Contribution of the Implementation of High-Touch Teachers and the Academic Self Concept of Student Learning Motivation In Mathematics Subject

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Abstract
This study motivated by the low level of student motivation in mathematics subjects. The application of high-touch teachers and academic self-concept are factors that influence students' learning toward motivation in mathematics subjects. This study uses a descriptive correlational quantitative method. The population of this study was all students of MAN 1 Pekanbaru totalling 1138 and 322 students were selected by using proportional stratified random sampling. The instruments used were questionnaires for the application of high scored teachers, academic self-concept, and student learning motivation in mathematics subjects using a model Likert scale. The findings of the study were the application of high touch teachers in a good category, academic self-concept was in a fairly positive category, student motivation in mathematics subjects was in the high category, the application of high touch teachers and academic self-concept respectively contributes significantly positively to students' learning motivation on mathematics subjects.

Keywords: High-Touch Teacher, Academic Self Concept, Learning Motivation


Introduction
Learning motivation is considered a factor that influences learning outcomes, in addition to self-regulation. Then, learning motivation focuses on cognitive responses, such as students' tendency to achieve meaningful and useful academic activities from these activities Bahri & Corebima (2015). Students' learning motivation arises because of students' expectations for success, the appreciate the activity process, and the results obtained Biggs & Moore (1993). It links to the study of Williams & Williams (2011) that motivation is the most important factor to improve learning.

There are five things that are determining factors in learning motivation, namely: students, teachers, content, methods/processes, and environment.

One factor that determines learning motivation is the teacher. Brophy & Brophy (2004) reported that the personality and daily behavior of classroom teachers are the most effective motivational guide to generate students' motivation in learning. Similarly, Midgley & Carol (1988) reported that the quality of student and teacher relationship can lead to a decrease in student learning motivation, if, not well handled. A teacher must consider the dignity of their students during motivation. This can be conducted by the teacher by applying a touch of humanity to students as intended by the high approach. This is in line with what was revealed by Prayitno (2009) the learning process involves educational devices (teachers and students) which are supported by two pillars, such as high touch and high-tech. Prayitno (2009) states that high-touch is a device for interpersonal relations that link students and teachers in educational situations. Murhayati (2014) confirmed, that the learning process of a high-level approach was applied to reach out to students in education relations. With the application of high touch, the teacher can enter the student's personality, and students direct themselves to the teacher. Therefore the application of high touch by the teacher is very important to be applied in the learning process.
Another factor that also influences student motivation comes from within the student's self-concept. Fernald & Fernald (2004) define four factors that influence student learning motivation: family, cultural, the role of self-concept, gender roles, and recognition and achievement. Shavelson (in Marsh, 1993) reported that there are thirteen types of self-concept that can be examined in an individual: general, academic, mathematical, problem-solving, spiritual, emotional stability, related to friends of the same sex, different sex, parents, physical appearance, physical strength, and self-concept of honesty. One self-concept that can be examined in students is academic self-concept. Dagnew (2015) reveals academic self-concept is a person's feelings and judgments about himself in the school or academic environment or related to his academic progress (Ardi et al., 2019).

Academic self-concept has to do with student learning motivation. Bahri & Corebima (2015) revealed that learning motivation was considered a factor that more influenced students' academic performance. Therefore, a positive academic self-concept can increase student learning motivation (Daharnis et al., 2018).

Based on the previous data at MAN 1 Pekanbaru, it was reported that there were still students who had low learning motivation, this was indicated by students still skipping school, not entering during certain class hours. During learning, many students came out and prefer to sit in the canteen, UKS, and toilet. There are some other students who sit restless, sleepy, lazy, do not take notes, do not pay attention, do not do assignments, and even chit-chat with their friends. This phenomenon shows that students' learning motivation is still low. Students learning motivation is also indicated by the low achievement achieved by students, especially on mathematics subjects. Mathematics subjects are chosen because it is an important subject. Nirwana (2009) stated the importance of mathematics subjects can be seen from its purpose in developing students' cognitive abilities in solving problems and developing students' effectiveness (Ardi et al., 2019).

Another phenomenon shows the motivation of student learning mathematics subjects is from the National Examination result which is followed by all students of MAN 1 Pekanbaru T.P. 2016–2017 shows that out of 315 students of class XII, mathematics subjects get the lowest number with an average value of 41.6. This shows the achievement of students caused by various factors, one of them is because students' motivation in mathematics subjects are low.

The purpose of this study was to describe (1) the application of high-touch teachers, academic self-concept, and student learning motivation in mathematics subjects, (2) the contribution of high-touch teachers' application to students' learning motivation in mathematics subjects, (3) the contribution of academic self-concept to student who are learning motivation in mathematics subjects, (4) contribution of the application of high-touch teacher and academic self-concept together on student learning motivation in mathematics subjects.

Method

The research uses a quantitative approach with a descriptive correlational method to describe the contribution of the application of high-touch teachers and academic self-concepts to students' learning motivation on mathematics subjects, which is revealed from the processing of data, based on instruments that have been administered. The population of this study was all the active students of MAN 1 Pekanbaru academic year 2018–2019. The total number of the population was 1138 students and the sample of this study was 322 students. In this study, the writer uses proportional stratified random sampling. The instruments used were questionnaires for the application of high scored teachers, academic self-concept, and student learning motivation on mathematics subjects using a model Likert scale. Data were analyzed using descriptive statistics.

Results and Discussion

Data Description

Data in this study include; (1) Describe the application of high touch teachers, (2) Describe student academic self-concept, and (3) Describe student learning motivation on mathematics subjects.

1. Data description of the application of high touch mathematics teachers at MAN 1 Pekanbaru.

It can be seen that in general, the application of high touch by mathematics teachers are in a good category (B) with a percentage of 72.9%. The acquisition of each sub-variable of implementation high touch by mathematics teachers in learning with a total overall frequency of very good categories (BS) was 63 with a percentage of 19.6%. The total overall frequency of good category (B) is 149 with a percentage of
46.3%. The total overall frequency of the medium category (S) is 96 with a percentage of 29.8%. The total overall frequency of the less category (K) is 14 with a percentage of 4.3%, and the total overall frequency of the less category (KS) is 0 with a percentage of 0%.

2. The description of students’ academic self-concept data in MAN 1 Pekanbaru

It can be seen that in general students have academic self-concepts in the fairly positive category (CP), with a percentage of 61.4%. The acquisition of each sub-student academic self-concept variable with a total of very positive frequency (SP) is 6 with a percentage of 1.9%. The total overall frequency of the positive category (P) is 71 with a percentage of 22%. The total frequency of the categories is quite positive (CP) as much as 200 with a percentage of 62.1. The total overall frequency of the non-positive category (TP) was 41 with a percentage of 12.7%, and the total overall frequency of the very non-positive category (STP) was 4% and 1.2%.

3. Data description of student learning motivation on mathematics subjects in MAN 1 Pekanbaru

It can be seen that from all respondents totalling 322 students, in general students’ learning motivation in mathematics subjects is in the high category (T) with a percentage of 70.2%. The acquisition of each sub-variable of student motivation in mathematics subjects with a very high overall frequency (ST) was 18 with a percentage of 5.6%. The total overall frequency of the high category (T) is 177 with a percentage of 55%. The total overall frequency of the medium category (S) is 116 with a percentage of 36%. The total overall frequency of the low category (R) is 10 with a percentage of 3.1%. And the total frequency of the very low category (SR) is 1 with a percentage of 0.3%.

Testing Data Analysis Requirements

The test requirements for the analysis carried out on this research data were carried out using the parametric statistical formula, namely the multiple regression data analysis techniques. Therefore, the requirements test analysis carried out on this research data is the normality test, linearity test, and multicollinearity test.

1. Normality

Test Data normality test using the Kolmogorov-Smirnov test, which compares the coefficient Asymp. Sig. with a significance level of 0.05. If Asymp. Sig. greater than 0.05, the data comes from populations that are normally distributed. Data were analyzed using the program SPSS version 20.00. The results of the calculation of the three variables are presented in Table 1 below.

Table 1. Normality Test Results for the Application of High Touch Teachers (X₁), Academic Self Concept (X₂), and Motivation of Student Learning in Mathematics Subjects (Y).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Asymp. Sig.</th>
<th>Significance</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X₁</td>
<td>0.479</td>
<td>0.05</td>
<td>Normal</td>
</tr>
<tr>
<td>X₂</td>
<td>0.466</td>
<td></td>
<td>Normal</td>
</tr>
<tr>
<td>Y</td>
<td>0.660</td>
<td></td>
<td>Normal</td>
</tr>
</tbody>
</table>

Based on the data in Table 1, it can be seen that all three variables have scores Asymp. Sig. greater than the predetermined significance (0.05). That is, data from the three variables are normally distributed. This shows that one of the requirements for regression analysis has been fulfilled.

2. Linearity Test

Linearity test in this study, by looking at deviation from linearity. If the significance value of deviation from linearity is 5 0.05, then the data is declared linear. The results of the linearity testing of data in this study can be seen in Table 2 below.
Table 2. Linearity Test Results for the Application of High Touch Teachers ($X_1$), Academic Self Concept ($X_2$), and Motivation of Student Learning in Mathematics Subjects ($Y$).

<table>
<thead>
<tr>
<th>No</th>
<th>Variable</th>
<th>$F$</th>
<th>Significance</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$X_1 Y$</td>
<td>123,183</td>
<td>0,000</td>
<td>Linear</td>
</tr>
<tr>
<td>2</td>
<td>$X_2 Y$</td>
<td>348,858</td>
<td>0,000</td>
<td>Lineer</td>
</tr>
</tbody>
</table>

Based on the data in Table 2, it can be seen that the variable $X_1$ with $F_{count}(123,183) > F_{table}(3,92)$ and $X_2$ with $F_{count}(348,858) > F_{table}(3,92)$ with $Y$, and the value is known $\text{sig is.} 0,000 < 0,05$, it can be concluded that the regression line between variables $X$ and $Y$ forms a linear line.

3. Multicollinearity Test

Seeing the possibility of multicollinearity using the program assistance SPSS version 20.00. If the value $VIF$ is below 10, then the data is declared not to have multicollinearity. Based on calculations through the program, SPSS version 20.00can be seen in Table 3 below.

Table 3. Multicollinearity Test Results for the Application of High-Touch Teachers ($X_1$), Academic Self Concept ($X_2$).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Tolerance</th>
<th>$VIF$</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$X_1$</td>
<td>0,891</td>
<td>1,123</td>
</tr>
<tr>
<td>$X_2$</td>
<td>0,891</td>
<td>1,123</td>
</tr>
</tbody>
</table>

Based on the data in Table 2, it can be seen that the value of the $VIF$ variable applying the high touch teacher is 1,123 and the value $VIF$ of variable the academic self-concept 1,123. The value of the $VIF$ two variables is small than 10. This means that there is no multicollinearity between the variables of applying high touchmathematics teacher and variable academic self-concept.

Testing the Research Hypothesis

1. The First of Hypothesis

Based on the data by applying regression analysis the application of high-touch teacher to students' learning motivation in mathematics subjects in MAN 1 Pekanbaru showed that the coefficient of determination of R-Square ($R^2$) is 0,260, which means that 26% of the contribution of teachers' high touch application to student learning motivation in mathematics subjects, while 74% are influenced by other factors. Furthermore, a regression equation analysis is performed with the results showing that $t\text{-count} 10,597$ with a significance value of $0,000 < 0,05$, then $H_0$ is rejected and $H_1$ is accepted. This finding means that $H_1$ is accepted because there is a significant contribution to the application of high-touch teachers to students' learning motivation in mathematics subjects.

2. The Second of Hypothesis

Based on the data by applying regression analysis of academic self-concept on student learning motivation in mathematics subjects in MAN 1 week, the results obtained were that the coefficient of determination of R-Square ($R^2$) was 0,521, which means that 52,1% of the contribution of academic self-concept to students' learning motivation in the mathematics lessons, while 37,9% are influenced by other factors. Furthermore, a regression equation analysis is performed with the results showing that the count is 18,647 with a significance value of $0,000 < 0,05$, then $H_0$ is rejected and $H_1$ is accepted. This finding means that $H_1$ is accepted because there is a significant contribution of academic self-concept to students' learning motivation in mathematics subjects.

3. The Third of Hypothesis

Based on the data by applying multiple regression analysis the application of high-touch teacher and the self-concept of academic learning together to students' learning motivation in mathematics subjects in MAN 1 Pekanbaru obtained the result that the coefficient of determination of R-Square ($R^2$) is 0,603, which means that 60,3%is the contribution of the application of high-touch
teacher and academic self-concept to students’ learning motivation in mathematics subjects, while 39.7% is influenced by other factors. Furthermore, multiple regression equation analysis is performed with the results showing t-count X1 8.146 with a significance value of 0.000 <0.05, and t-count X2 16.620 with a significance value of 0.000 <0.005, then H₀ is rejected and H₁ is accepted. This finding means that H₁ is accepted because there is a significant contribution to the application of high-touch teacher and academic self-concept together to students’ learning motivation in mathematics subjects.

DISCUSSION

1. High-Touch Teacher Implementation

Based on the results of the descriptive analysis as a whole the application of high-touch mathematics teachers in learning in MAN 1 Pekanbaru is in a good category. These results are supported by the results of research conducted by Sin (2010) that high-touch implementation is in a good category. This was also supported by Mashari (2015) who found that in general teachers have implemented authority in the learning process both in the opinion of the teacher and in the opinions of students.

Based on the results of previous studies that have been raised, it can be reinforced that the application of high-touch teachers is needed for the implementation of a conducive and enjoyable learning process so that learning objectives can be achieved. This is because in carrying out their duties, the teacher is expected to realize teacher interaction with students in a conducive situation. Prayitno (2009) stated the situation of education grows and develops through the actualization of high touch, which contains elements of recognition and acceptance, affection and tenderness, reinforcement, decisive actions that educate, and direction and exemplary.

2. Academic Self-Concept

Based on the results of the descriptive analysis, overall, students’ academic self-concept of mathematics in MAN 1 Pekanbaru is in a fairly positive category. These results are supported by research Fau, Firman, & Mudjiran (2016) that students’ academic self-concept as a whole is in a fairly positive category. Marsh & Rhonda (in Ordaz-Villegas, Acle-Tomasini, & Reyes-Lagunes, 2013) suggests that academic self-concept is one of the most important variables in the academic domain; this is because it directly affect the learning process, achievement and student expectations. Thus, it can help create various self- and cognitive-regulatory strategies that reflect academic performance. In this way, Yagers cited (in Marsh & Hattie, 1996) that having a positive academic self-concept minimizes the emergence of learning difficulties, allowing for better academic achievement.

Based on the results of the study, it can be concluded that students’ academic self-concept plays an important role in the achievement of student learning goals because by having a very positive self-concept, it help to understand their abilities in the academic field. Thus, the counsellor is expected to develop a variety of service programs that improve students’ self-concept. Indriani’s (2013) study revealed that group guidance services with numerical game techniques were able to improve students’ academic self-concept. Khoirunnisa (2016) also shows that mastery of content with role playing techniques can improve students’ academic self-concept.

3. Learning Motivation

Based on the results of the descriptive analysis, overall, students’ learning motivation in mathematics subjects in MAN 1 Pekanbaru is in the high category. The results of this study supported by Saragi (2016)&Putri (2016) show that students’ motivation is in the high category. Although the results of the study showed that most of the research samples had high motivation to study in mathematics, there were still respondents in the medium, low to very low categories. This is in line with the phenomenon observed in MAN 1 Pekanbaru; there are still students who have the motivation to study in the medium and low to very low categories. Musbikin (2012) suggests that motivation is the driving force that drives learning activities. Students participate in learning activities because there are those who encourage them. Motivation as a driver that encourages students to learn, and if students are motivated to learn, they will complete the learning activities within a certain time frame.

Based on the results of the study and exposure, it can be concluded that students’ learning motivation in mathematics in MAN 1 Pekanbaru is in the high category. However, efforts need to be made so that students’ motivation to learn math increases to very high. Furthermore, to further improve students’ learning motivation in mathematics subjects, improved collaboration between counsellors, teachers, and parents is necessary. Various efforts can be made by school counsellors so that students can improve their learning motivation. The results of Fitri(2016) show that information services using blended learning methods effectively increase student learning motivation. In addition, study
Sampurnawati (2014) revealed that student learning motivation can be improved through group guidance.

4. **The Contributions of High-Touch Teachers to Student Motivation in Mathematics**

The results showed that the application of high-touch teachers and academic self-concepts contributed significantly to students’ learning motivation in MAN 1 Pekanbaru. A Teacher’s high-touch application is one of the factors that contribute to student learning motivation in mathematics subjects, with a contribution percentage of 26%. Sin (2010) found that high-touch implementation contributes significantly to motivation with a percentage of 14.21%, and is in a low category. Moreover, the small contribution of the application of high-touch teachers is a factor that contributes to students' motivation that comes from outside the student — in other words, it is an extrinsic factor. Dailey (2009) conveyed that there are two factors that influence student learning, namely factors that come from within students, and factors that come from outside of students, such as teachers and parents. Intrinsic motivation was more impactful than extrinsic motivation (Williams & Williams, 2011).

Based on the explanation above, the teacher is included in extrinsic factors that can increase student learning motivation. According to Prayitno (2009), the achievement of educational goals are supported by two pillars, namely high-touch and authority. This is in line with the results of the study conducted by Abdillah (2012), that high touch and authority together have a significant influence on the quality of student learning activities. The presentation shows that the achievement of learning goals is not only supported by the authority/high-touch of the teacher, but also the teacher must use their authority positively to motivate students to learn, so that student learning achievements are in line with expectations and ideals.

The application of high-touch teachers must be continually improved, since teachers are instrumental in the learning process. Teachers are responsible for fostering the student’s creative and dynamic potential. In general, teachers are expected to create conditions that allow each student to develop their creativity. The learning process is essential to develop the activities and creativity of students, through various interactions and learning experiences. It also stated by Prayitno (2009) that the main purpose of authority/high-touch by the teacher is to create educational relationships with students in order to achieve educational goals. In addition, the presentation shows that although the application of high-touch teachers does not have a significant impact in motivating students to learn, the application of high-touch teachers still needs to be improved in order to achieve educational goals.

5. **Contributions of Academic Self-Concept to Student Learning Motivation in Mathematics Subjects**

Based on the results of the study, academic self-concept contributed positively to students’ motivation to learn math in MAN 1 Pekanbaru. Moreover, a recent study was carried out by Dewi (2015), which proved that academic self-concept contributes significantly to decision-making in learning; it shows that if students have a positive academic self-concept in learning, all of the teaching and learning process will be increased.

Darta’s (2009) research suggests that the achievements of students with positive academic self-concept will be higher than those with a negative academic self-concept. To be able to achieve expected success in learning, students need to improve their learning motivation as well. Bong & Clark (1999) also explain that there is a relationship between academic self-concept and academic motivation. When a person has a positive view of their abilities, they will be successful, and will overcome learning obstacles.

As Yagers cited (in Marsh, H. W., & Hattie, 1996), a positive academic self-concept can minimize learning difficulties. This reduced learning difficulty ultimately allows students to gain better academic mastery. Students will try to show their achievements and abilities in learning, both individually and in groups. A positive academic self-concept can encourage students to be passionate about achieving their goals. Students feel more motivated to maintain or improve learning achievement. Positive academic self-concepts also motivate students to do the work or tasks they are charged with; in other words, students become motivated to learn in order to perform better than before. The results of research by Mercer (2011) also suggest that students with academic self-concept also have an independent attitude, willingness, and motivation to achieve academic goals which are reflected in their ability and involvement in learning activities. Based on the explanation above, it can be surmised that academic self-concept is one of the determining factors that support student success in learning. To be able to achieve success in learning, students must be able to motivate themselves.

6. **The Contribution of High-Touch Teacher Application and Academic Self-Concept on Students’ Learning Motivation in Mathematics Subjects**

The results showed that there was a significant positive correlation between the application of high-touch teachers and academic self-concept in students’ learning motivation in mathematics...
subjects in MAN 1 Pekanbaru. The application of high-touch teachers and students' academic self-concept are two of the factors that can increase students' learning motivation in mathematics. In this case, the two factors came from the teacher and the students themselves. As stated by Williams & Williams (2011), the five contributing factors in growing student motivation are students, teachers, content, processes, and the environment.

Teachers and students themselves play a role in improving student learning motivation. From the teacher’s perspective, there are many tools teachers can use to motivate students to learn. Dailey (2009) revealed that teachers can use four such tools, which are to: familiarize students with the classroom learning atmosphere, provide lessons that are fun and relevant to student learning needs, create positive self-ideals in students, and encourage independent self-learning. To realize the four things mentioned above, first, the teacher must be able to protect and develop the potential of students. This is in line with the statement by Prayitno (2009) that the achievement of student learning success is inseparable from the role of the teacher in protecting and developing the potential of students. It can be realized with the application of authority/high-touch. Schaefer (2000) also mentioned that authority/high-touch is based on greater knowledge or expertise carried out in an atmosphere of love and mutual respect. Therefore, teachers are expected to have the authority to be able to guide and motivate students to achieve real learning goals.

Returning to the results of the study showed that the relationship between the application of high-touch teachers and academic self-concepts, together with students' learning motivation in mathematics subjects, contributed greatly to the increase compared to individual donations. This means that the high-touch application of the teacher is in a good category and together with the academic self-concept of the students are in the positive category, which has an impact on increasing students' learning motivation in mathematics subjects.

Conclusion

This study has led to six distinct conclusions: (1) the application of high-touch mathematics teachers in MAN 1 Pekanbaru is in the good category, (2) the academic self-concept of students is in a fairly positive category, (3) learning motivation in mathematics subjects are in the high category, (4) the application of high-touch mathematics teachers contributes positively to students' learning motivation, (5) students' mathematical self-concept contributes positively towards students' learning motivation (6) the application of high-touch teachers and students' academic self-concepts together contribute positively to students' learning motivation.

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