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Substantial Factors in Secondary School Student Learning Satisfaction

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Abstract:- The research aims at seeing the indirect contributions of the teachers' skills, use of media, and learning condition to the student satisfaction with mathematics learning achievement; those of the teachers' skills, use of learning media, and learning condition to mathematics learning achievement; and those of the mathematics learning achievement to the student learning satisfaction. It was a correlational study with a quantitative approach. Its population amounted to 209 students. The samples employed the proportional random sampling by quiz. The amount of the samples was 137 students. The data gathering technique applied the questionnaires and documentation. The data analysis technique employed a path analysis. It can be concluded that 1) the indirect contributions of the teachers' skills, use of media, and learning condition to the student learning satisfaction with mathematics learning achievement reached 60.00%; 2) those of the teachers' skills, use of media, and learning condition to mathematics learning achievement attained 14.80%; and 3) those of the mathematics learning achievement to the student satisfaction reached 52.85%.

Keywords:- *Teachers' Skills, Use of Media, Learning Condition, Learning Achievement, Student Satisfaction.*

I. INTRODUCTION

In a learning process, student satisfaction is said to be essential. It will take an effect on the extent of the instructional materials of mathematics while the literacy in mathematics being will be useful in a daily life. It is due to the mathematics that will be able to give contributions to the literacy in other sciences. According to Sopiatin (2010: 33), student satisfaction is the students' positive attitude to a teaching learning process by teachers since it is relevant of what is expected to their needs and wants.

The importance of student satisfaction should be closely related to a high literacy in mathematics. In the early observation by the researchers, the students of SMP Negeri 1 Salatiga Junior High School were a low literacy in mathematics. Based on a document analysis, additionally, their learning satisfaction fell in a mid-semester test grade. More than 30% students got a grade under minimum learning achievement standard. For this, it is necessary to improve student satisfaction. It is due to some factors that derive from the students, learning facilities, and learning environments. One of the factors in the students is related to learning achievement. It plays a role in a learning process. The students with a high learning achievement may have a higher satisfaction than those with a low one.

Another factor refers to the facilities such as use of learning media. It can make students easy to take their learning activities. A medium is a kind of facilities which can make students interested in a learning activity (Singh-Pillay, Alant, Nwokocha, 2017). The use of media may be a learning source and tool. The factors deriving from an environment may be the teachers' skills and learning condition, among others. The skills can be planning, learning, and evaluating. The learning condition can be facilities which will make students easy to take a learning process and help schools improve a learning process.

The results of the previous research show that teachers' skills in teaching significantly influenced the students' learning achievement (Rahman, 2011; Sasikala, 2012; Mohsan, 2014; and Suarman 2015). The reasearch by Munadi (2013) states the use of the internet and learning environment and motivation significantly influenced the student achievement. Also, the research by Masriyon (2012) states there was a positive relationship of the student learning satisfaction to the achievement. In his research, Hyun (2017) states an active learning process and traditional class condition positively influenced the student satisfaction.

The learning condition of specific hours is one of the factors in influencing the students' learning achievement. It is strengthened by Lestari (2012) who makes a conclusion that the conditions of the hours highly influenced the students' mathematics learning achievement. In addition, she states that the mathematics learning would improve the learning if it was taken in the morning. It is strengthened by Agustiningsih (2015) and Pambudi (2015). It is concluded that the use of learning media and physic condition affected the learning achievement.

For these, it is essential to research the indirect contributions of the teachers' skills, use of learning media, and learning condition to the student satisfaction with mathematics learning achievement. The research aims at seeing the indirect contributions of the teachers' skills, use of media, and learning condition to the student satisfaction with mathematics learning achievement; those of the teachers' skills, use of media, and learning condition to mathematics learning achievement; and those of the mathematics learning achievement to the student satisfaction.

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II. RESEARCH METHOD

The research is a correlational study by using a quantitative approach. It was located at di SMP Negeri 1 Salatiga Junior High School in the even semester of 2016/2017. The population amounted to 209 students while the samples were 137 students with the proportional random sampling by quiz. The independent variables comprised the teachers' skills (X_1), use of learning media (X_2), and learning condition (X_3) with intervening variable of mathematics learning achievement (Y) and independent variable of student satisfaction (Z).

The data collection technique used the questionnaires and documentation. To see the questionnaire validations and reliabilities, the research instruments were previously tested to the nonsample population. The data analysis employed a path analysis with the following equation: $Z = \rho_{ZX_1} X_1 + \rho_{ZX_2} X_2 + \rho_{ZX_3} X_3 + \rho_{ZY} Y + \rho_Z \varepsilon_2$ and $Y = \rho_{YX_1} X_1 + \rho_{YX_2} X_2 + \rho_{YX_3} X_3 + \rho_Y \varepsilon_1$. It was done after meeting the prerequisites of normality, linearity, heteroscedasticity, and autocorrelation tests.

III. RESULTS OF RESEARCH

Before employed in the sample class, the instruments had previously been tested. Besides the samples, the instruments were tested to 30 students of the population before testing the instrument validity and reliability. The validity test of statement items applied a Product Moment correlation. The correlation value of individual item was compared with the coefficient value at the test samples, i.e., n = 30 students with a significant level at 0.05, so it was found $t_{table} = 0.3494$.

The result of the validity test of the student satisfaction questionnaire instruments of 22 statement items was found $t_{count} = 0.840 \geq r_{table} = 0.3494$. It means that the indicators of the student satisfaction variables were stated to be valid and reliable for gathering the data. The result of the validity test of the teachers' skill questionnaire instruments of 22 statement items was found $r_{count} = 0.933 \geq r_{table} = 0.3494$. It means the the indicators of the teachers' skill were stated to be valid and reliable for collecting the data.

The result of the validity test of the learning media use of 22 statement items was found $r_{count} = 0.862 \geq r_{table} = 0.3494$. It means that the indicators of the media use variables were said to be valid and reliable for gathering the data. Finally, the result of the validity test of the learning condition variables was found $r_{count} = 0.710 \geq r_{table} = 0.3494$. So, the indicators of the variables were valid and reliable for collecting the data.

The reliability tests of the statement items used the *Cronbach's Alpha* method. The instruments will be stated to be reliable if the value is found $r_{count} \geq r_{table}$. In summary, the reliability tests of the instruments for individual variables are reported in Table 1.

Variables	***Cronbach's Alpha***	**Indicators**
Student Satisfaction (*Z*)	0.840	Reliable
Teachers' Skills (X_1)	0.933	Reliable
Use of Media (X_2)	0.862	Reliable
Learning Condition (X_3)	0.710	Reliable

Table 1:- Results of Reliability Tests

Based on the results of the reliability tests, it was found $r_{hitung} \geq r_{tabel} = 0.3494$, so the questionnaires of the research were stated to be valid. Therefore, they could be useful for the further research. The valid and reliable statement can be used for collecting the data. The student satisfaction based on the questionnaires of 22 statement items: the highest value of 98 and lowest one of 33 with the average of 70.44 and the standard deviation of 18.10. In terms of the value classification, it was found 27 students or 19.70% of 137 samples in the group of the students' high achievement; 85 students or 62.04% of 137 samples in the cluster of the students' sufficient achievement, and 25 students or 18.24% of 137 samples in the group of the students' low achievement.

The results of the mathematics learning used a documentation method. It was found the highest value of 98 and the lowest value of 33 with the average of 67.669 and standard deviation of 18.919. Regarding the value classification, it was found as follows: 22 students or 13.33% of 165 samples in the cluster of the students' high achievement, 116 students or 70.3% of 165 samples in the sufficient achievement, and 27 students or 16.37% of 165 samples in the cluster of the low achievement.

The results of the teachers' skills were based on the questionnaires of 41 statement items. It was found the highest value of 205 and the lowest value of 78 with the average of 145.94 and standard deviation of 32.40. The value classification was found as follows: 24 students or 17.51% of 137 samples in the category of the high skills, 90 students or 65.69% of 137 samples of the sufficient skills, and 23 students or 16.78% of 137 samples of the low skills.

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The use of media was based on 12 statement items. It was found the highest value of 49 and the lowest value of 27 with the average of 39.82, individual modus and medians of 43, and 42 with the standard deviation of 5.90. The value classification was found as follows: 24 students or 17.51% of 137 samples in the cluster of the high use of media, 89 students or 64.96% of 137 samples in the sufficient use of media, and 24 students or 17.51% of 137 samples of the low use of media.

The learning condition was based on the questionnaires of 8 statement items. It was found the highest value 39 and the lowest value of 17 with the average of 29.81 and standard deviation 5.89. The value classification was found as follows: 23 students or 16.78% of 137 samples with the high learning condition, 90 students or 65.69% of 137 samples of the sufficient one, and 24 students or 17.51% of 137 samples of the low learning condition. In summary, the value classifications for individual variables are reported in Figure 1.

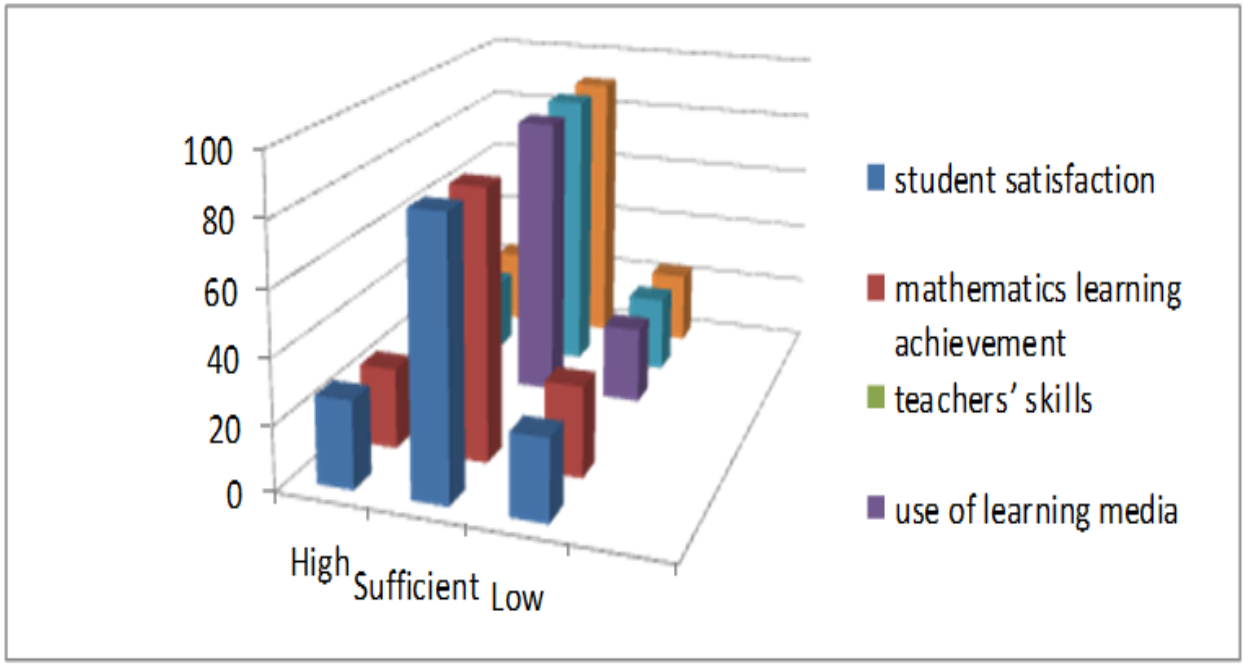

Fig 1:- Data of Research Variables

Before the data analysis, a prerequisite test was done. The normality test used the *Kolmogorov-Smirnov (K-S)*. The data distribution will be said to be normal if the value of significance is ≥ 0.05 and the data distribution will be said not to be normal if the value of significance is < 0.05. The data of the research is a normal distribution since the significant value for individual variables is > 0.05. In summary, the results of the normality test for individual variables are described in Table 2.

Variables	Significances	Notes
Student Satisfaction (Z)	0.260	Normal
Mathematics Leaning (Y)	0.496	Normal
Teachers' Skills (X1)	0.898	Normal
Use of Media (X2)	0.192	Normal
Learning Condition (X3)	0.191	Normal

Table 2:- Results of Normality Test

The linearity test employed F_{test}. The result of the test will be said to be linear if it is found $F_{count} \leq F_{table}$ and it will be said not to be linear if it is found $F_{count} > F_{table.}$ The data of the research is linear since it is found $F_{count} \leq F_{table}$. In summary, the results of the linearity test for individual variables are reported in Table 3.

ISSN No:-2456-2165

Variables	F Value		Notes
	F_{count}	F_{table}	
X_1 to Y	1.046	1.531	Linear
X_2 to Y	1.075	1.574	Linear
X_3 to Y	1.613	1.691	Linear
X_1 to Z	1.291	1.531	Linear
X_2 to Z	1.379	1.574	Linear
X_3 to Z	0.543	1.691	Linear

Table 3:- Results of Linearity Test

The multicollinearity test can be seen from the values of *Variance Inflation Factor* (VIF) and *Tolerance* (TOL). There is no multicollinearity indication if it is found $VIF <$ 10 and $TOL >$ 0.1. There is multicollinearity if it is found $VIF >$ 10 and $TOL <$ 0.1. In the data of the research, there is no multicollinearity indication because it is found the values of $VIF \leq 10$ and $TOL \geq 0.1$. In summary, the results of the multicollinearity test for individual variables are described in Table 4.

Variables	Values		Notes
	TOL	*VIF*	
X_1 and X_2	0.979	1.022	No multicollinearity
X_1 and X_3	0.976	1.025	No multicollinearity
X_2 and X_3	0.688	1.453	No multicollinearity

Table 4:- Results of Multicollinearity Test

The heteroscedasticity test of the research used the *glejser* test. If the value of the significance is ≥ 0.05, there is no heteroscedasticity indication and there is heteroscedasticity indication if the value of the significance was < 0.05. In the data of the research, there is no heteroscedasticity indication because the value of significance was ≥ 0.05. In summary, the results of the heteroscedasticity test for individual variables are described in Table 5.

Variables	P-Value	Notes
X_1 to Y	-0.920	No heteroscedasticity
X_2 to Y	-0.775	No heteroscedasticity
X_3 to Y	1.939	No heteroscedasticity
X_1 to Z	0.438	No heteroscedasticity
X_2 to Z	-0.408	No heteroscedasticity
X_3 to Z	-0.192	No heteroscedasticity

Table 5:- Results of Heteroscedasticity Test

The autocorrelation test of the research employed the *Durbin-Watson* test. If the value of *Durbin-Watson* is more than Du and less than 4-du, there is no autocorrelation. In the data of the research, there is no multicollinearity indication because the value of the *Durbin-Watson* is more than Du and less than 4-du. In summary, the results of the autocorrelation test for individual variables are reported in Table 6.

Variables	*DW*	*D-Tabel*			Notes
		Dl	*Du*	*4-Du*	
X_1, X_2, and X_3 to Y	1.792	1.6613	1.7813	2.2187	No autocorrelation
X_1, X_2, and X_3 to Z	1.960	1.6613	1.7813	2.2187	No autocorrelation

Table 6:- Results of Autocorrelation Test

IV. DISCUSSION

After meeting the prerequisites of normality, linearity, multicollinearity, heteroscedasticity, and autocorrelation tests, it needed a path analysis. The results of the path analysis are described in Figure 2.

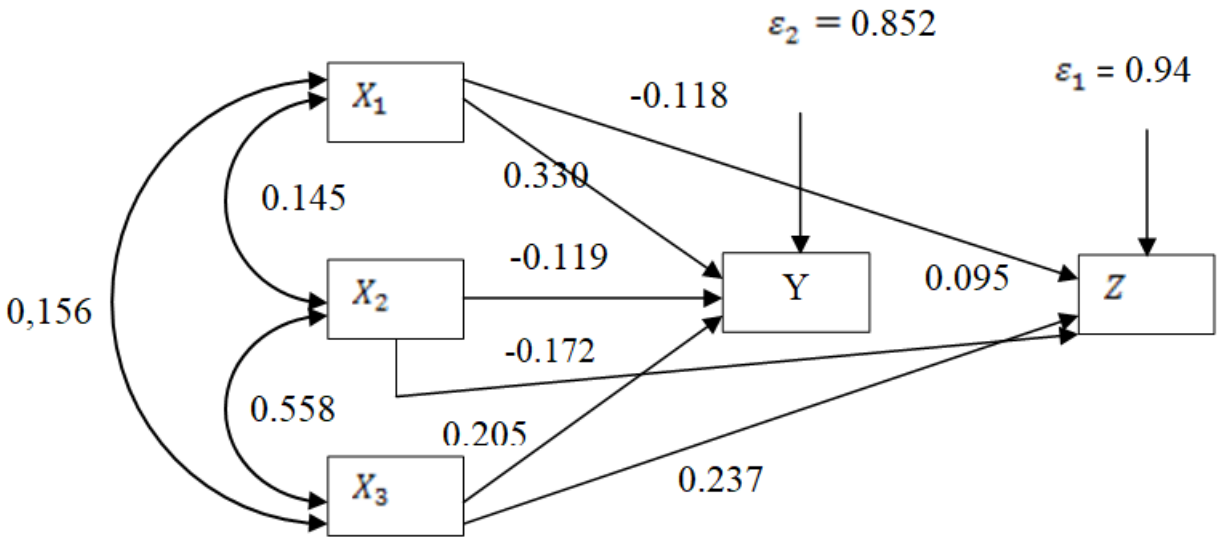

Fig 2:- Results of Path Analysis

The results of the research show that the contribution of the teachers' skills, use of media, and significant learning condition to the student satisfaction with mathematics learning indirectly reached 60% and the other 40% were influenced by other factors outside the research. It is relevant to the research by Puspayani (2012), showing that the teachers' skills and use of learning facilities to the student satisfaction with the determination coefficient value (R^2) of 50.20%. It means that the teachers' skills and learning facilities could improve the student learning satisfaction.

The contribution of the teachers' skills (X_1) directly influenced the student satisfaction of 1.39%. The teachers' skills (X_1) that indirectly influenced the student satisfaction (Z) with mathematics learning (Y) reached -8.66%. The contribution of the use of media (X_2) that directly influenced the student satisfaction (Z) attained 2.95%. The use of media (X_2) which affected the student satisfaction (Z) with mathematics learning (Y) attained (Y) reached -18.30%. The contribution of the learning condition (X_3) that directly affected the student satisfaction (Z) reached 5.61%. The learning condition (X_3) that indirectly affected the student satisfaction (Z) with mathematics learning (Y) attained 25.60%. It is consistent with the research by Ariyanti (2013), stating that the learning condition influenced the student satisfaction with the contribution of 86.10%. It means that the higher learning condition, the higher student satisfaction.

The mathematics learning gave contributions to the student satisfaction. The mathematics learning (Y) that directly influenced the student satisfaction reached (Z) 18.32%. In summary, the results of the path analysis are reported in Table 7.

Variable Influences	**Causal Influences**		**Other ε_2**
	Direct	**Indirect with *Y***	
X_1 to Z	1.39%	-	-
	-	-8.66%	-
X_2 to Z	2.95%	-	-
	-	-18.30%	-
X_3 to Z	5.61%	-	-
	-	25.60 %	-
X_1, X_2, X_3, Y to Z	60%	-	40%

Table 7:- Direct and Indirect Contributions

The results of the research show the contributions of the teachers' skills, use of media, significant learning condition to the mathematics learning of 14.80% and the other factors of 82.20% outside the research. It is relevant to the research by Sontani & Safitri (2016). It could be concluded that the teachers' skills and students' learning

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motivation influenced the students' learning achievement with the determination coefficient (R^2) attained 53.82%. It means that the professional teachers' skills and the students' motivation could improve the students' learning achievement.

The results of the research show that the contribution of the teachers' skills (X_1) that influenced the mathematics learning (Y) attained 10.89%. It is strengthened by Sutardi (2013), stating that there was a significant influence of the teachers' skills on mathematics learning with the contribution of 7.80%. According to the research by Engelbrecht & Mwambakana (2016), the teachers' performance gave contributions to the students' learning achievement. It means that the better teachers' skills in teaching, the better students' achievement.

Likewise, the use of media and learning condition influenced the mathematics learning achievement. The contribution of media use (X_2) that directly affected the mathematics learning (Y) attained 1.41%. According to the research by Toit & Gaothlhobogwe (2017), the education technology used by the teachers gave contribution to the students' learning achievement. The contribution of the learning condition (X_3) that directly influenced the mathematics learning achievement (Y) reached 4.20%. According to the researchers, it was limited because of the instruments used by themselves and uncontrolled respondents.

Variable Influences	Direct Causal Influences	Other ε_1
X_1 to Y	10.89%	-
X_2 to Y	1.41%	-
X_3 to Y	4.20%	-
X_1, X_2, X_3, to Y	14.80%	185.20%

Table 8:- Direct Contributions

The results of the research show that the contribution of the mathematics learning to the student satisfaction reached 52.85%, while the other 47.15% were affected by the factors outside the research. It is strengthened by Januari (2015), stating that there was a significant influence of the students' achievement on performance satisfaction with the contribution of 47.90%. It means that the higher students' achievement, the higher student performance satisfaction.

V. CONCLUSION

The contributions of the teachers' skills, use of media, and learning condition to the student satisfaction with mathematics learning indirectly attained the value of the significance of $0.000 < \alpha = 0.05$. It means that they gave contributions of 60 % while, the other 30 % were influenced by the other factors outside the research. The teachers' skills gave direct contributions to the student satisfaction of 1.39% with the value of significance at $0.194 > \alpha = 0.05$, meaning that it is insignificant. The indirect contributions of the teachers' skills to the student satisfaction with the mathematics reached -8.66% with the value of the significance at $0.194 > \alpha = 0.05$, meaning that it is insignificant. The use of media gave direct contributions to the student satisfaction at 2.95% with the significance at $0.094 > \alpha = 0.05$, meaning that it is insignificant. The use of media gave indirect contributions to the student satisfaction with the mathematics learning attained -18.30% with the significance $0.094 > \alpha = 0.05$, meaning that it is insignificant. The direct contributions of the learning condition to the student satisfaction reached 5.61% with the significance at $0.024 < \alpha = 0.05$, meaning that it is significant. The learning condition gave indirect contributions to the students satisfaction with the mathematics reached 25.60% with the significance at $0.024 < \alpha = 0.05$, meaning that it is significant.

The contributions of the teachers' skills, use of media, and learning condition to the student satisfaction with the mathematics learning attained 14.80% with the significance at $0.000 < \alpha = 0.05$ while the other 85.20% were influenced by other factors outside the research. The teachers' skills gave direct contributions to the mathematics learning achievement attained 10.89% with the significance at $0.000 < \alpha = 0.05$. The direct contributions of the use of media to the student satisfaction reached 1.41% with the significance $0.218 > \alpha = 0.05$, meaning that it is insignificant. The learning condition gave direct contributions to the mathematics learning achievement attained 4.20% with the significance at $0.036 < \propto = 0.05$, meaning that it is significant.

The contributions of the mathematics learning achievement to the student satisfaction attained 52.85% with the significance at $0.000 < \alpha = 0.05$, meaning that it is significant while the other 47.15% were affected by the other factors outside the research.

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