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How do students' study habit and self-confidence affect their mathematics learning outcome?

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Abstract

Study habits and self-confidence are several factors that are thought to be related to student mathematics learning outcomes. This research aims to determine whether there is a positive and significant relation between study habits and self-confidence to mathematics learning outcomes on the 11th grade students of SMA Negeri 1 Dukuhwaru, Indonesia. The type of this research is quantitative research. It involved 167 students of social sciences of SMA Negeri 1 Dukuhwaru. The instrument used was a test of learning outcomes and a questionnaire that had been tested for the validity and the reliability. Data analysis techniques used in this study are descriptive analysis, analysis prerequisite test, and hypothesis testing. The results of this study indicates that there is a positive and significant relation between study habits and self-confidence to mathematics learning outcomes on the 11th grade students of SMA Negeri 1 Dukuhwaru. It is indicated by $F = 4.91 > 3.32 = F_{table}$. Double correlation coefficients R = 0.547 dan R^2 are 0.299 with $\hat{Y} = -25{,}442 + 0{,}793X_1 + 0{,}513X_2$ and SR(X1) = 62,63% and SR(X2) = 37,36%, SE(X1) = 18,74% and SE(X2) = 11,18%.

Keywords: mathematics learning outcome, self-confidence, study habit.

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INTRODUCTION

The process of running education is inseparable from learning activities. Susanto (2016) defines learning as an activity carried out deliberately and conciously to obtain a concept, understanding, or new knowledge so it might make someone experience some changes in the behavior that are relatively fixed in thinking, feeling, and in acting. The changes occur gradually in accordance with the learning activities undertaken. Behavioral changes that occur indicate an increase of potential in a person and the increasing of potential is the result of learning activities undertaken. Slameto (2015) explains that there are several factors that influence someone's learning process. Then, these factors are divided into two groups, i.e. internal and external factors. Internal factors are factors that exist in the individual itself while external factors are factors that exist outside the individual include: family factors, community factors, and school factors that include several things, one of which is the learning method used.

According to Slameto (2015), learning methods or appropriate and regular ways of learning improve students' learning outcomes effectively and if it is done consistently, it can be a good learning habit. Study habits are a method or technique that is inherent in students when receiving lessons, reading books, doing assignments, and setting the time to complete activities (Djaali, 2017; Rana & Kausar, 2011). Regularity in learning will produce good learning habits.

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Danskin and Burnett (1952) stated that the higher the academic scores of students, the more effective their learning habits compared to students whose academic scores are low.

In the learning process, physical activity undertaken is influenced by various psychological conditions. One psychological condition that influences human activities and behavior is self-confidence. Yates in Hendriana (2018) explained that self-confidence is very important for students to succeed in learning mathematics. With the confidence, students are more motivated and happier to learn mathematics. This statement is supported by Mullis's findings which revealed that there is a positive association between self-confidence and mathematics learning outcomes (Hendriana, 2018). It means that students who have high mathematics learning outcomes also have a high self-confidence index. Based on these descriptions, among the important factors that are thought to affect learning outcomes are learning habits and self-confidence.

In the interviews and observations on 17-18 July 2019 at SMA Negeri 1 Dukuhwaru, we found that there are students who do not prepare their learning needs. The students concentrate less during learning and did not immediately complete the practice questions given by the teacher. The culture of cheating on the work of friends is still done. They are afraid of being asked to do voluntarily work on math problems in front of the class. They are hesitant to response the work of friends and the results of their own work. When the students are asked to explain the results of math work in front of the class, some students refuse because they are afraid of being wrong. Teachers dominate learning process so the students tend to be passive. Seeing the results of Mathematics odd semester assassment of Grade XI IPS at SMA Negeri 1 Dukuhwaru, it is also known that 164 students out of 167 or 98% of students did not reach the Minimum Mastery Criteria of 70 in mathematics.

Based on the description, several problems were formulated as follows. First, is there a positive and significant relation between study habits to mathematics learning outcomes on the 11th grade social sciences students of SMA Negeri 1 Dukuhwaru Tegal Regency odd semester of academic year 2019/2020? Second, is there a positive and significant relation between self-confidence to mathematics learning outcomes on the 11th grade IPS students of SMA Negeri 1 Dukuhwaru Tegal Regency odd semester of academic year 2019/2020? And third, is there a positive and significant relation between study habits and self-confidence to mathematics learning outcomes on the 11th grade IPS students of SMA Negeri 1 Dukuhwaru Tegal Regency odd semester of academic year 2019/2020?

RESEARCH METHOD

The type of the research in this study is correlation because in this study, researcher uses a correlational test to describe and measure the degree of relationship between two or more variables (Creswell, 2015). The approach used in this study is a quantitative approach because this study uses data collection, interpretation and results of these data.

The population in this study are all 11th grade social science students of SMA Negeri 1 Dukuhwaru in the Odd Semester Class of 2019/2020 which consists of 5 classes with the total population is 167 students. The technique used in sampling is probability sampling technique with cluster random sampling. The reason of using random cluster sampling because the population in this study consists of groups / classes obtained 33 students of XI IPS 5 as the sample. In this study, there are two kinds of variables i.e. independent

variable and the dependent variable. Independent variable consists of study habit (X1) and self-confidence (X2) while the dependent variable is the student's mathematics learning outcome (Y).

Data collection techniques used in this study are questionnaire and tests that have been tested for validity and reliability. After going through the validity and reliability test, the data will be analyzed using descriptive statistical analysis and analysis prerequisite tests. Analysis prerequisite tests include normality test, linearity test and independent test. Then, the hypothesis testing is performed to answer the temporal hypotheses, where the hypothesis testing is done, including correlation analysis and linear regression analysis.

RESULTS AND DISCUSSION

Based on the research done, it is obtained study habit data and self-confidence and students' mathematics learning outcome.

Prerequisite test analysis

Normality test

Normality test is used to determine the distribution of data from each research variable that has a normal distribution or not. The summary of normality test results can be seen in Table 1.

Table 1. Normality test

No.	Variable	χ^2	χ^2_{table}	df	Conclusion
1	Study habit (X_1)	0.3180	5.9915	2	Normal
2	Self-confidence (X_2)	0.1989	5.9915	2	Normal
3	Mathematics learning outcome (Y)	7.5497	7.8147	4	Normal

Table 1 shows that $\chi^2 \leq \chi^2_{table}$, so the distribution of the data obtained by each variable are normally distributed.

Linearity test

Linearity test is used to determine whether the independent variable and the dependent variable have a linear relationship or not by using the linear regression formula (Test F). The summary of linearity test results can be seen in Table 2.

Table 2. Linearity test

No.	Variable	F	F_{table}	Conclusion
1	X_1 to Y	1.93	2.35	Linear
2	X_2 to Y	1.65	2.65	Linear

Table 2 shows that $F \leq F_{table}$, it shows that the variable of study habits and the mathematics learning outcomes has a linear relationship as well as the variables of confidence with students' mathematics learning outcome has a linear relationship.

Independent Test

The independent test is used to determine the existence of a relationship between the independent variables, i.e. the study habits variable (X1) and the confidence variable (X_2) which uses *chi-square* formula. The decision making

criteria are variable X_1 and variable X_2 which are independent if $\chi^2 \leq \chi^2_{table}$, in $\alpha =$ 5% and the degree of freedom df =(B–1)(K–1). In which B is the number of rows and K is the number of columns. The result of independence test are X_1 to X_2 with χ^2 = 34,83 and χ^2_{table} = 37,6585 so $\chi^2 \leq \chi^2_{table}$. It means that the variables, study habit variable (X_1) and self-confidence variable (X_2) are independent.

Hypothesis Test

First Hypothesis
The summary of the results of the first hypothesis test can be seen in table 3.

Table 3. First hypothesis test

t	t_{table}	df	Conclusion
2.939	2.039	31	decline $H_{0,1}$, accept $H_{1,1}$

Based on Table 3, it is obtained that $t > t_{table}$ in the significat level 5% and dof = 31, so there is positive and significat realtion between study habit and the mathematics learning outcomes of 11th grade of social science students of SMA Negeri 1 Dukuhwaru Tegal Regency in the Odd Semester Class of 2019/2020.

Second Hypothesis
Summary of second hypotesis test can be seen in Table 4.

Table 4. Second hypothesis test

t	t_{table}	df	Conclusion
2.303	2.039	31	decline $H_{0,2}$, accept $H_{1,2}$

Based on Table 4, it is obtained that $t > t_{table}$ in the significat level 5% and dof = 31, so there is positive and significant realtion between self-confident and mathematics learning outcome of 11th grade of social science students of SMA Negeri 1 Dukuhwaru Tegal Regency in the Odd Semester Class of 2019/2020.

Third Hypotesis
The summary of the third hypotesis test can be seen in Table 5.

Table 5. Third hypothesis test

F	F_{table}	df	Conclusion
4,910	3,32	$v_1 = 2$ $v_2 = 30$	decline $H_{0,3}$, accept $H_{1,3}$

Based on Table 5, it is obtained that $F > F_{table}$ in the significant level 5% with $v_1 = 2$ and $v_2 = 30$. It means that there is a positive and significant relation between study habit and self-confident to mathematics learning outcome of 11th

grade social science students in SMA Negeri 1 Dukuhwaru Tegal Regency in the Odd Semester Class of 2019/2020.

The results of relative contributions (SR) and effective contributions (SE) in each variable X_1 dan X_2 can be seen in the Table 6.

Table 6. Relative and effective contribution

Variable	*SR(%)*	*SE(%)*
Study habit (X_1)	62.64	18.74
Self-confidence (X_2)	37.36	11.18
Total	100	29.92

In the first hypotesis test, it is obtained that the coefficient correlation is 0,466 in the significant level 5%. So, it obtains 0,217 or 21,7% determinant coefficient (r^2) of learning outcome affected by study habit. There are variations in learning outcomes in mathematics (Y) which is explained by study habit (X_1) through linear line $\hat{Y} = -0.260 + 0.922\,X_1$ with 0,922 regression direction coefficient. It means every increase one unit X_1 causes 0,922 Y increases. Based on the result of the first hypotesis, there is positive and significant relation between study habit and the learning outcome. It is relevant with Rahayu's research (2015), which states that there is a positive and significant influence between study habits and mathematics learning outcomes. Because the relationship between learning habits and mathematics learning outcomes of students shows a positive direction thus, the better the students' learning habits, the better the learning outcomes they get.

In the second hypothesis test, it is obtained that 0.382 coefficient correlation (r) is in the significant level 5%. So, it obtains determinant coefficient (r^2) 0.146 ot 14.6% of learning outcome affected by self-confident. There are variations in learning outcome in mathematics (Y) explained by self-confident (X_2) through linear line $\hat{Y} = 21.156 + 0.671\,X_2$ with 0.671 regression direction coefficient. It means every increase one unit X_2 causes 0.922 Y increase. Based on the results of the second hypothesis test, there is a positive and significant relation between self-confidence and mathematics learning outcomes. Because the relation between self-confidence with mathematics learning outcomes shows a positive direction, so the higher the student's self-confidence, the higher the learning outcomes they get.

Based on the results of the double correlation test analysis, it is obtained that the correlation coefficient values (R) is 0.547 and determinant coefficient (R^2) is 0.299. It means 29.9% learning outcomes are affected by study habit and self-confidence. There are variations in learning outcome in mathematics (Y) explained by study habit (X_1) and self-confidence (X_2) through the linear line $\hat{Y} = -25.442 + 0.793X_1 + 0.513X_2$. It means every increase one unit X_1 causes 0.793 Y increase and every increase one unit X_2 causes 0.513 Y increase.

The relative contribution of X_1 is 62.64% and X_2 is 37.36% and efective contribution of each variable X_1 and X_2 are 18.74% and 11.18%. Meanwhile, the result of third hypothesis test is that there is a positive and significant relationship between learning habits and self-confidence with the outcome of learning mathematics. It is in line with the research of Agustianingrum and Suryantini (2016) which states that there is a positive and significant relationship between learning habits and self-confidence with students' mathematics learning outcomes. Thus, the better the students' study habits,

the better the learning outcomes. Also, the higher the confidence of students, the higher the learning outcomes they get.

CONCLUSION

Based on the results of the research and discussion as described above, the following research conclusions can be drawn. First, there is a positive and significant relation between study habits to mathematics learning outcomes on the 11th grade IPS students of SMA Negeri 1 Dukuhwaru Tegal Regency odd semester of academic year 2019/2020. It is shown that test-t is obtained by t = 2.939 while t_{table} = 2.039 so $t > t_{table}$. The simple coefficient correlation (r) between study habit (X_1) and mathemathic learning outcome (Y) is 0.466 with the linear regression $\hat{Y} = -0.260 + 0.922\,X_1$. Second, there is a positive and significant relation between self-confidence to mathematics learning outcomes on the 11th grade IPS students of SMA Negeri 1 Dukuhwaru Tegal Regency odd semester of academic year 2019/2020. It shows that the test-t obtained is t = 2.303 while t_{table} = 2.039. So, $t > t_{table}$. The simple coefficient correlation (r) between self-confidence (X_2) and mathemathic learning outcome (Y) is 0,382 with the linear regression $\hat{Y} = 21.156 + 0.671\,X_2$. Third, there is a positive and significant relation between study habits and self-confidence to mathematics learning outcomes on the 11th grade IPS students of SMA Negeri 1 Dukuhwaru Tegal Regency odd semester of academic year 2019/2020. It can be seen that test-F is obtained by F = 4,910 while F_{table} = 3,32. Beside of that, there is double coefficient correlation (R) between study habit and self-confidence with student's mathemathic learning outcome, 0,547 and determinant coefficient (R^2) 0.299. The double linear regression equation is $\hat{Y} = -25.442 + 0.793X_1 + 0.513X_2$. The amount of relative contribution X_1 is 62.64% and X_2 is 37.36% and each variable's effective contribution X_1 is18.74% dan X_2 is 11.18%.

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