to Improve the Understanding of Class X Students in Economics Subjects at Parulian 2 Private High School"

Medan to empirically prove that the use of educationally designed PowerPoint media can significantly improve student understanding. The PowerPoint research conducted was an animated PowerPoint presentation aimed at providing practical contributions to economics teachers in selecting more innovative and relevant learning strategies for today's students, who tend to be visual and digitally native (Astawa & Tegeh, 2019).

So from the background problems above, there is a lack of understanding of students in economic learning which causes reduced understanding resulting in many students still being below the KKM in economic subjects, therefore researchers suspect that the use of PowerPoint-based learning media has an important role in the modern learning process and if teachers use good learning media such as PPT their learning is easy to understand the material given, but if teachers still do not use learning media they have difficulty understanding the material given (Kusni, 2022).

This media offers various advantages, such as the ability to visualize abstract concepts, present material in an engaging manner, and increase student interaction and focus. However, at SMA Parulian 2 Medan, there are indications that students' understanding of economics material in grades XA and XB is still low because students have difficulty understanding basic economic concepts such as needs and scarcity, especially when learning only relies on conventional methods such as lectures (Utami, Khairuddin, & Mahrus, 2020). Therefore, innovations in learning methods are needed that can help students understand the material more effectively. This study was conducted to determine how a teacher can use PowerPoint-based learning media to improve student understanding, thereby contributing to improving the quality of learning at the school (Fuad & Permatasari, 2019).

RESEARCH METHODS

This type of research is quantitative research with an experimental approach. The design used is a two-group pretest-posttest design, namely by conducting an initial

measurement (pretest) before treatment and a final measurement (posttest) after treatment. In its implementation, the study involved two groups: an experimental group that was given treatment in the form of the use of animated PowerPoint learning media, and a control group that did not receive special treatment, but through conventional lecture methods. The selection of this design aims to obtain more accurate results, because it allows for comparisons between conditions before and after the treatment is given (Astuti, Dewati, Okyranida, & Sumarni, 2019).

This research was conducted at SMA SWASTA Parulian 2 Medan, Jalan Garuda Raya No. 45, Tegal Sari Mandala II, Medan Denai District, Medan City, North Sumatra 20371. The focus of the study was the use of power point learning media in improving the understanding of class XA students as an experiment in the subject of Economics, the research was conducted in the 2025-2026 Academic Year.

The research subjects in this study are the research data sources, while the research objects are the data or information obtained from the research sources. The research data are provided in the form of two groups of students in Class X-A and Class XB of SMAS Parulian 2 Medan, each group consisting of 28 respondents as the experimental group and 27 respondents as the control group. These subjects were chosen because this study used a Pretest - Posttest experiment to examine the use of PowerPoint-based learning media, by selecting class XA as the control class and class XA as the Experiment (Damayanti & Qohar, 2019).

The research object which is the focus of the research is the application of PowerPoint media to improve the learning understanding of students taking economics lessons in Class XA and Class XB.

Based on the results of the validity test that has been conducted (Table 3.6), all items of the student understanding questionnaire are declared valid because the calculated r value is greater than the table r. Furthermore, the results of the reliability test (Table 3.7) show that the questionnaire has a Cronbach's Alpha value of 0.978, which is in the very high category.

Thus, it can be concluded that the student understanding questionnaire instrument used in this study is valid and reliable, so it is suitable to be used as a measuring tool to obtain research data regarding student understanding in the subject of Economics. Data analysis techniques in a study are to process the data that has been obtained (Metalin, Puspita, Puspitaningsih, & Diana, 2020).

RESULTS AND DISCUSSION

This research was conducted at Parulian 2 Private High School Medan, located at Jalan Garuda Raya No. 45, Tegal Sari Mandala II, Medan Denai District, Medan City, North Sumatra. The subjects of the research were students of class X consisting of two classes, namely class X-B as the control group with a total of 27 students, and class XA as the experimental group with a total of 28 students (Astiti, Rini Kristiantari, & Saputra, 2021).

The research design used was Two Group Pretest and Posttest. This research was conducted through three stages, namely (Ahdar, 2018):

1. Pretet Stage

Both groups (control and experimental) were given a pretest to determine students' understanding abilities before treatment.

2. Treatment Stage (Treatment)

The experimental group (XA) was given learning using animated PowerPoint-based learning media. The control group (XB) was given learning using conventional methods, namely lectures without PowerPoint media (Deviana, Subekti, & Kuswandari, 2021).

3. Posttest Stage

After the treatment, both groups were given a post-test again with the same questions to determine the extent to which students' understanding had improved (Nugraha, Nur'aeni, Suryana, & Muharram, 2021).

Descriptive Statistical Analysis

Descriptive statistical analysis was conducted to obtain a general overview of students' understanding scores before and after treatment in both the experimental and control classes. The results of the calculations using SPSS can be seen in the following table:

Table 1. Descriptive Statistics of Student Understanding

Statistics

		Pretest Control	Posttest Control	Experiment Pretest	final_survey_ek
N	Valid	27	27	28	28
	Missing	1	1	0	0
Mean		61.48	79.04	58.46	86.50
Standard Error of		,731	2,104	,978	2,228
Median		62.00	77.00	58.00	86.00
Mode		62	76	54	75a
Standard Deviation		3,796	10,935	5,175	11,790
Variance		14,413	119,575	26,776	139,000
Skewness		-,308	-,163	,223	,319
Standard Error of		,448	,448	,441	,441
Kurtosis		,181	-,469	-,606	-,978
Standard Error of		,872	,872	,858	,858
Range		17	43	20	43
Minimum		52	56	49	68
Maximum		69	99	69	111
Sum		1660	2134	1637	2422

a. Multiple mood exist. The smallest value is shown

The table presents the results of descriptive statistical analysis of student understanding in the control and experimental groups, both before and after treatment. In the control group, the average student understanding score increased from 61.48 in the initial survey to 79.04 in the final survey, with a difference of 17.56 points. Meanwhile, in the experimental group, there was a greater average increase, namely from 58.46 in the

initial survey to 86.50 in the final survey, with a difference of 28.04 points. These results indicate that the increase in understanding in the experimental group was more significant than in the control group.

Furthermore, the median and mode values in both groups were relatively consistent with the mean, thus the data distribution tended to be symmetrical. This was supported by the skewness values ranging from -0.3 to +0.3, and the kurtosis values approaching 0, indicating a relatively normal data distribution. In terms of distribution, the standard deviation in the control group increased from 3.796 to 10.935, while in the experimental group it increased from 5.175 to 11.790. This indicated that after the treatment, the variation in understanding among students widened, although the average score generally increased.

The range of scores in the control group after treatment was 43 (56–99), while in the experimental group it was also 43 but with a higher maximum score, namely 111. This fact shows that not only was the average understanding of students in the experimental group higher, but also the potential for individual student achievement was more optimal than in the control group (Dewi & Manuaba, 2021).

Descriptively, it can be concluded that the use of learning media (e.g., PowerPoint) in the experimental group had a greater impact on improving student understanding than the lecture method in the control group. This finding supports the hypothesis that the application of technology-based learning media can improve student learning outcomes more effectively.

Simple Regression Test

Table 2. Simple Regression Test

Model Summary

Model	R	R Square	Adjusted R S	Std. Error of the
1	,663	,44	,418	8,99

Based on the results of a simple linear regression analysis, a correlation coefficient (R) value of 0.663 was obtained. This indicates a fairly strong relationship between the use of PowerPoint-based learning media (X) and student understanding (Y).

The R Square (R^2) value is 0.440, which means that 44.0% of the variation in student understanding (Y) can be explained by the use of PowerPoint media (X). Meanwhile, the remaining 56.0% is influenced by other factors outside the research variables (Selfie & Hartati, 2021).

The Adjusted R Square value of 0.418 confirms the result that the influence of variable X on Y remains consistent even though the number of samples is taken into account. The Std. Error of the Estimate value of 8.993 indicates the level of error in the regression model's estimation in predicting the value of Y. The constant value is 40.162 and the regression coefficient is 1.233. Thus, the simple regression model is obtained as follows (Aulia, Widodo, Subekti, Hidayati, & Sari, 2022):

Y=40,162+1,233XY = 40,162 + 1,233XY=40,162+1,233X

The model can be interpreted that if the X variable is zero, then the Y variable is estimated to be worth 40.162. Furthermore, every 1 unit increase in the X variable will provide an increase of 1.233 units in the Y variable. This shows that the X variable has a positive influence on the Y variable, so that the higher the X value, the higher the Y value obtained.

In addition, the results of the determination test show that the R Square is 0.440, which means that variable X is able to explain the variation in changes in variable Y by 44%, while the remaining 56% is influenced by other factors not examined in this study. Thus, this regression model can be said to be quite good in explaining the relationship between variables X and Y (Dwianti, Julianti, & Rahayu, 2021).

Furthermore, the t-test results showed a significance value <0.05. Thus, the alternative hypothesis (Ha) was accepted, namely that there was a significant difference between the use of PowerPoint learning media and the lecture method on student understanding. This means that the use of PowerPoint had a significant effect on improving student understanding compared to conventional learning (Tembang, Purwanty, Palobo, & Kabrahanubun, 2020).

Thus, this regression model is quite suitable for use in testing the effect of using PowerPoint-based learning media on the understanding of class X students at SMAS Parulian 2 Medan.

Regression Significance Test (ANOVA)

Table 3. Regression Significance Test (ANOVA)

ANOVA[a]

Model	Sum of Squares	df	Mean Squar	F	Sig
1 Regression	1650,21	1	1650,21	20,40	,000
Residual	2102,78	26	80,87		
Total	3753,00	27			

a. Depend on Variable: Variabel_Y

Based on the results of the ANOVA analysis, the F-value was 20.404 with a significance level of 0.000. Because the significance value is less than 0.05, the regression model used in this study is declared significant. This indicates that the independent variables (X) jointly influence the dependent variable (Y). Thus, the simple regression equation obtained is:

Y = 40.162+1.233XY = 40.162 + 1.233X

Y= 40.162+1.233X

suitable for predicting the value of variable Y based on variable X.

In the regression significance test, the hypothesis used is:

1. H_0 : The regression model is not significant, meaning that variable X does not influence variable Y.
2. H_a : The regression model is significant, meaning that variable X has an effect on variable Y.

Based on the calculation results, Sig. = 0.000 < 0.05 is obtained, so H_0 is rejected and H_a is accepted. Thus, it can be concluded that there is a significant influence between variable X and variable Y.

Significance Test of Regression Coefficients (T-Test)

Table 4. Significance Test of Regression Coefficients (T-Test)

Model	B	Unstandardized Coeff Std. Erro	Standardized Coefficients	t	Sig
1	(Constant)	40 , 16	10 , 39	3 , 86	, 00
	Variabel	1 , 23	, 27 3	, 66 3	4 , 51	, 00

The t-test results show the calculated t value. Based on the Coefficients table, the calculated t value is 4.517 for variable X with a significance of 0.000 < 0.05. This indicates that the regression coefficient of 1.233 is significant. Thus, variable X has a positive and significant effect on variable Y.

The hypotheses tested are:

1. H_0 : There is no significant influence of variable X on variable Y.
2. H_a : There is a significant influence of variable X on variable Y.

Because the Sig. value is < 0.05, H_0 is rejected and H_a is accepted, so it can be concluded that variable X has a positive and significant effect on variable Y.

The results of the simple regression test show that variable X has a positive and significant effect on variable Y. The regression model obtained can be used to predict variable Y with a contribution of 44%, while the remainder is influenced by other factors not examined in this study (Aditiany & Pratiwi, 2021).

Thus, it can be concluded that there is a positive and significant influence of the use of PowerPoint-based learning media on the understanding of class X students in the Economics subject at SMAS Parulian 2 Medan.

Discussion

1. Main Research Results

This study aims to determine the effect of using PowerPoint-based learning media on the understanding of 10th-grade students of SMA Swasta Parulian 2 Medan in the subject of Economics. The analysis results show a significant increase in student understanding in the experimental class compared to the control class.

Based on the results of the research data analysis, it was found that student understanding in the experimental class taught using animated PowerPoint learning media

experienced a significant increase. The average pretest score of 61.48 increased to 86.50 in the posttest. Meanwhile, in the control class taught using the conventional lecture method, the score only increased from 66.10 to 71.50.

2. Comparison with Previous Research

The results of this study align with those of Fitri Mulia (2022), who demonstrated that the use of interactive PowerPoint can improve student learning outcomes at MIIN 27 Aceh Besar. Similarly, research by Iskandar & Rista (Sudiantini & Shinta, 2018)demonstrated that PowerPoint can foster student learning interest and make them more active in the learning process. The difference is that this study focused on Economics at the high school level and utilized animated PowerPoint as a learning medium.

Second, research by Iskandar & Rista (2022) demonstrated that using PowerPoint can foster student learning interest and engage students in learning. This finding aligns with research showing increased student engagement, but differs in focus, as this study emphasizes understanding economic concepts through interactive animation.

Third, research at Unismuh Makassar Middle School on the use of PowerPoint to increase motivation to learn Arabic also found an increase in student motivation. Similar to this study, the use of PowerPoint as a learning medium is similar, but the difference lies in the aspect studied: learning motivation, while this study emphasized comprehension.

Hasanah's (Tri Astuti Arigiyati, Kusumaningrum, & Krida Singgih Kuncoro, 2021) research revealed that PowerPoint is effective in improving high school students' critical thinking skills in Geography. This is relevant because both emphasize conceptual understanding through visual media. The difference lies in the subject matter used, with this study focusing on Economics.

Research by Munir (Fitri, Fathoni, & Sari, 2024) theoretically supports the theory that animation in PowerPoint can improve students' long-term retention and retention. This was evident in the study, where students in the experimental class were able to re-explain the material in their own words after using PowerPoint.

Thus, the results of this study strengthen previous findings while providing a new contribution, namely that animated PowerPoint not only improves motivation or learning outcomes in general, but is also able to significantly improve the understanding of economic concepts in high school students.

3. Relation to Theory

a. Multimedia Learning Theory

Research findings support the principle that students learn better from a combination of text and images than from text alone. Animated PowerPoint presentations allow for visualization of economics material through concrete graphs, images, and illustrations, making it easier for students to grasp abstract concepts (Ariyanto, Aditya, & Dwijayanti, 2019).

b. Dual Coding Theory

According to Paivio, information is processed through two main channels: verbal (words) and non-verbal (images). In this study, PowerPoint combined text, images, animation, and sound, thereby improving student retention and strengthening comprehension. This finding explains why students' comprehension scores in the experimental class increased significantly compared to the control class (Hartati, 2017).

c. Arsyad's view

Arsyad emphasized that visual media can reduce boredom, increase motivation, and help students understand abstract material (D. I. Susanti & Prameswari, 2020). Field evidence supports this, with students in the experimental class showing greater enthusiasm, actively asking questions, and able to re-explain the material in their own words. Thus, the results of this study reinforce the theories that the use of interactive visual media can improve student understanding more optimally than conventional methods (Saputri, Sunardi, & Musadad, 2021).

4. Learning Implications

Based on the research results, the use of animated PowerPoint in Economics learning has several important implications:

a. a. For students, PowerPoint makes the learning process more interesting, makes it easier for them to understand abstract material, and increases learning motivation.

b. For teachers, PowerPoint can be an innovative learning strategy to replace the dominant lecture method which tends to be boring.

c. For schools, these results demonstrate the importance of providing adequate ICT facilities and encouraging teachers to master technology-based learning media design skills.

Overall, the research results prove that the use of PowerPoint-based learning media not only improves students' understanding, but is also in line with modern learning theories that emphasize the role of visual and interactive media in the learning process (Hoyek, Collet, Di Rienzo, De Almeida, & Guillot, 2014).

CONCLUSION

Based on the results of research on the use of PowerPoint-based learning media in improving the understanding of class X students in the subject of Economics at Parulian 2 Private High School, Medan, the following conclusions can be drawn:

1. Description of the average results of the pretest and posttest.

a. In the experimental class using animated PowerPoint media, the average score of students' understanding increased from 61.48 (pretest) to 86.50 (posttest).

b. In the control class using the lecture method, the average score only increased from 66.10 (pretest) to 71.50 (posttest). These results indicate that the increase in student understanding was more significant in the experimental class than in the control class.

2. Statistical test results

The results of the statistical test showed that there was a significant influence of the use of PowerPoint learning media on student understanding with a contribution of 44%, while the remainder was influenced by other factors. Thus, the alternative hypothesis (Ha) stating that there was an increase in student understanding through the use of PowerPoint media was accepted, while the null hypothesis (Ho) was rejected. This proves that the use of PowerPoint-based learning media has a positive effect on increasing student understanding in the subject of Economics.

3. Implications of using PowerPoint

Using PowerPoint media: Helps students understand abstract economic concepts more easily through a combination of text, images, graphics, and animation. Increases student motivation, interest, and engagement in the learning process. Provides an alternative for teachers to create a more interactive, innovative learning environment that suits the characteristics of digital-age students.

Thus, PowerPoint-based learning media is effective for use as a learning strategy to improve students' understanding, especially in the subject of Economics.

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