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The Influence of Using Powerpoint-Based Learning Media on the Learning Activity of 10th Grade Students at SMA N 2 Medan

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ARTICLE INFORMATION

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ABSTRACT

This research aims to determine the extent to which the use of PowerPoint-based learning media influences the learning activity of 10th-grade students at SMA Negeri 2 Medan. This research is motivated by the importance of learning media that can make the learning process more engaging, interactive, and easier for students to understand. The approach used is quantitative with the simple linear regression method to analyze the relationship between the use of PowerPoint media and students' learning activity levels. The research sample consisted of 32 tenth-grade students selected using the total sampling technique. The research instrument, a questionnaire, has been tested for validity and reliability, and all items have been declared suitable for use. The research results indicate that using PowerPoint media has a positive and significant impact on student learning activity. This is evidenced by a calculated t-value of 2.695, which is higher than the table t-value of 1.69726, and a significance value of 0.011, which is less than 0.05. The coefficient of determination value of 0.195 indicates that 19.5% of the variation in student learning activity is influenced by the use of PowerPoint media. Thus, it can be concluded that PowerPoint-based learning media is effective in increasing student activity because it can present material visually, attractively, and in an easier-to-understand manner, thereby encouraging students to be more involved in the learning process.

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1. INTRODUCTION

Education plays an important role in creating high-quality human resources capable of competing in the face of globalization. One crucial component in the educational process is

student activity in learning, as this reflects their cognitive, affective, and psychomotor engagement in learning activities (Karimah dkk, 2022). However, the reality shows that the level of active student participation is still considered low, particularly at the high school level. This is evident from the students' minimal desire to ask questions, participate in discussions, and provide feedback on the material presented by the teacher. With the advancement of information technology, methods in the world of education have also undergone changes. Traditional learning media are starting to be replaced by technology-based media, such as PowerPoint (PPT), which can deliver material visually, interactively, and more engagingly. According to (Abdullah dkk, 2024), Using PowerPoint makes it easier for listeners to understand the material because of the visual displays presented on each slide. Additionally, utilizing visual media in the learning process can accommodate various student learning styles and support more efficient delivery of the material. (Hayes dkk, 2017).

PowerPoint is one of Microsoft's software products used to support the learning process by creating efficient, practical, and professional-looking presentations. (Febrian Syah dkk, 2023). Referring to the article (Sintia Dewi dkk, 2021), Microsoft PowerPoint is software that makes it easy to efficiently and effectively organize material when giving a presentation. This application also has a user-friendly interface, making it widely used in presentation activities, teaching processes, and even animation creation.

Cognitivism learning theory emphasizes the important role of internal mental processes in learning, such as perception, attention, and memory. Additionally, the constructivist approach highlights the importance of students' active role in constructing their own knowledge, and interactive media like PPT can support this process by creating a learning environment that encourages active student participation.

This research is based on the need to assess the extent to which the effectiveness of PowerPoint-based learning media in increasing student learning activity. SMA Negeri 2 Medan was chosen as the study location because it is considered representative in the application of technology in the learning process. The purpose of this study is to determine whether there is a significant influence between the use of PPT media and the level of learning activity of 10th-grade students. It is hoped that the results of this study can make a positive contribution to designing more effective and engaging learning strategies for students.

a. Learning Media

Learning media plays an important role in supporting the teaching and learning process. As a learning resource, media can help teachers improve student understanding. The use of various types of media by teachers can be a means of conveying knowledge to students. (Titin & Kurnia, 2022). The term "learning media" consists of two elements: "media" and "learning." (Titin & Kurnia, 2022) explains that media serves as a teaching aid for both teachers and students in the learning process. Learning media acts as a means of conveying information, capable of stimulating students' minds, feelings, attention, and motivation, so that the learning process can proceed in a directed and controlled manner.

According to (Titin & Kurnia, 2022), There are various types of learning media, such as audio, visual, audiovisual, and multimedia. In this case, the main focus is on using multimedia as a learning medium. Multimedia can be defined as a system that transfers various forms of information such as text, images, audio, video, numbers, or words, which are then processed by a computer into digital data, with the user playing the role of controller. Generally, multimedia is divided into three categories: interactive multimedia, hyperactive multimedia, and linear multimedia. One example of interactive multimedia-based media is the use of interactive PowerPoint presentations.

b. PowerPoint-Based Learning Media

Powerpoint merupakan media yang memudahkan pengguna dalam memperoleh informasi dan pengetahuan. Media ini berupa slide interaktif yang berisi materi pembelajaran dan dapat digunakan sebagai sarana pendukung dalam proses belajar. PowerPoint sendiri adalah program berbasis multimedia yang memiliki berbagai fitur menarik dan dirancang khusus untuk kebutuhan presentasi. Program ini memungkinkan pengolahan elemen-elemen seperti teks, warna, gambar, dan animasi, yang dapat disesuaikan dengan kreativitas penggunanya (Titin & Kurnia, 2022).

PowerPoint merupakan penggabungan berbagai elemen media dalam satu kesatuan yang mendukung pencapaian tujuan belajar. Media ini memudahkan guru dalam menyampaikan materi, dapat digunakan berulang, tampilannya menarik, dan menghemat tenaga serta waktu. Namun, kekurangannya termasuk kebutuhan akan perangkat khusus seperti proyektor dan komputer, memerlukan keterampilan dalam pembuatan slide, serta waktu persiapan yang relatif lama.

c. Student Learning Activity

Learning activity is understood as a process that produces positive and lasting changes within a person, occurring thru experience, practice, and interaction. (Zarkasi & Taufik, 2019). Meanwhile, learning activity refers to students' physical and mental involvement in learning activities. This reflects the fundamental nature of humans as learning beings with curiosity. Thus, learning activity is a form of individual active participation in the learning process that encourages positive change thru interaction with others and with their environment. Learning media plays an important role in encouraging students to be more actively involved in learning activities. Activity can be defined as the enthusiasm, perseverance, and effort undertaken with sincerity. Therefore, when teaching, teachers need to create conditions that allow students to be active both physically and mentally. In the context of mathematics learning, student activity is demonstrated thru their ability to ask questions, express opinions, and solve various problems. (Setyono, 2016).

2. RESEARCH METHODS

This research uses a quantitative approach to systematically and objectively assess the relationship between variables. Quantitative research is a research method based on the philosophy of positivism. This method is used to study a specific population or sample, with data collection carried out using research instruments. The data obtained is in the form of numbers, which is then analyzed using quantitative or statistical techniques. (Adolph, 2016). Data were analyzed using the simple linear regression method to determine and measure the relationship between the use of PowerPoint-based learning media and students' learning activity levels.

The population in this study includes all tenth-grade students at SMA Negeri 2 Medan, consistent with the definition of population as the area of generalization that has certain characteristics determined by the researcher. (Adolph, 2016). From that population, 32 students were selected as a sample using the total sampling technique, meaning all members of the population were made respondents. The selection of this technique is based on the opinion (Adolph, 2016) which suggests that if the population size is less than 100, it is best to use the entire population as a sample to obtain more representative data.

3. RESULTS AND DISCUSSION

Validity Test Results

Validity testing is the process of assessing the extent to which a research instrument is able to accurately measure the intended concept. Validity is determined by comparing the

calculated correlation value (r-calculated) with the correlation value from the table (r-table) based on the product moment table.

Validity Test of Using Powerpoint-Based Learning Media (Independent Variable)

The value of r-table is obtained from the rho table with degrees of freedom (df) = n – 2 (n = 32 – 2 = 30), and at a significance level of 5%, the r-table value obtained is 0.361. Based on this, out of the 10 statements used to test the validity of the PowerPoint-based learning media usage variable, all statements show a calculated r value greater than the r-table value of 0.361, so they are declared valid.

Validity Test of Student Learning Activity (Dependent Variable)

The value of r-table is obtained from the rho table with degrees of freedom (df) = n – 2 (n = 32 – 2 = 30), and at a significance level of 5%, the r-table value is 0.361. Based on this, out of the 10 statements used to test the validity of the learning activity variable, all statements show a calculated r value greater than the r-table value of 0.361, so they are declared valid.

Reliability Test

Reliability testing is conducted to evaluate the consistency of results obtained from an instrument. A questionnaire is said to have good reliability if the responses given by respondents remain consistent when the measurement is repeated. A research instrument is considered reliable if the resulting Cronbach's Alpha value is greater than 0.6.

Table 1.1 Reliability Test Results for Variables

Variabel	Cronbach's Alpha	Reference Number	Description
Use of Learning Media Based on PowerPoint (X)	0,868	0,6	Reliabel
Learning activity (Y)	0,867	0,6	Reliabel

Based on the table above, it can be seen that the test results for each variable show a Cronbach's Alpha value above 0.60. Therefore, the variables of PowerPoint-Based Learning Media Usage and Learning Activity are declared reliable. This indicates that the questionnaire in this study is reliable and consistent, making the data obtained suitable for use in the subsequent analysis stage.

Hypothesis Testing

Test of Determination Coefficient

The coefficient of determination aims to measure the extent to which the regression model is able to explain the variation occurring in the dependent variable. The R^2 value ranges from 0 to 1, where a value close to 0 indicates that the influence of the independent variable on the dependent variable is very small. Conversely, the closer the value is to 1, the greater the influence of the independent variable on the dependent variable, meaning the regression model has a high degree of accuracy in predicting changes in the dependent variable.

Table 1.2 Determination Coefficient Test

Model	R	R Square	Adjusted Square	RStd. Error of the Estimate

1	.441[a]	.195	.168	4.61023

a. Predictors: (Constant), Use of PPT-Based Learning Media

R in the simple regression model summary table is actually the value of the simple regression coefficient, which is 0.441. The R-squared value is 0.195, meaning that 19.5% of Learning Activity can be explained by the variation in the value of the PPT-Based Learning Media variable. The remaining 80.5% comes from variables not examined in this study.

Simple Linear Regression Test

Simple linear regression is one of the statistical methods used to analyze the linear relationship between one independent variable (x) and one dependent variable (y). This technique is useful for understanding the direction and form of the relationship between these two variables, allowing us to see how changes in the independent variable, both up and down, affect the dependent variable.

Table 1.3 Simple Regression Test Results

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant) Using PPT-Based Learning Media	24.621	5.764		4.271	.000
	(Constant) Using PPT-Based Learning Media	.403	.150	.441	2.695	.011

a. Dependent Variable: Learning Activity

Regression equation

In column B, the Constant is 24.621 and the Regression Coefficient for Media PPT is 0.403. Therefore, the Regression Equation is Y = 24,621 + 0,403X

Advanced Interpretation

So the regression equation is Y = 24,621 + 0,403X

Meaning of the Regression Equation

a. Konstanta (a) sebesar 24,621, artinya bahwa ketika variabel Keaktifan Belajar adalah 0, maka rata-rata Penggunaan Media Pembelajaran Berbasis PPT adalah sebesar 24,621 persen
b. Slope regresi sebesar 0,403, artinya jika terdapat kenaikan 1 persen pada Penggunaan Media Pembelajaran Berbasis PPT (X), maka akan meningkatkan prediksi Keaktifan Belajar (Y) sebesar 0,403. Koefisien regresi bernilai positif menunjukkan bahwa semakin tinggi Penggunaan Media Pembelajaran Berbasis PPT, maka Keaktifan Belajar cenderung semakin meningkat.

Significance Test

Next, in the Coefficients table, the calculated t-value is 2.695, while the t-table value at α = 0.05 and df = 30 is 1.69726. Since the calculated t-value (2.695) is greater than the t-table value (1.69726), H0 is rejected.

Drawing Conclusions

Nilai t hitung (2,695) > t tabel (1,69726), maka H0 ditolak. Artinya terdapat pengaruh positif dan signifikan Penggunaan Media Pembelajaran Berbasis PPT terhadap Keaktifan Belajar. Hipotesis yang diajukan teruji kebenarannya.

Uji Signifikansi Parameter Individualis (Uji Statistik t)

Uji statistik t digunakan untuk mengevaluasi sejauh mana variabel bebas berpengaruh terhadap variabel terikat secara individual. Dilakukan pengujian ini yaitu dengan melakukan perbandingan antara nilai t hitung dengan nilai t tabel yang kriterianya berdasarkan:

a) Jika hasil dari thit > ttab atau Sig < 0,05, maka Ha diterima dan Ho ditolak, yang berarti variabel bebas berpengaruh terhadap variabel terikat.
b) Jika hasil thit < ttab atau Sig > 0,05, maka Ha ditolak dan H, diterima, yang berarti variabel bebas tidak berpengaruh terhadap variabel terikat.

Table 1.3 Statistical Hypotheses

Types of Hypotheses	One-Tailed Research Hypothesis – Right-Tailed (Positive)	Statistical Hypothesis
Associative Simple Regression	H0: There is no effect of using PowerPoint-based learning media on learning activity. H1: There is a positive and significant effect of using PowerPoint-based learning media on learning activity.	**$H_0 : \beta \leq 0$** **$H_1 : \beta > 0$**

Table 1.4 Results of Simple Regression Test

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant) Using PPT Based Learning Media	-24.621	5.764		4.271	.000
	(Constant) Using PPT Based Learning Media	-.403	.150	.441	2.695	.011

a. Dependent Variable: Learning Activity

(db) = n-k-1 = 32-1-1 = 30. Therefore, the value t tabel = 1.69726

Next, from the t-test table, it is known that the calculated t-value is 2.695, while the t-table value at α = 0.05 and df = 30 is 1.67793. Since the calculated t-value (2.965) is greater than the t-table value (1.69726), H0 is rejected.

Drawing Conclusions

Since the calculated t-value (2.695) is greater than the table t-value (1.69726), H0 is rejected. This means there is a positive and significant influence of using PPT-based learning media on learning activity. The proposed hypothesis has been proven true.

Discussion

From the data processing results, it is known that the calculated t-value is 2.695, which exceeds the table t-value of 1.69726, indicating that H0 is rejected and Ha is accepted. This finding indicates that the use of PowerPoint (PPT)-based learning media has a positive and significant impact on improving the learning activity of 10th-grade students at SMA Negeri 2 Medan. Applying multimedia principles, such as the contiguity principle which governs the presentation of words and images closely together, the modality principle which combines the use of audio and visuals simultaneously, and the coherence principle which eliminates less relevant information, in creating PPT designs can increase students' active learning participation by optimizing their cognitive processes. This positive influence indicates that the more frequently and effectively PowerPoint media is used in learning, the higher the students' activity level will also be. PowerPoint can present material in a more engaging, interactive, and diverse way thru a combination of images, videos, animations, and neatly arranged text. This encourages students to be more motivated in asking questions, discussing, and actively participating during the learning process. Some previous studies also support this finding, indicating consistency between the current research results and previous studies. (Ole et al., 2023) stated that the use of PowerPoint learning media, which includes videos, images, animations, text, and colors, is at a high level. This means that students' active learning, such as asking questions, answering, expressing opinions, and participating in discussions, indicates that they were very active throughout the learning process. Meanwhile, research (Anas, 2020) revealed that using PowerPoint media can significantly increase the learning motivation of vocational high school students in accounting subjects. This shows that an attractive and structured visual presentation is able to increase student engagement in the learning process. Furthermore, research by (Budianti et al., 2023) also showed consistent results, where the use of interactive PowerPoint media can improve the learning outcomes of elementary school students. The use of PowerPoint (PPT)-based learning media has a positive and significant impact on student learning activity. This is due to its ability to present material visually in an engaging way, such as thru images, graphs, animations, and videos. This more varied and interactive delivery of material helps students understand lesson concepts more easily, while also increasing their concentration and interest during the learning process. In addition, PowerPoint makes it easier for teachers to structure a dynamic learning flow, creating a more lively and less boring classroom atmosphere. This condition encourages students to be more active in asking questions, participating in discussions, and taking part in learning activities. This media also supports various student learning styles, especially for those who are more sensitive to visual and auditory stimuli, thus significantly increasing learning motivation.

4. CONCLUSION

Based on data analysis, this study concludes that there is a positive and significant correlation between the use of PowerPoint-based learning media and the learning activity of 10th-grade students at SMA Negeri 2 Medan. This conclusion is supported by the calculated t-value (2.695), which exceeds the table t-value (1.69726) at a significance level of 0.011, which is less than 0.05. Additionally, the coefficient of determination of 0.195 indicates that the use of PowerPoint-based learning media is able to explain 19.5% of the variation in student learning activity.

The regression equation shows that every one-unit increase in the use of PowerPoint-based learning media contributes to a 0.403 increase in student learning activity. This implies that the more frequently students use PowerPoint-based learning media, the higher their learning activity. A correlation coefficient of 0.403 also confirms a moderate relationship between the variables of PowerPoint-Based Learning Media Usage (X) and Student Learning Activity (Y). This finding aligns with previous research demonstrating the significant impact of PowerPoint on learning engagement. Therefore, training and improving teachers' competence in utilizing

learning technology are very important for optimizing the use of media such as PowerPoint in teaching and learning activities.

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