THE EFFECT OF STUDENT LEARNING STYLES AND LEARNING VIDEOS ON THE LEARNING OUTCOMES OF LIGHT VEHICLE ENGINE SYSTEM SUBJECTS IN CLASS XI TKR SMK N 1 RATAHAN

Max Marthen Rottie[1], Rolly Oroh[2], Metsi Daud[3], Parabelem Tinno Dolf Rompas[4], Djami Olii[5]
[1,2,3,4,5]Master of Technology and Vocational Education Study Program,
Program Pasca Sarjana, Universitas Negeri Manado
e-mail: [1]mmaíthen584@gmail.com, [2]rollyoroh@unima.ac.id, [3]metsidaud@unima.ac.id,
[4]parabelemrompas@unima.ac.id, [5]djamiolii@unima.ac.id

ABSTRACT

The low learning achievement of students in class XI TKR SMK Negeri 1 Ratahan in the subject of Light Vehicle Engine Systems is caused by several factors, such as: Learning Style, Motivation, Interest and the lack of teachers using Learning Media, such as Learning Videos, pictures etc. Based on this reason, research was conducted with the aim of knowing how much influence learning styles and the use of learning videos on learning outcomes and to find out whether there is an influence of learning styles and the use of learning videos in influencing student learning outcomes in Light Vehicle Engine System subjects. The population in this study were all Class XI TKR students who studied Light Vehicle Engine System Subjects as many as 60 students and samples for Variable (X1) as many as 60 students and samples for Variable (X2) as many as 60 students. Using quantitative research methods regression approach. The data collection technique uses a questionnaire with a Likert scale and uses the Education Report Value. Data processing using classical assumption tests: Multicollinearity test, Heteroscedasticity test: Data Validity and Reliability Test, Data Normality Test, Data Homogeneity Test, F Test, Differential Test (t test), analyzed using the IBM SPSS For Windows 25.0 Program. The results show that the effect of learning styles and the use of learning videos on learning outcomes is in the high category. Learning styles and the use of learning videos have a contribution to the influence on learning outcomes in the Light Vehicle Engine System Subject of Class XI TKR students by 43%. The conclusion with this research is that there is a positive and significant influence between learning styles and learning videos on the learning outcomes of light vehicle engine system subjects of class XI TKR students of SMK Negeri 1 Ratahan.

Keywords: Learning Styles, Learning Videos, Learning Outcomes

INTRODUCTION

Maximum learning outcomes are achieved through the sincere efforts of students and teachers as educators. There are two factors, namely factors that come from within

students and factors that come from outside students. Internal factors include physical condition, intelligence, creativity, interest, talent, learning style, attention, motivation, discipline, attitude, and others. Factors that come from outside students include family, school, community, infrastructure, learning media in this case in the form of learning videos, and situational factors such as climate, time, and location (Winkel WS, 2004: 43). One of the factors known to affect student understanding and learning outcomes is learning style.

In today's digital era, one possibility is the use of learning video media to become one of the increasingly popular media used in the teaching and learning process. Learning videos can present information visually and auditory, thus helping students to understand the subject matter better. Based on interviews conducted with teachers who teach in class XI TKR in the Light Vehicle Engine System subject, the final score of the odd semester of the 2023/2024 academic year has a low average score. From the results of these interviews, the author gets information that the teacher who teaches still does not pay attention to the learning style of students and has not used media, especially learning videos or it can be said that the media used is still simple, especially in the Light Vehicle Engine System Subject.

Based on the description above, the author is interested in conducting research with the title **"The Effect of Student Learning Styles and Learning Videos on Learning Outcomes of Light Vehicle Engine System Subjects in Class XI TKR SMK N 1 Ratahan."** It is hoped that the findings of this study can provide valuable insights for educators in designing Learning Strategies that are more effective and support student learning success in the automotive field.

Learning outcomes are changes in a person's behavior in terms of knowledge or attitude after carrying out the learning process both formal and non-formal lessons. According to Rusmono (2017) states that learning outcomes are changes in a person's behavior which include cognitive, affective, and pisikomotor domains.

Factors that affect learning outcomes according to M. Thobroni (2015, 30) are as follows The following: (1) Factors (2) Environmental factors (3) Instrumental factors. Instrumental factors that can affect learning outcomes are as follows: (a) Curriculum, (b) Facilities, and (c) Teachers. According to Rudi Hartono (2013, 31-32), learning styles can be divided into 3 (three), namely 1) auditory, visual, and kinesthetic. According to Nyanyu Khodijah (2014, 143) there are 4 (four) factors that can affect learning styles, namely: 1) Physical factors 2) Emotional Emotions 3) Sociological 4) Environment.

Learning Media According to (Syaiful bahari Djamarah and Azwan Zain, 2020: 121) Learning media is any tool that can be used as a channel for messages to achieve learning objectives. Video as an audio-visual medium that displays motion, is increasingly popular in our society. The message presented can be factual (important events, news or fictitious (such as stories), can be informative, educational, or instructional (Arif S. and Sudiman, et al, 2010: 74) Video media has proven to have an

ISSN 2798-141X

effective ability (penetration of more than 70%) to convey information, entertainment and education.

RESEARCH METHODS

This type of research is a type of quantitative research with a regression approach chosen because this research aims to test theories, build facts, show relationships between variables, provide statistical descriptions, estimate and predict the results to determine the influence between the variables studied, namely student learning styles (visual, auditory, and kinesthetic) and the use of learning videos on the learning outcomes of Light Vehicle Engine System subjects. In this study, the authors raised the issue of the Effect of Student Learning Styles and Learning Videos on the Learning Outcomes of Light Vehicle Engine System Subjects in Class XI TKR SMK N 1 Ratahan. The population in this study were all students of Class XI TKR SMK Negeri 1 Ratahan, with a population of 60 students. The sample used was Class XI TKR students who were getting Light Vehicle Engine System material totaling 60 students. The participants in this study were 30 students of Class XI TKR 1 and 30 students of Class XI TKR 2.

Data collection techniques used to obtain data on students' learning styles and learning videos were needed using research instruments in the form of questionnaires. The scale used is the Likert scale. According to (Sugiyono, 2019) the Likert scale is used to measure the attitudes, opinions, and perceptions of a person or group of people about social phenomena.

The data analysis method in this study uses Inferential analysis consisting of Multiple Linear Regression Analysis; Regression Line variant analysis; classical assumption test consisting of: Multicollinearity Test, Heteroscedasticity Test using the Glejser test, Using the Analysis Requirements Test which consists of: Normality Test, Homogeneity Test; Hypothesis Test consists of: F test and t test to answer the formulation of problems and research objectives.

RESEARCH RESULTS AND DISCUSSION

The main data in this study comes from questionnaires that have been filled out by respondents, namely students of class XI TKR 1 SMK Negeri 1 Ratahan totaling 30 respondents and students of class XI TKR 2 SMK Negeri 1 Ratahan totaling 30 respondents in the academic year 2023/2024 a total of 60 respondents. The Student Learning Style questionnaire score (X1) is 3021 and the Learning Video questionnaire score (X2) is 3239 while for the Learning Outcome Variable (Y) based on the Report Card Results which will then be analyzed using *SPSS Statisitik 25 for Windows* to determine the Effect of Student Learning Styles and Learning Videos on Learning Outcomes of Light Vehicle Engine System Subjects in Class XI TKR SMK N 1 Ratahan.

The data validity test aims to determine whether the instrument used is really

ISSN 2798-141X

right to measure what will be measured. The data validity test was carried out using the *Product Moment correlation* method (*pearson correlation*). A data is said to be valid if the value of rcount> rtabel with a significance level <0.05. The results of the validity test on this research data are declared Valid. Based on the results of observations on the r table, the sample value (N) = 60 is 0.254, it is known that the test of the variable (X1) Student Learning Style and Variable (X2) Learning Video is 0.254 and the variable (Y) Learning Results shows that all data obtained is valid. This meets the requirements of rcount> rtabel with a significance value <0.05, thus all question items in the questionnaire can be used and can be trusted to collect the necessary data.

An instrument can be said to be reliable if it always gives the sameresults if tested on the same group at different times or occasions. To test the reliability, it is done by finding the reliability number of the question items in the questionnaire using the Alpha formula. After obtaining the value (α), then compare the value with the critical number of Reliability in the α table, which shows the relationship between the number of question items and the reliability of the instrument. Based on the data from the reliability test results in Table 1, it can be stated that the instrument that measures the value of the independent variable (X1) and the independent variable (X2) on the dependent variable (Y) is reliable.

Table 1. Reliable Analysis Results

No.	Variables	Cronbach alpha	Reliable Criterion Number	Test Results
1	X_1	0,886	0,50	Reliable
2	X_2	0,952	0,50	Reliable
3	Y	0,818	0,50	Reliable

Linear regression analysis is used to determine the effect between the variables of Student Learning Style (X1) and Learning Video (X2) on the Learning Outcome variable (Y). In this study, simple linear regression analysis was carried out using *SPSS for windows software*. The results of the analysis are presented in table 2.

Table 2. Multiple Linear Analysis Results

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	64.663	5.817		11.117	.000
	Student Learning Style	.151	.060	.256	2.508	.015
	Learning Video	.435	.080	.554	5.420	.000
a. Dependent Variable: Learning Outcome						

ISSN 2798-141X

Based on the table 1, the simple linear regression equation is as follows:

$$\hat{Y} = 64.663 + 0.151X1 + 0.435X2 + e$$

In accordance with the regression equation obtained, the regression model can be interpreted as follows: First equation:

a. The constant value = 64.663. This shows that if the independent variables of Student Learning Style (X1) and Video Learning (X2) and other unexamined variables (e) are zero, then the value of the student work readiness variable (Y) is equal to 64.663.
b. The regression coefficient of the Student Learning Style variable (X1) = 0.151, meaning that the independent variable Student Learning Style has a positive effect on Learning Outcomes. If the value of the independent variable Student Learning Style (X1) increases by one point, while the constant and the unexamined independent variable (e) are zero, the dependent variable Learning Outcomes (Y) increases by 0.151.
c. The regression coefficient of the learning video independent variable (X2) = 0.435, meaning that the learning video independent variable has a positive effect on learning outcomes. If the value of theindependent variable Learning Video (X2) increases by one point, while the constant and the unexamined independent variable (e) are zero, the dependent variable Learning Outcomes (Y) increases by 0.435.
Based on the results of the interpretation of the data above, it can be concluded that the regression coefficient of the independent variable Student Learning Style (X1) and the Independent Variable Learning Video (X2) have a significant influence on the dependent variable Learning Outcomes (Y).

This Regression line Variant Analysis is used to measure how much or how many percent (%) the influence of the independent variable Student Learning Style (X1) and the Independent Variable Learning Video (X2) on the dependent variable Learning Outcomes (Y). The greater the value of R^2 (R Square), the stronger the ability of the regression model obtained to explain the actual conditions. The magnitude of the regression line between variable X and variable Y can be seen in the table 3.

Table 3. The magnitude of the regression line between variable X and variable Y

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.656[a]	0,430	0,410	4,019	0,861
a. Predictors: (Constant), **LEARNING VIDEO, STUDENT LEARNING STYLE**					
b. Dependent Variable: Learning Outcome					

Based on the above calculations, it can be seen that the coefficient of determination is 0.430. The proportion of the contribution of the independent variable Student Learning Style (X1) and Video learning (X2) to the dependent variable Learning outcomes (Y) can be calculated simultaneously as follows:

R *square* x 100% = 0.430 x 100% = 43.0%

ISSN 2798-141X

Based on the analysis conducted, the value of the coefficient R^2 coefficient (Determinant Coefficient), which is 43.0%. These results can be concluded that the effect of the independent variable Student Learning Style (X1) and the independent variable Video learning (X2) on the dependent variable Learning outcomes (Y) is 43.0%. The remaining 57% is another variable not examined in the study.

Partial determination coefficient analysis is used to measure the proportion of effective contribution and relative contribution of each independent variable, namely student learning style (X1) and learning video (X2) to the dependent variable, namely learning outcomes (Y). The partial coefficient of determination is also used to determine the variable that has the most dominant effect on (Y). The results of the SPSS analysis are presented in Table 4.

Table 4. Partial Determination Coefficient Analysis Results

Variables	Regression Coefficient Beta	Correlation Coefficient	R Square (%)
Student Learning Style (X1)	0,256	0,370	0,430
Learning Video (X2)	0,554	0,606	

Effective Contribution	Value (%)
Student Learning Style (X1)	9,4
Learning Video (X2)	33,6
Total	43

Relective Contribution	Value (%)
Student Learning Style (X1)	0,22
Learning Video (X2)	0,78
Total	1

Based on the table 4, it can be seen the amount of influence given by each independent variable on the dependent variable by multiplying the *beta* value by the *zero order* value and then multiplying by 100%. Then the analysis results can be obtained as follows:

1. The percentage effect of X1 onY is: *Beta* x *zero order* x 100% = 0.256 x 0.370 x 100% = 9.4%
2. The percentage of influence from X2 on Y is: *Beta* x *zero order* x 100% = 0.554 x 0.606 x 100% = 33.6%

The total influence given by each independent variable is 9.4% + 33.6% = 43.0%, which is equal to Rsquare or simultaneous influence. The independent variable that has a dominant effect is Video Learning, which is 33.6%.

Multicollinearity is used to test whether the regression model found a correlation between independent variables or independent variables. Multicollinearity will not occur if the results of the VIF (*Varian Inflation Factor*) calculation are not greater than 10. The results of the analysis of multicollinearity are presented in Table 5 and Table 6.

ISSN 2798-141X

Table 5. Analysis of multicollinearity

Coefficients[a]			
Model		Collinearity Statistics	
		Tolerance	VIF
1	LEARNING STYLE	.958	1.044
	LEARNING VIDEO	.958	1.044
a. Dependent Variable: STUDY RESULTS			

Table 6. Analysis of multicollinearity for Variables X1 and X2

Variables	Tolerance	Value VIF	Terms	Description
X1	0,958	1,044	<10	No multicollinearity
X2	0,958	1,044	<10	No multicollinearity

Heteroscedasticity is used to test whether in the regression model there is an inequality of variance from the residuals of one observation to another called heteroscedasticity. The Glejser test is performed by regressing the Independent Variable with the Absolute Residual Variable (Abs_Res). If the Significant Value (> 0.05), it can be concluded that no Heteroscedasticity symptoms occur and if the Significant Value (< 0.05), it can be concluded that Heteroscedasticity symptoms occur. From the table 7, the significant value for the Learning Style Variable (X1) is 0.295> 0.05, and the Learning Video Variable (X2) is 0.969> 0.05 from these results proves that no Heteroscedasticity symptoms occur.

Table 7. Heteroscedasticity Test Results

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.641	3.138		.523	.603
	LEARNING STYLE	.034	.033	.142	1.058	.295
	LEARNING VIDEO	.002	.043	.005	.039	.969
a. Dependent Variable: ABS_RES						

The normality test is used to test whether in a regression model the independent variable (free variable) and the dependent variable (dependent variable) have a normal distribution or not. This test can use the normal P-P plot graphical method of *standardized residual cumulative probability*. The results of the normality test can be presented in the figure 1.

ISSN 2798-141X

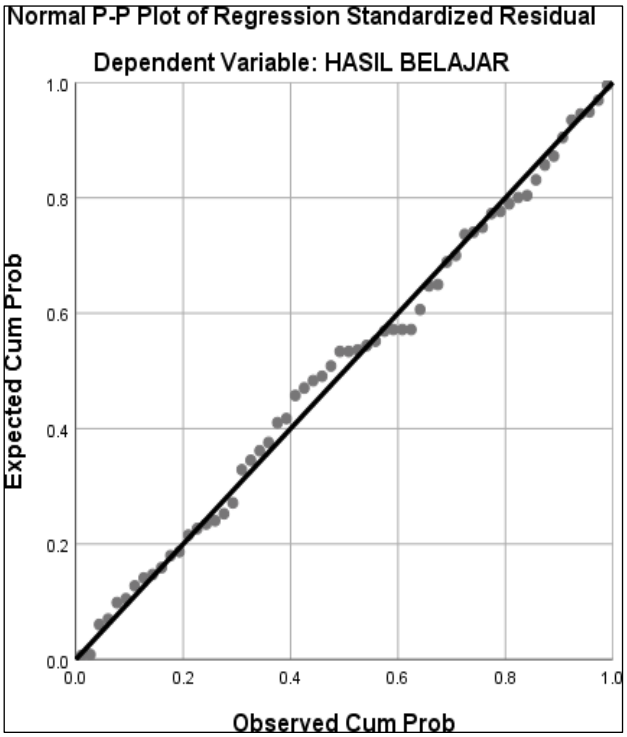


Figure 1. Normality Test Results

Based on the figure 1, the distribution of relative points is around a straight line, while the rest are normally spread. This means that the assumption of normality is acceptable. Homogeneity test is that the population variance of group one is equal to the population variance of group two. To determine Homogeneity used SPSS Windows. The procedure for determining the Hypothesis is:

1. If the significance value (P) is equal or greater > than 0.05, then the variances of two or more groups of measured data are homogeneous.
2. If the significance value (P) is less than 0.05, then the variances of two or more groups of measured data are not homogeneous.

Table 8. Homogeneity Test Results

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
LEARNING OUTCOMES OF LIGHT VEHICLE ENGINE SYSTEMS	Based on Mean	1.563	1	58	.216
	Based on Median	2.166	1	58	.146
	Based on Median and with adjusted df	2.166	1	57.935	.146
	Based on trimmed mean	1.614	1	58	.209

ISSN 2798-141X

From the test results in Table 8, obtained the value of Based on Mean Homogeneity of Light Vehicle Engine System Learning Outcomes Sig. of 0.216> 0.05. So it can be concluded that the data group comes from a population that has the same variance or Homogeneous.

The F test is used to test the hypothesis proposed by the researcher, namely that it is suspected that the independent variables of student learning styles and learning videos simultaneously affect the dependent variable of learning outcomes and have a significant influence on the dependent variable (Y). The decision-making criteria are as follows:

1. If Fcount ≥ Ftabel , it means that Ho is rejected and H1 is accepted, then the conclusion is that there is an influence of the Independent Variable Student Learning Style (X1) and the Independent Variable Video learning (X2) on the Dependent Variable Learning outcomes (Y) simultaneously (together).
2. If Fhitung < Ftabel , means Ho is accepted and H1 is rejected, then the conclusion is that there is no effect of the independent variable Student Learning Style (X1) and the Independent Variable Learning Video (X2) on the Dependent Variable Learning Outcomes (Y) simultaneously (together).

Table 9. F Test Results

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	695.521	2	347.761	21.525	.000[b]
	Residuals	920.879	57	16.156		
	Total	1616.400	59			
a. Dependent Variable: STUDY RESULTS						
b. Predictors: (Constant), LEARNING VIDEO, LEARNING STYLE						

Based on the Table 9, it is known that Fhitung is 21.525 and the amount of Ftabel 3.16 with a significance level of 0.05 is 0.000 so that Fhitung = 21.525> Ftabel = 3.16 with a significance level α = 0.05> significance 0.000. This proves that Ho is rejected and Ha is accepted, so Student Learning Styles and Learning Videos have a significant influence on Learning Outcomes.

The t test is a statistical method used to test whether there is a significant difference between two groups or populations and is used to test the hypothesis of the partial influence of the Student Learning Style variable (X1) and Learning Videos (X2) on Learning Outcomes (Y). This test can be done by comparing tcount with ttabel with *level of significant* α = 5%. The decision-making criteria are:

1. If tcount> ttabel , then Ho is rejected and H1 is accepted, so the independent variables, namely Student Learning Style (X1) and Learning Video (X2) partially have a significant influence on the dependent variable, namely Learning Outcomes (Y).

ISSN 2798-141X

2. If tcount < ttabel , it means Ho is accepted and H1 is rejected, so all independent variables, namely Student Learning Style (X1) and Learning Video (X2) partially do not have a significant influence on the dependent variable, namely Learning Outcomes (Y). The results of the analysis of the t test can be seen in table 10.

Table 10. Results of the t-test

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	64.663	5.817		11.117	.000
	LEARNING STYLE	.151	.060	.256	2.508	.015
	LEARNING VIDEO	.435	.080	.554	5.420	.000
a. Dependent Variable: STUDY RESULTS						

From the test results using the t test, a significant P-value <0.05 is obtained. α = 0,05, which is 0.015 <0.05 and the value of $t_{hitun\&} > t_{tabel}$ = 2.508 > 2.00247, it can be concluded that the H1 Hypothesis is accepted, which means that there is an effect of Student Learning Style (X1) on Learning Outcomes (Y) in the Light Vehicle Engine System Subject in Class XI TKR SMK N1 Ratahan. From the test results using the t test, a significant P-value <0.000 is obtained. α = 0,05, which is 0.000 <0.05 and a value of $t_{hitun\&} > t_{tabel}$ = 5.420 > 2,00247. It can be concluded that the H1 Hypothesis is accepted, which means that there is an effect of the Use of Learning Videos (X2) on Student Learning Outcomes in the Light Vehicle Engine System Subject in Class XI TKR SMK N1 Ratahan.

Standard Error of the Estimate is a measure of the amount of regression model error in predicting the value of Y. As a guideline, if the standard error of the estimate is less than the standard deviation of Y, the better the regression model is in predicting the value of Y. The results of the standard error of the estimate analysis can be seen in the Table 11 and Table 12.

Table 11. Analysis Results Std. Error of Estimate

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.656[a]	.430	.410	4.019
a. Predictors: (Constant), LEARNING VIDEO, LEARNING STYLE				

ISSN 2798-141X

Table 12. Standard Deviation Analysis Results

Descriptive Statistics			
	Mean	Std. Deviation	N
LEARNING OUTCOMES	80.60	5.234	60
STUDENT LEARNING STYLE	50.35	8.853	60
LEARNING VIDEO	54.13	6.657	60

Based on the table above, it shows that the Standard Error of the Estimate is 4.019, while the standard deviation is 5.234. This shows that the standard error of the estimate < standard deviation of work readiness, namely 4.019 < 5.234, which means that the regression model will be better in predicting the value of Learning Outcomes.

The Effect of Student Learning Styles on Learning Outcomes of Light Vehicle Engine System Subjects in Class XI TKR SMK N 1 Ratahan.

Student Learning Style has a positive and significant effect on Learning Outcomes of Light Vehicle Engine System Subjects in Class XI TKR SMK N 1 Ratahan. Obtained the results of the Partial Determination Coefficient Analysis with a value of R Squere (%) of 0.430; Beta Regression Coefficient 0.256 correlation coefficient of 0.370. Then the Effective Contribution of Student Learning Style to Learning Results is 9.4% which means the value of Student Learning Style ($X1$) has an influence on Learning Results (Y) of 9.4%. Based on the results of the t test, the tcount is 2.508 and the t table is 2.00247 at a significance level of 5%, the t count is greater than the t table (2.508> 2.00247) or p (0.00 <0.05). This shows that H0 is rejected and H1 is accepted, which means that the Student Learning Style Free Variable (X1) has a positive effect on the Learning Outcomes of Light Vehicle Engine System Subjects in Class Xi TKR SMK N 1 Ratahan (Y).

The Effect of Video Learning on Learning Outcomes of Light Vehicle Engine System Subjects in Class XI TKR SMK N 1 Ratahan.

The effect of Learning Video has a positive and significant effect on Learning Outcomes of Light Vehicle Engine System Subjects in Class XI TKR SMK N 1 Ratahan. Obtained the results of the Partial Determination Coefficient Analysis with a value of R Squere (%) of 0.430; Beta Regression Coefficient 0.554 Correlation Coefficient of 0.606 Then the Effective Contribution of Learning Videos to Learning Results is 33.6% which means that the value of Learning Videos ($X2$) has an influence on Learning Results (Y) of 33.6%. Based on the results of the t test, the tcount is 5.420 and the t table is 2.00247 at a significance level of 5%, the t count is greater than the t table (5.420> 2.00247) or p (0.00 <0.05). This shows that H0 is rejected and H1 is accepted, which means that the Learning Video Free Variable (X2) has a positive effect on the Learning Results of Light Vehicle Engine System Subjects in Class XI TKR SMK N 1 Ratahan (Y).

ISSN 2798-141X

The Effect of Student Learning Styles and Learning Videos on Learning Outcomes of Light Vehicle Engine System Subjects in Class XI TKR SMK N 1 Ratahan.

The effect of student learning styles and learning videos together have a positive effect on learning outcomes. Based on the results of the F test, the F count is 21.525 and the F table is 3.16 at the significance level of 5%, the F count is greater. This proves that Ho is rejected and H1 is accepted, so Student Learning Styles and Learning Videos have a significant influence on the Learning Outcomes of Light Vehicle Engine System Subjects in Class XI TKR SMK N 1 Ratahan.

CONCLUSION

According to the analysis and observation of the data, the following conclusions can be drawn:

1. There is an influence between Student Learning Styles on the Learning Outcomes of Light Vehicle Engine System Subjects in Class XI TKR SMK N 1 Ratahan by 9.4%.
2. There is an Influence between Learning Videos on Learning Outcomes of Light Vehicle Engine System Subjects in Class XI TKR SMK N1 Ratahan by 33.6%.
3. There is a significant influence between Student Learning Styles and Learning Videos on Learning Outcomes of Light Vehicle Engine System Subjects in Class XI TKR SMK N 1 Ratahan by 43% simultaneously. The dominant influential Free Variable is Learning Video, which is 33.6%.

Based on the results of research with the title "The Influence of Student Learning Styles and Learning Videos on Learning Outcomes of Light Vehicle Engine System Subjects in Class XI TKR SMK N 1 Ratahan, schools must provide direction, support and more attention to each Expertise Program to provide learning in accordance with student learning styles and provide learning media Learning Videos. Suggestions for other researchers With 53% of variables not examined in this study, many other independent variables can affect Learning Outcomes.

REFERENCES

Alma, B. (2015). *Marketing management and service marketing.* Bandung: Alfa.

Andri. (2013). *Learning styles: A guide to optimizing students' learning abilities.* Bandung: Alfabeta.

Arif, S., & Sudirman, et al. (2010). *Educational media: Understanding, development, and utilization.* Jakarta: PT Raja Grafindo Persada.

Arikunto. (2006). *Research procedure: A practice approach.* Jakarta: PT Rineka Cipta.

Arsad. (2017). *Basic statistics for educational research.* Depok: PT Rajagrafindo Persada.

Astriani. (2018). *Principles and criteria for selection of learning media.* Probolinggo: Nurul Jadid University.

ISSN 2798-141X

Arsyad, A. (2015). *Learning media.* Jakarta: PT Rajagrafindo Persada.

Arsyad, A. (2017). *Learning media.* Jakarta: Rajawali Press.

Azwar, S. (2009). *Research methods.* Yogyakarta: Student Library.

Chislett, & Chapman. (2005). *The economic impact of the European Union.* London: Routledge.

Daud, M. (2022). Analisis fasilitas belajar dan iklim kelas dengan kepuasan belajar siswa SMK Negeri 2 Manado. *Journal On Teacher Education, 3*(3), 5.

Desmita. (2014). *Psychology of development: Learner development.* Bandung: PT Remaja Rosdakarya.

Dody, A. (2015). *Education research methods.* Jakarta: Bumi Aksara.

Fatria. (2017). Application of Google Drive learning media in Indonesian language learning. *Journal of Indonesian Language Education Research, 2*(1). Bandung: Alfabeta.

Febriani, D. (2017). *Active learning strategies: Concepts and implementation in learning.* Bandung: Alfabeta.

Hartono, R. (2013). *Introduction to learning and learning theory.* Yogyakarta: Graha Ilmu.

Ilham, M. L. (2020). Research journal: The effect of learning style on science learning outcomes. Mataram: University of Mataram.

Irham, M., & Wilyani, N. A. (2013). *Educational psychology: Theory and application in the learning process.* Yogyakarta: Ar-Ruzz Media.

Isnawan, M. G., & Sudirman. (2020). *Quasi experiment.* Lombok: Nashir Al-Kutub Indonesia.

Kustandi, C. (2013). *Learning media: Manual and digital.* Bogor: Ghalia Indonesia.

Machfoedz. (2007). *Statistics for research.* Bandung: Intermedia.

Mahmud. (2017). *Learning styles: Understanding the right way to learn to improve achievement.* Jakarta: PT Gramedia Pustaka Utama.

Mardianto. (2012). *Teaching and learning strategy.* Yogyakarta: Student Library.

Noor, D. (2014). *Introduction to geological disaster mitigation.* Yogyakarta: Deepublish.

Olii, D., Hezekiah, K. M., & Yusuf, T. S. M. (2023). The effect of using interactive multimedia on learning outcomes of basics of visual communication design for students at SMK Negeri 1 Tondano. *EduTIK: Journal of Information and Communication Technology Education, 3*(5), 618.

Parabelem, T. D. R., Marvil, R., & Arje, C. D. (2022). Development of educational game-based learning media for natural science subjects in junior high schools. *EduTIK: Journal of Information and Communication Technology Education, 2*(1), 67.

Pearson, K. (1900). *The grammar of science.* London: Walter Scott.

Rosmita. (2020). *Human resource management.* Sukoharjo: Tahta Media.

Rusman. (2017). *Learning models: Developing teacher professionalism.* Jakarta: Rajawali Press.

Rusmono. (2017). *Learning strategy with problem-based learning to improve teacher professionalism.* Jakarta: Ghalia Indonesia.

ISSN 2798-141X

Sihombing, C. (2012). Research journal: The effect of using learning videos on learning outcomes of XII grade students. *Edu Cendikia: Efarina University.*

Sugiyono. (2019). *Quantitative, qualitative, and R&D research methods.* Bandung: Alfabeta.

Suprihatiningrum, J. (2016). *Learning strategies: Theory and application.* Yogyakarta: Ar-Ruzz Media.

Susilana, R. (2008). *Learning media: Nature, development, utilization, and assessment.* Bandung: CV Wacana Prima.

Susilana, R. (2008). *Qualitative research methods: Basics and applications.* Bandung: Refika Aditama.

Thobroni, M. (2015). *Learning and learning book: Theory and practice.* Jakarta: PT Rajafindo Persada.

Warsita, B. (2008). *Learning technology: Foundation and application.* Jakarta: Rineka Cipta.

Winkel, W. S. (2004). *Teaching psychology.* Yogyakarta: Media Abadi.

Wulandari. (2021). *Research methodology.* Surabaya: Changing Universe.

ISSN 2798-141X