



THE CONTRIBUTION OF MULTIPLE INTELLIGENCE ON MATHEMATICS LEARNING'S SUCCESS

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Abstract

The research aims to analyze the contribution of these factors in determining the success of the multiple intelligences of students studying mathematics at secondary school level. There are eight multiple intelligences factors, namely: linguistic, logical-mathematical intelligence, visual-spatial intelligence, bodily-kinesthetic intelligence, musical intelligence, interpersonal intelligence, intrapersonal intelligence and naturalistic intelligence. The study was conducted using a survey method-correlation with a sample of 105 students. Analysis using multiple regression inferential statistical approach by placing Mathematics achievement as the dependent variable and the eight multiple intelligences factors as independent variables. The results found things like the following. (1) Taken together multiple intelligences factors contributing to the success of students in learning mathematics. (2) Partially there are 3 (three) multiple intelligences are several factors that contribute to a positive, one (1) negative contributing factors, and 4 (four) factors do not contribute. The factors that contribute positively, namely: logical-mathematical intelligence, visual-spatial intelligence and interpersonal intelligence. A contributing factor is negative intrapersonal intelligence. Factors that do not contribute are: linguistic, bodily-kinesthetic intelligence, musical intelligence and naturalistic intelligence.

Keywords: multiple intelligences factors, the success of learning Mathematics.

1. INTRODUCTION

Sholeh (2005: 34) says, "improving the quality of education is a step that is done in a planned, which includes two strategies. First, is planning to increase the intellectual capability of students as a minimum standard to achieve long-term educational goals which refers to the development of the Indonesian people fully. Second, leading to broad educational goals grounded, useful, tangible, and meaningful in preparing students to face the challenges of the future. Quality education is education that can generate fully human resource and spiritually powerful and meaningful. Education has a very important role in the process of educating the nation. Because education will be generated through the human-human skilled and qualified in accordance with national education goals. Education is successful when it produces positive change both in terms of knowledge, skills,

behaviors and attitudes on students toward maturity and can be used in social life. To the students are trained to be able to leverage the potential that he has to the fullest, through the teaching-learning process in schools.

Mathematics is one of the main subjects in the development of human intellectual development. It's just not a few students who think mathematics is a difficult subject and not attractive. The impact of this perception resulted in some students are not able to focus and not be able to get the appropriate learning strategies, resulting in the level of mastery of mathematical concepts is low. In general, if students hear the math will typically appear in them feeling anxious and insecure. Learning mathematics requires an understanding of concepts and continuous training in order to obtain optimal results. Buchori (2001: 121-122) says, "If we really want to improve the nation's capability in the field of technology in the future, then it should





not be left to the young children who are blind mathematician (mathematically Illiterate) and blind natural sciences (scientifically Illiterate). "

In theory, if an activity can satisfy a person's needs, then there is a big tendency of the person to repeat it. Source of reinforcement in learning mathematics can be extrinsic or intrinsic. Intrinsic sources that can serve as reinforcement in the learning process of mathematics among the factors that intelligence exists in each individual student. Self-study activity is influenced by several factors so that student achievement can meet expectations. Although generally students are less interested in math but still there are some students who are interested to pursue mathematics seriously. Mathematics learned in school will be very helpful if they'll continue to pursue a higher education that go to high school (high school) and then went on to college, as well as in anticipation for implementation in everyday life. This phenomenon is supporting the students have a desire to master or understand math well.

In general, the factors that influence student success in learning mathematics consists of factors in the student and environmental factors. Rashad (2003: 103) reveals, the factors that affect students in learning the inner factors (endogenous) and external factors themselves (exogenous). Factors such as interest in students learning, health, self-concept, self learning, attention, intelligence, and others. External factors/environments such as classrooms, teacher competence, study time, learning methods, and others. Students need direction and guidance to continue learning both within themselves as well as from the surrounding environment. Both of these factors are influential factors in improving mathematics achievement. One of the factors that most affect student achievement is a factor of intelligence possessed by students.

Suharsono (2009: 43) mentions intelligence is the ability to solve problems correctly, which is relatively faster than their biological age. Implementation of intelligence in learning theory implies that the teacher no longer acts as a source (resources), but it should act more as a manager of the learning activities. In applying the theory of intelligence, school systems need to provide teachers who are competent and capable of

carrying the child to develop the potential of their intelligence. Music teacher for example, besides being able to play a musical instrument, he also must be able to teach it so that it can be a good role model for students who have musical intelligence.

One important characteristic of an individual that needs to be understood by the teacher as an educator is the talent and intelligence of the individual. Teachers who do not understand the intelligence of the students would have difficulty in facilitating the process of developing the potential of individuals to be aspired. Generalization ability and the potential negative impact that individual students do not have the opportunity to develop optimal potential in him. Result of improper handling as happened in the school system now, cause we have lost the brilliant talents of superior seeds of the nation. This is due, intelligent individuals who can not develop their potential optimally.

An education in the field of cognitive psychology research supports the idea that students obtain the benefits of a teaching approach that helps them reflect on their own learning process. When students engage in metacognitive activities of this kind, they can choose the right strategy to solve the problem they are also able to help themselves when placed within the new learning.

Basically, the theory of intelligence includes things are always done by a good teacher in the teaching process, students without a thought-provoking text and glued to the board. One way to do a teacher to recognize the growing intelligence of the students is to observe the "mischief" they are in class, students who have high linguistic intelligence will often interrupt conversations, students with high spatial intelligence would love doodling and daydreaming , students who have a high interpersonal intelligence would like to chat, and students who have high bodily-kinesthetic intelligence will not be silent, while students who have a high interest in nature may be bringing an animal into the classroom without permission. Through the "mischief" they, meaning the metamorphosis they said: "This is the way I learn, sir. And if you do not teach me through my most natural way, what would happen? However, I would still do it."





Gardner (1983) in Padiya (2008) states there are eight (8) factors of multiple intelligences (Multiple Intelligence), namely: verbal-linguistic intelligence, logical-mathematical intelligence, visual-spatial intelligence, bodily-kinesthetic intelligence, musical-rhythmic intelligence, wit interpersonal, intrapersonal intelligence and naturalistic intelligence. Actually every students has all the intelligence. As well as any normal human being can develop eight kinds of intelligence it got to a certain level of mastery. Each person is unique, as the level of ownership of the eight intelligences. Rare is the student who can achieve a high level of mastery of eighth intelligence because it takes a lot of training to achieve it. For each unique individual that normally would have a dominant intelligence of its eight multiple intelligences. On this basis then the term talent of each individual human being.

Mathematics as a must-have basic knowledge of each student. To develop a specific science takes the role of Mathematics. There is no single person in this life who does not use Math. So Mathematical knowledge should be mastered by every man/students, at least at the level of mathematics relevant to their life, as Leonard (2012: 10) says, "Almost the use of mathematics treats in basic of daily life". Therefore, based on the above problems, this research was conducted in order to identify and analyze the contribution of each type of multiple intelligences in successful learning mathematics students at the junior secondary level.

2. METHODOLOGY

The method used in this study is a survey method to look for correlations between variables-

regression. This technique chosen for this research trying to find a causal relationship between variables that may occur. According to Kerlinger (2003: 664), a survey research study populations large and small, but the data is the data of the studied samples taken from the population, and thus found the incidence, distribution and interrelation of the variables relative sociological and psychological. Survey research is used to gather data or information about a large population by using a relatively small sample. Surveys are used to determine the general overview of the characteristics of the population. The population in this study were students of class VII SMP in DKI Jakarta. Of the population sampled were 105 students with multi-stage sampling technique. The research data were then analyzed using multiple regression inferential statistics to generalize. Before the multiple regression analysis have met some of the requirements analysis which includes: normality test, linearity test and multicollinearity test.

In this study there were 9 (Nine) variables that serve as the object of research consists of 8 (eight) independent variables and one (1) dependent variable. The independent variables in this study are: linguistic, logical-mathematical intelligence, visual-spatial intelligence, bodily-kinesthetic intelligence, musical intelligence, interpersonal intelligence, intrapersonal intelligence, and naturalist intelligence, while the dependent variable is used as a Mathematics student achievement as an indicator of success in learning mathematics. Ninth variable constellation of problems such as the following picture variable.



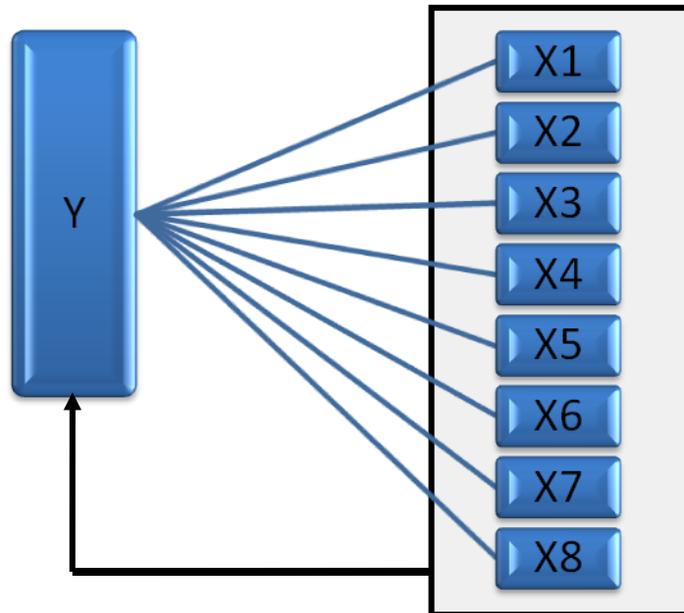


Figure 1. Constellation of Research Variables

Description:

- X1 = linguistic intelligence
- X2 = logical-mathematical intelligence
- X3 = visual-spatial intelligence
- X4 = bodily-kinesthetic intelligence
- X5 = intelligence musical
- X6 = interpersonal intelligence
- X7 = intrapersonal intelligence
- X8 = intelligence naturalist
- Y = achievement learning mathematics

3. RESULT AND DISCUSSION

Descriptive analysis of sample data dependent variable and the results

obtained eight independent variables such as the following table.

Table 1. Descriptive Statistic

Statistic Measure	Y	X1	X2	X3	X4	X5	X6	X7	X8
Mean	73.24	41.35	50.67	44.74	49.77	48.65	49.27	41.86	43.69
Median	75.00	42.00	51.00	45.00	50.00	49.00	49.00	42.00	43.00
Mode	80	46	49	45	49	49	52	42	42
Std. Deviation	14.81	5.58	8.63	5.25	6.02	3.56	6.43	5.71	5.85
Minimum	35	27	33	30	32	41	34	30	30
Maximum	100	57	71	59	67	58	65	56	57

Test results of the requirements analysis

Prior to inferential analysis with multiple regression statistical techniques, must first fulfill some assumptions or analysis requirements that include: data normality conditions, linearity each independent variable regression model with the dependent variable, and the absence of multicollinearity among the independent variables.

Normality Test

Normality test data for each variable performed with SPSS using the Kolmogorov-Smirnov test techniques result that the value of the Kolmogorov-Smirnov (KS) for each of the variables: Y = 0.853, X1 = 0.718, X2 = 0.750, X3 = 0.933, X4 = 1.061, X5 = 0.713, X6 = 0.679, X7 and X8 = 0.639 = 0.729. Asymp value. Sig. for all these variables is greater than 0.05 so it can be concluded that the sample data of each variable is normally distributed.

Linearity test

Results of the analysis using SPSS to linearity test simple regression line of each independent variable (Xi) to the dependent variable (Y), the value of Sig. for all regression models of each independent variable (xi) of the

dependent variable (Y) are all greater than the value of $\alpha = 0.05$, so we can conclude all regression models of each independent variable (Xi) linear patterned on the dependent variable.

Multicollinearity Test

To determine whether or not collinearity/multicollinearity among the independent variables in a regression model is done by looking at or test the value of VIF (Variance Inflation Factor) or the value of Tol (Tolerance). Analysis results obtained with the help of SPSS that VIF values for all the independent variables (Xi) is less than 10 and more than 0.1 Tolerance value, so it can be concluded between the independent variable does not occur multicollinearity.

Research Hypothesis Testing Results

With the fulfillment of all the requirements analysis which includes normality test, and the absence of linearity test and multicollinearity test, the research hypothesis testing using multiple regression can be resumed. Results of the analysis using SPSS for multiple regression obtained the results as in the table summary, ANOVA tables and table coefficient as follows.

Table 2. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.798(a)	.637	.606	9.191

Table 3. ANOVA
Effect X1, X2, X3, X4, X5, X6, X7, X8 to Y

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	14063.708	8	1757.963	20.813	.000(a)
	Residual	8024.254	95	84.466		
	Total	22087.962	103			

Table 4. Coefficients
Individual Effect X1, X2, X3, X4, X5, X6, X7, X8

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
	B	Std. Error	Beta			Zero-order	Partial	Part
1 (Constant)	-46.218	17.189		-2.689	.008			
Lingusitik	.158	.179	.058	.881	.380	.196	.090	.054
Logik-matematik	.869	.123	.509	7.064	.000	.703	.587	.437
Spasial-visual	.681	.201	.244	3.391	.001	.518	.329	.210
Kinestetik	.263	.166	.104	1.580	.117	.281	.160	.098
Musikal	.201	.268	.049	.752	.454	.160	.077	.046
Interpersonal	.475	.175	.208	2.710	.008	.349	.268	.168
Intrapersonal	-.451	.178	-.177	-2.527	.013	-.017	-.251	-.156
Naturalistik	.253	.165	.101	1.531	.129	.279	.155	.095

Dependent Variable: Prestasi Belajar

Taken together these factors consisting of multiple intelligences linguistic, logical mathematical intelligence, spatial intelligence, bodily kinesthetic intelligence, musical intelligence, interpersonal intelligence, intrapersonal intelligence and naturalist intelligence significantly affect the achievement of high school students learn math first. This is indicated by the value of $F = 20.813$ and $sig. = 0.000$ is greater than $\alpha = 0.05$. Taken together these factors contribute to the multiple intelligences of 0.637 or 63.7% of the success of students in learning mathematics. The remaining 36.3% of students in learning mathematics success is determined by other factors, beyond the factors of multiple intelligences. Based on Table 7. Above, together influences from multiple intelligence factors to the success of students in learning mathematics can be expressed in the multiple regression model as follows $Y = -46,218 + 0,158X1 + 0,869X2 + 0,681X3 + 0,263X4 + 0,201X5 + 0,475X6 - 0,451X7 + 0,253X8$. Constant at -46.218, meaning that if the linguistic intelligence (X1), logical mathematical intelligence (X2), spatial intelligence (X3), musical intelligence (X4), bodily kinesthetic intelligence (X5), intrapersonal intelligence (X6), interpersonal intelligence (X7) and naturalist

intelligence (X8) together value is 1 then the student mathematics achievement (Y) value is -46.218.

Linguistic influences on student mathematics achievement

Based on Table 7, regression coefficient values obtained linguistic variables (X1) of 0.158, meaning that if the other independent variables are fixed and the X1 value increased one (1) score value, then the student mathematics achievement (Y) will increase by 0,158. Coefficient is positive, it means there is positive linguistic intelligence (X1) to student mathematics achievement (Y).

Probability (sig.) numerical intelligence has a value of 0.380 is greater than $\alpha = 0.05$ and $t = 0.881$ value is smaller than the value of t -table = 1.985 therefore concluded that linguistic intelligence (X1) does not significantly affect students' mathematics achievement in the city of Jakarta SMP at significance level of 5%.

Logical-mathematical intelligence influences on student mathematics achievement

Based on Table 7. regression coefficient values obtained logical mathematical intelligence (X2) of 0.869, which meant if the other independent variables are fixed and the X2 value



increased one (1) score value, the achievement of mathematics students (Y) will be increased by 0.869. Coefficient is positive, it means there is positive logical-mathematical intelligence (X2) on students' mathematics achievement (Y).

Probability (sig.) logical-mathematical intelligence has a value of 0.000 is less than $\alpha = 0.05$ and $t = 7.064$ value is greater than t-table value = 1.985 therefore concluded that the logical-mathematical intelligence (X2) significantly affect the achievement SMP students' mathematics learning in the city of Jakarta at a significance level of 5%.

Effect of visual-spatial intelligence to learn math student achievement

Based on Table 7. regression coefficient values obtained spatial-visual intelligence (X3) of 0.681 means that if the other independent variables are fixed and the X3 value increased one (1) score value, the achievement of mathematics students (Y) will be increased by 0.681. Coefficient is positive, it means there is positive spatial intelligence (X3) on students' mathematics achievement (Y).

Probability (sig.) spatial-visual intelligence has a value of 0.001 is less than $\alpha = 0.05$ and $t = 3.391$ value is greater than t-table value = 1.985 thus concluded that visual-spatial intelligence (X2) significantly affect the achievement SMP students' mathematics learning in the city of Jakarta at a significance level of 5%.

Influence of bodily-kinesthetic intelligence kinesthetic learning mathematics achievement of students

Based on Table 7. regression coefficient values obtained bodily-kinesthetic intelligence (X4) 0.263 means that if other independent variables are fixed and X4 values increased 1 (one) score value, the achievement of mathematics students (Y) will be increased by 0.263. Coefficient is positive, it means there is positive between bodily-kinesthetic intelligence (X4) on students' mathematics achievement (Y).

Probability (sig.) bodily-kinesthetic intelligence has a value of 0.117 is greater than $\alpha = 0.05$ and $t = 1.580$ value is smaller than the value of t-table = 1.985 therefore concluded that

the bodily-kinesthetic intelligence (X2) does not significantly affect the mathematics achievement of students in the city of Jakarta Junior High School at 5% significance level.

Influence of musical intelligence of the students' mathematics achievement

Based on Table 7. regression coefficient values obtained musical intelligence (X5) of 0.201 means that if the other independent variables and its value is fixed X5 increased one (1) score value, the achievement of mathematics students (Y) will increase by 0,201. Coefficient is positive, it means there is positive musical intelligence (X5) on students' mathematics achievement (Y).

Probability (sig.) musical intelligence has a value of 0.454 is greater than $\alpha = 0.05$ and $t = 0.752$ value is smaller than the value of t-table = 1.985 therefore concluded that the bodily-kinesthetic intelligence (X2) does not significantly affect the academic achievement mathematics students in the city of Jakarta SMP at significance level of 5%.

Interpersonal influences on student mathematics achievement

Based on Table 7. regression coefficient values obtained interpersonal variables (X6) of 0.475 means that if the other independent variables are fixed and X6 value increased one (1) score value, then the student mathematics achievement (Y) will increase by 0,475. Coefficient is positive, it means there is positive interpersonal intelligence (X6) on students' mathematics achievement (Y).

Probability (sig.) interpersonal intelligence has a value of 0.008 is less than $\alpha = 0.05$ and $t = 2.710$ value is greater than t-table value = 1.985 therefore concluded that the bodily-kinesthetic intelligence (X2) significantly affect the mathematics achievement SMP students in the city of Jakarta at a significance level of 5%.

Intrapersonal intelligence influence on students' mathematics achievement

Based on Table 7. regression coefficient values obtained intrapersonal intelligence (X7) of -0.451 means that if the other independent variables and its value is fixed X7 increased one





(1) score value, the achievement of mathematics students (Y) will decrease by -0.451. Negative coefficient means that there is a negative effect of intrapersonal intelligence (X7) on students' mathematics achievement (Y).

Probability (sig.) interpersonal intelligence has a value of 0.013 is less than $\alpha = 0.05$ and the value of $|t| = 2.527$ is greater than t-table value = 1.985 therefore concluded that the bodily-kinesthetic intelligence (X2) significantly affect the achievement SMP students' mathematics learning in the city of Jakarta at a significance level of 5%.

Naturalist intelligence influence learning mathematics achievement of students

Based on Table 7. regression coefficient values obtained naturalist intelligence (X8) of 0.253 means that if the other independent variables and its value is fixed X8 increased one (1) score value, the achievement of mathematics students (Y) will be increased by 0.253. Coefficient is positive, it means there is positive naturalist intelligence (X8) to student mathematics achievement (Y).

Probability (sig.) naturalist intelligence has a value of 0.129 is greater than $\alpha = 0.05$ and $t = 1.531$ value is smaller than the value of t-table = 1.985 therefore concluded that the naturalist intelligence (X2) does not significantly affect students' mathematics achievement in the city of Jakarta SMP at significance level of 5%.

Discussion

The study found that together these factors consisting of multiple intelligences: linguistic intelligence (X1), logical mathematical intelligence (X2), spatial intelligence (X3), bodily kinesthetic intelligence (X4), musical intelligence (X5), intelligence interpersonal (X6), intrapersonal intelligence (X7) and naturalist intelligence (X8) has a significant effect on students' mathematics achievement at junior high school level. The coefficient of determination of multiple intelligences factors is the amount of $R^2 = 0.637$. It is informed that 63.7% of multiple intelligences factors contributing to the success of students in learning mathematics. This suggests that the success of students in learning

mathematics is influenced by many internal factors that exist in the students' multiple intelligences factor. For the teachers in designing learning should pay attention to talent or intelligence factors that exist in students. Fadli (2009) says, "The ability of teachers to recognize multiple intelligences possessed by the students is very important. This will be a very decisive factor in the planning process of learning that must be taken by students.

From table 6. ANOVA values obtained F_{count} 20.813 with a significance level of 0.000 is less than $\alpha = 0.05$. Therefore probability value (sig.) = 0.000 is much smaller than 0.05, then the regression model can be used to predict students' mathematics achievement. Or it can be said that, linguistic variables (X1), logical mathematical intelligence (X2), spatial intelligence (X3), musical intelligence (X4), bodily kinesthetic intelligence (X5) intrapersonal intelligence (X6), interpersonal intelligence (X7) and naturalist intelligence (X8) together - at a very significant effect on mathematics achievement (Y). Multiple regression equation of multiple intelligences factors on Mathematics achievement as follows.
$$Y = -46,218 + 0,158X1 + 0,869X2 + 0,681X3 + 0,263X4 + 0,201X5 + 0,475X6 - 0,451X7 + 0,253X8.$$

Constants of -46.218, pales linguistic (X1), logical mathematical intelligence (X2), spatial intelligence (X3), musical intelligence (X4), bodily kinesthetic intelligence (X5), intrapersonal intelligence (X6), interpersonal intelligence (X7) and naturalist intelligence (X8) together - the same value is 1 then the student mathematics achievement (Y) value is -46.218. Hadi (2006: 6) describes the theory of multiple intelligences spawned a new paradigm in the organization of learning activities. First, change the mindset of the teachers, the teachers have to change the way of thinking that in the classroom there are students who are not stupid, let alone assume that some bright students, some mediocre, and some are not savvy. Teachers should see that essentially all students are smart, intelligent in different aspects. Second, changes in design and instructional strategies. Based on the assumption that every student has a different kind of intelligence, then teachers need to create learning





designs are varied. Varied instructional design is intended to provide a space for students with different learning styles.

The partial effect of each factor of multiple intelligences is found different results. There are multiple intelligences factors that positively influence significantly the factors: logical-mathematical intelligence, visual-spatial intelligence and interpersonal intelligence. There are also multiple intelligences factor negatively affecting significantly the intrapersonal intelligence factor. While factors other multiple intelligences are: linguistic intelligence, kinesthetic intelligence, musical intelligence, naturalistic intelligence and positive influence on the success of students in learning mathematics, it's just that the effect is not significant.

Logical-mathematical intelligence have a significant effect on the success of students in learning mathematics. Partial correlation coefficient between logical-mathematical intelligence with mathematics learning achievement of students at 0.587. This phenomenon indicates that the logical-mathematical intelligence is partially contributing to the success of students in learning mathematics at $0.5872 \times 100\% = 34.5\%$. This suggests that for students who have a logical-mathematical intelligence is high then it will be easier to catch the math. So that students will gain a high mathematics achievement. This picture is very reasonable, since Mathematics is itself a developed knowledge of the philosophy of logic, which place more emphasis on right and wrong. Padiya (2008) explains "This intelligence is characterized by one's ability to interact with the figures and numbers, think logically and scientifically, the consistency in thought. Someone who is intelligent logic-mathematics often are interested in patterns and numbers / figures. They learn fast number operations and quickly understand the concept of time, explaining concepts logically or mathematically deduce information."

Multiple intelligences more positive impact on student success in learning mathematics that visual-spatial intelligence. Partial correlation coefficients between spatial-visual intelligence with mathematics learning achievement of students at 0.329. This

phenomenon indicates that the visual-spatial intelligence is partially contributing to the success of students in learning mathematics at $0.3292 \times 100\% = 10.8\%$. This suggests that for students who have visual-spatial intelligence is high then it will be easier to catch the math. So that students will gain a high mathematics achievement. This picture is very reasonable, because the ability to learn mathematics necessary student's high abstraction. Abstract mathematical object that has the form of ideas, concepts tau idea. Therefore to master mathematical concepts with good spatial-visual intelligence needed good anyway. Fadli (2010) explains that people who have visual-spatial intelligence are the people who have the capacity to think in three dimensions.

Multiple intelligences next factor that has a positive influence on the success of students in learning mathematics is interpersonal intelligence. Partial correlation coefficient between interpersonal intelligence with mathematics achievement of students at 0.268. This phenomenon indicates that interpersonal intelligence is partially contributing to the success of students in learning mathematics at $0.2682 \times 100\% = 7.2\%$. This suggests that for students who have a high interpersonal intelligence then she would be easier to catch the math. So that students will gain a high mathematics achievement. This result is very reasonable, because it is itself intrinsically Mathematics is a language that is universal. Mathematics is a language of symbols that will be easier to understand each person. Mathematical symbols are declared to convey an idea will be more easily understood by many people rather than using verbal language. For example, to convey the idea of "two plus five" will be more easily understood by many people from various ethnic and foreign if the idea written in mathematical symbols as follows " $2 + 5$ ". Therefore for those students who have a high interpersonal intelligence then the student will be easier to master mathematical concepts. Padiya (2008) explains "This intelligence relates to one's ability to interact with others. When interacting with others, one should be able to estimate the feelings, temperament, mood, intention and desire friend interaction, then give a decent response."





Unlike the above three multiple intelligences that have a positive influence in the success of learning mathematics, the intrapersonal intelligence have a negative effect on students' mathematics achievement. Partial correlation coefficient between interpersonal intelligence with mathematics achievement of students at -0.251. This phenomenon indicates that intrapersonal intelligence is partially negatively contribute to the success of students in learning mathematics $(-0.251) \times 100\% = 6.3\%$. This suggests that for students who have a high intrapersonal intelligence then he will be hampered in capturing mathematics. So that the students will get a low mathematics achievement. Intrapersonal intelligence involves the ability to accurately understand the self (such as: the power and limitations of self), awareness of the moods, intentions, motivations, temperament and the desire and ability to discipline themselves, understand and respect ourselves. Fadli (2010) states, "is shown in the form of intrapersonal intelligence is the ability to construct an accurate perception of yourself and use those skills in making plans and directing others." Therefore it is reasonable, if the negative influence intrapersonal intelligences in successful learning mathematics. Because Mathematics is essentially knowledge to solve problems of human life in order to become more simple and can be solved easily. The math is as a servant, not a ruler. This is contrary to the nature of intrapersonal intelligence. So it is natural that intrapersonal intelligence negatively affect students' mathematics achievement.

Other four factors, namely multiple intelligences: linguistic, bodily-kinesthetic intelligence, musical intelligence and naturalistic intelligence does not significantly influence the success of students in learning mathematics. Partial correlation coefficient with the linguistic achievement of student learning Mathematics 0.090. Partial correlation coefficient with the bodily-kinesthetic intelligence learning mathematics achievement of students at 0.160. Partial correlation coefficients musical intelligence with mathematics achievement of students at 0.077. Partial correlation coefficient with the naturalistic intelligence Mathematics student achievement by 0.155. Contribution of

each of these four factors to the success of multiple intelligences learning mathematics as follows. Contribution of linguistic intelligence of $0.0902 \times 100\% = 0.8\%$. Contribution of bodily-kinesthetic intelligence of $0.1602 \times 100\% = 2.6\%$. Contribution of linguistic intelligence of $0.0772 \times 100\% = 0.6\%$. Contribution of linguistic intelligence of $0.1552 \times 100\% = 2.4\%$. These four factors are all positive influence intelligence, only a very small and insignificant. On this basis, it can be understood that the fourth factor of intelligence (linguistic, kinesthetic, musical, and naturalistic) did not affect student success in learning mathematics.

4. CONCLUSION

Based on the results of research that has been disclosed in the previous section, this study can be concluded as follows. First, taken together these factors consisting of multiple intelligences: linguistic, logical-mathematical intelligence, visual-spatial intelligence, bodily-kinesthetic intelligence, musical intelligence, interpersonal intelligence, intrapersonal intelligence and naturalistic intelligence affect student success in studying Mathematics at secondary school level. Second, each partially factor the multiple intelligences have influence and contribute differently to the success of students in learning mathematics. There are three (3) factors that positively influence are: (1) logical-mathematical intelligence accounted for 34.5%, (2) spatial-visual intelligence accounted for 10.8%, and interpersonal intelligence accounted for 7.2%. There is 1 (one) factors that negatively affect intrapersonal intelligence by 6.3%. The remaining four (4) factors, namely: linguistic, bodily-kinesthetic intelligence, musical intelligence and naturalistic intelligence has no effect on the success of middle school students in learning mathematics.

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