The correlation of motivation, activeness, and learning style with mathematical learning achievement

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Article Info
Abstract
This study aims to determine the correlation of motivation, activeness and learning style with mathematical learning achievement. The type of research is ex-post facto research. The population in this study are students in grade X of senior high school in Bantul sub-district where consists of 130 students who taken on a random sampling cluster. Data collection techniques using angket, observation, and results of midterm exam. 

Mathematics learning achievement is the mastery of knowledge or skills developed by subjects, usually indicated by test scores or grades given by the teacher (Tu'u, T., 2004: 75). Measurement of learning achievement can be done by evaluating student learning outcomes using midterm exam, end of semester assessment, daily tests, etc.

Student learning achievement consists of high or good student learning achievement and low or poor student learning achievement “Student success in learning can be influenced by internal and external factors” (Slameto, 2010: 54). Internal factors are factors that come from within students, including interests, motivation, activity, learning styles, and so on. While external factors are factors that originate from outside the student, including family environment, community, relationships, learning facilities, family socioeconomic conditions and so on. Among these factors, researchers are interested in examining what is included in internal factors, namely motivation, activity and learning styles.

According to Oemar Hamalik (2015: 158) motivation is a change of energy in a person marked by the emergence of feelings and reactions to achieve goals. If students have the drive and will from within, then the student will learn to the maximum and earnestly. A student who has been motivated to learn will always be diligent in learning so that his learning achievements will be seen gradually.
Activeness is an activity that involves both physical and mental, which is acting and thinking as a series that cannot be resolved (Sardiman, 2001: 98). In the learning process it will be very important for students who are active in it and pay attention when learning the mathematics process. Active students can be seen from students who talk to teachers who ask questions about who wants to move to understand the material delivered and others. Students who have high activity will more easily discuss the subject matter delivered by the teacher during the learning process than students who use passive and ignorant language.

According to Adi Gunawan (2004: 200) "Learning style is a way that students like to do the activities of thinking, processing and understanding information." Learning styles can affect a child in many ways, such as the way he hears, pay attention to storing information, and how to use that information. Each child has more than one learning style that they like and they use it for the purpose of achieving good learning achievement. If a teacher can identify trends in student learning styles, this will be very useful for developing teaching and learning processes for the convenience of student learning.

The results of observations at SMA Negeri 2 Bantul and SMA Negeri 3 Bantul indicated that there was a difference between student motivation that could be seen from the attitudes of students in math lessons that tend to varied. The activeness of students in SMA Negeri 2 Bantul and SMA Negeri 3 Bantul tends to be diverse, for example there were students who during the learning process in class are always actively asking questions, and come forward to solve the practice questions provided by the teacher, but there are also students who during the learning process take place tend to be more passive and difficult to ask the teacher. There are various patterns of learning styles undertaken by students in SMA Negeri 2 Bantul and SMA Negeri 3 Bantul, for example such as there were students who used learning styles that always focused on what is conveyed by the teacher and there are also students who use learning styles that focus on what is conveyed teacher but occasionally chatting with his bench friend.

Based on these explanations, researchers are interested in knowing the relationship between motivation, activeness, and learning styles with mathematics learning achievement of students of class X in Bantul Sub-district High School in 2018/2019. The purpose of this study was to determine (1) the relationship between motivation and mathematics learning achievement, (2) the relationship between activeness and mathematics learning achievement, (3) the relationship between learning styles and mathematics learning achievement, (4) the relationship between motivation, activeness and style learn by learning achievement mathematics.

Method

The research is an Ex Post Facto research and the quantitative research. This research was conducted in Grade X of Senior High School in Bantul Sub-District. The population in this study were 803 students in Grade X of Senior High School in Bantul Sub-District in 2018/2019. The cluster random sampling was used in this research, which was taking 2 schools randomly from 6 existing schools, it was SMA Negeri 2 Bantul and SMA Negeri 3 Bantul. SMA Negeri 2 Bantul consisted of 6 classes, which is taken 2 classes randomly where consists of 63 students. SMA Negeri 3 Bantul consisted of 3 classes, which is taken 2 classes randomly where consists of 67 students. So, the number of sample was 130 students or 16.18% of the population.

Data collection technique that used in this study were questionnaire, observation, and the results of midterm exam. Questionnaire was used to collecting learning motivation data and learning styles, observation was used to collecting student activity data, and results of midterm exam was used to collecting mathematics learning achievement data. Before the instruments were used, did worthiness testing first. The questionnaire instruments did by validity and reliability tests. Midterm exam did by validity, difficulty level, difference power and reliability tests. Data analysis techniques did by descriptive analysis for motivation, activeness and learning achievement, whereas learning styles of students would be categorized. The pre-requisite analysis tests were normality, linearity and multicollinearity tests. While testing the hypothesis did by multiple correlation analysis and partial correlation analysis.

Results and Discussion

The things that described in this study were motivation, activeness, learning styles, and mathematics learning achievements of students in Grade X of Senior High School in Bantul Sub-District. The results of this study show that the average score of students learning motivation data was 83.07 in the range of 82.55 < \bar{x} \leq 97.5. This shows that the tendency of learning motivation of students in Grade X of Senior High School in Bantul Sub-District was high category. Student learning activeness based on descriptive data was obtained score 57.26 in the range of 55 < \bar{x} \leq 65. This shows that the tendency of learning activeness of students in Grade X of Senior
High School in Bantul Sub-District was high category. Mathematics learning achievements that obtained from the results of midterm exam was obtained score 71.88 in the range of 75.01 < \bar{x} . This shows that the tendency of mathematics achievement of students in Grade X of Senior High School in Bantul Sub-District was high category. Learning style instruments are validated using category classification that classifying learning styles into three categories, namely auditory, visual, and kinaesthetic. It was found that students who had auditory learning style were 45 students, visual learning style were 38 students, and kinaesthetic style were 47 students.

The normality test results in learning motivation variable obtained that sig value as 0.200 > 0.05, so it would be stated that learning motivation variable was normally distributed. The activeness variable obtained that the sig value as 0.200 > 0.05, then the activity variable is stated as normal distribution. Learning style variable obtained that the sig value as 0.094 > 0.05. It would be stated that learning achievement variable was normally distributed. Linearity test is performed to determine whether two variables (X and Y) were a linear or not. The result of the linearity test between motivation and mathematics learning achievement obtained that the sig value as 0.480 > 0.05, it can be stated that motivation and mathematics learning achievement was linear. The linearity test results about activeness and mathematics learning achievement obtained that the sig value as 0.864 > 0.05, so it can be stated that the learning style and mathematics learning achievement was linear.

Multicollinearity test is used to determine whether there was or not a deviation from the classic assumption of multicollinearity, namely the existence of a linear relationship between independent variables. The independent variable did not experience multicollinity if the VIF value was ≥10 and the independent variable did not experience multicollinearity if the VIF value <10 (Ghozali, I., 2009: 96). The results of multicollinearity test based on the results of calculations from SPSS software version 23.0 for windows on the motivation independent variable with activeness obtained a VIF value of 1.004 <10. This can be stated that there is no multicollinearity between the independent variables of motivation with activeness. The active variable with learning style obtained VIF value of 1.005 <10. It can be stated that there is no multicollinearity between the independent variables with the learning style. In the independent variable of learning style with motivation, a VIF value of 1.003 <10. This can be stated that there is no multicollinearity between the independent variables of learning style and motivation.

From the results of multiple regression analysis with three predictors, it is known that the regression coefficient value of the \beta value for constants was 7.569, motivation was 0.336, activeness was 0.32, and learning style was 0.211. Then the double regression equation is \hat{Y} = 7.569 + 0.336X_1 + 0.32X_2 + 0.211X_3. The multiple regression equation can be explained as follows: (1) A constant as 7.569, it means that if value of motivation X_1, activeness X_2, and learning style X_3 is zero (0) so mathematics learning achievement \hat{Y} is 7.569. (2) Coefficient X_1 as 0.336, it means that every additional motivation of 1 unit will increased mathematics learning achievement \hat{Y} as 0.336. (3) Coefficient X_2 as 0.32, meaning that every addition of activeness by 1 unit will increased mathematics learning achievement \hat{Y} as 0.32. (3) Coefficient X_3 as 0.211, meaning that each additional learning style by 1 unit will reduced mathematics learning achievement \hat{Y} as 0.211.

The major hypothesis of the multiple correlation test results obtained by the multiple correlation coefficient (R) as 0.869, the coefficient of determination R^2 of 0.756, this means that students' mathematics learning achievement could be influenced by motivation, activeness and learning styles as 75.6%, while the remaining 24.4% is influenced by other variables. Significance of the regression coefficient significance obtained sig=α was 0.000 <0.05 indicates the regression coefficient is significant. The results of the calculations obtained Fcount = 130.143 with Ftable of 2.68 at a significant level of 5% and df1 = 3, df2 = 126. Because Fcount > Ftable is 130.143 > 2.68 and sig = 0.000 <0.05, it could be concluded that major hypothesis is accepted and stated that there was a positive and significant relationship between motivation, activeness and learning style with mathematics learning achievement of students of Grade X Senior High School in Bantul sub-district.

The minor hypothesis of the partial correlation test results obtained that: (1) Partial Correlation Test of Learning Motivation (X_1) and Mathematics Learning Achievement (Y) where learning styles and activeness are controlled for 0.765. From the t test results obtained \text{t}_{count} = 13.349 and the value of \text{t}_{table} with a significance level of 5% and dk 130 is 1.978. This means that \text{t}_{count} > \text{t}_{table} so that it can be concluded that there is a positive and significant relationship between learning motivation and mathematics learning achievement of class X high school students in Bantul District in the Academic Year 2018/2019. (2) Partial Correlation Test between Activity (X_2) and Mathematics Learning Achievement (Y) where the learning style and learning activeness are controlled by 0.736. From the t test results obtained \text{t} = 12.209 and the value of \text{t}_{table} with a significance level of 5% and dk 130 is 1.978. This means that \text{t}_{count} > \text{t}_{table} so that it can be concluded that there is a positive and significant relationship between activeness and mathematics learning achievement of students of Grade X Senior High School in Bantul...
Sub-District in the Academic Year 2018/2019. (3) Partial Correlation Test between Learning Style (X₃) with Mathematics Learning Achievement (Y) where the learning style and activeness are controlled as 0.563. From the t test results obtained that \( t = 7.643 \) and the value of the table with a significance level of 5% and dk 130 was 1.978. This means that \( t_{\text{count}} > t_{\text{table}} \) so that it can be concluded that there is a positive and significant relationship between learning styles and mathematics learning achievements of class X high school students in Bantul Sub-district in the Academic Year 2018/2019.

**Conclusion**

Based on the results and discussion of the study, it would be concluded that:
1. There is a positive and significant relationship between motivation and mathematics learning achievement of students in Grade X of Senior High School in Bantul Sub-District as indicated by the correlation coefficient as 0.765 with a significance level of 5%.
2. There is a positive and significant relationship between the activeness and mathematics learning achievement of students in Grade X of Senior High School in Bantul Sub-District as indicated by the correlation coefficient as 0.736 with a significance level of 5%.
3. There is a positive and significant relationship between learning styles and mathematics learning achievement of students in Grade X of Senior High School in Bantul Sub-District as indicated by the correlation coefficient as 0.563 with a significance level of 5%.
4. The relationship between motivation, activeness, and learning style as 75.6%, while the remaining 24.4% is influenced by other variables.

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**References**


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