

The Relationship of Students Self Confidence and Mathematics Learning Outcomes in Sequences and Series Materials

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Abstract

This study aims to determine whether or not there is a relationship between students' self confidence and mathematics learning outcomes on sequences and series material in class VIII MTs Miftahul Huda Bekasi City. This type of research is descriptive quantitative with a correlation approach. The population in this study were all students of MTs Miftahul Huda Bekasi City for the 2022/2023 academic year. Sampling was carried out using the technique Cluster Random Sampling as many as 15 students. The instruments used have been tested for validity and reliability in the form of self confidence questionnaires and objective ability tests. The prerequisite test includes the normality test (Lilliefors) and linearity test. The data analysis technique used is to test the significance of the correlation coefficient with the F test and *t* test. The results showed: (1) there was a positive relationship between students' self confidence and mathematics learning outcomes, which means that the level of correlation was quite strong, (2) there was a significant influence between students' self confidence and mathematics learning outcomes with $t_{count}(1,8169) > t_{table}(1.7771)$. The data obtained is normally distributed and the regression model is linear with the regression equation $\hat{Y}=40.82+049X$.

Keywords: Learning outcomes, Mathematics, Self confidence.

1 INTRODUCTION

Education is a process experienced by all human beings from birth to death. From education, humans gain knowledge, expertise and experience that will shape their personality so that humans can confidently overcome the dynamic problems of life. Education is still the main vehicle for educating and developing students' potential. In addition, education aims to produce students who have morals, are intelligent, have character, are of high quality, are creative and can adapt quickly and precisely in the environment. Mathematics education has an important role in the formation of student character and educational development. This is because mathematics has been studied from kindergarten to university level. Mathematics is one of the subjects that is the basis for other sciences because it contains the ability to count, logic and think (Faradhila, Sujadi, & Kuswardi, 2013). In everyday life, the application of mathematics is closely related to various fields. Therefore, mathematics subjects are mandatory for students to learn because they are useful in solving problems in the world of work.

But in reality, students seem to avoid mathematics. This is because students always think that mathematics is a difficult, boring, scary subject and think that mathematics is just counting. Students study mathematics only limited to the demands that must be met and get grades without understanding the mathematical concepts being taught and even their application. The success of the teaching and learning process is determined by many factors, namely internal and external factors. One of the internal factors that comes from within the student is self confidence. Confidence is an important capital for students to be able to show their potential. Students who have high self confidence will

easily achieve their goals and are confident in the talents and abilities they show, while students who have low self confidence will feel inferior and always feel inadequate or fail to achieve their goals. Low self confidence in students resulted in learning outcomes of mathematics which is still relatively low. This can be seen from the learning process that takes place in schools where students do not dare to ask questions about material that they do not understand and do not dare to express their opinions because they are afraid of the teacher and avoid the questions posed by the teacher. In addition, in terms of exams, students are used to doing fraudulent activities, namely cheating because they are unsure of their own abilities and are afraid if they don't pass the exam so that gradually this self confidence gets lower and even disappears.

From the results of interviews conducted with mathematics teachers at MTs Miftahul Huda Bekasi City, students' mathematics learning outcomes were low when daily tests, PTS and PAS, there were still scores below the KKM, namely scores less than 75. This was because students felt insecure or not confident when asked to solve math problems. Students are too fixated on what the teacher is teaching so they don't dare to try variations of math problems. Students also do not explore material and study independently so that when faced with a lot of questions with a predetermined time students feel unprepared, panic, nervous and don't even remember the formula.

Based on the results of the problem analysis above, research and the formulation of the problem can be carried out to find out whether there is a relationship between students' self confidence and the results of learning mathematics in sequences and series material in class VIII MTs Miftahul Huda Bekasi City.

1.1 Self Confidence

Confidence is a positive attitude which is an important asset for someone to show their potential. A person who is confident will be able and confident in achieving his goals. According to Thantaway in (Pradipta, 2014), self confidence is a mental or psychological condition of a person who gives strong confidence in himself to do or take an action. Someone who is confident, does not hesitate to show his strengths and is optimistic that he can achieve the goals that have been set. Although everyone also has weaknesses, these weaknesses are not an obstacle to achieving goals instead used as motivation to develop strengths. Self confidence is a factor that influences learning outcomes. Students who have a positive self confidence will always try to maximize their potential and show the best of themselves as evidenced by an achievement (Oktarini, Suarjana, & Arini, 2018).

The point is that students who have high self confidence will be able and confident in showing their potential by improving the quality of learning, playing an active role in learning, being challenged in solving a problem given by the teacher, being responsible for the decisions taken, feeling free to do what they like, have a strong desire to get optimal learning outcomes (have an achievement drive). Whereas students who have low self confidence will feel unable to achieve their goals, are passive in learning, unsure of their potential, choose to believe in the abilities of friends during exams, are not ready to face the problems posed by the teacher so that learning results are less than optimal. Confidence does not just grow, but through a gradual process that starts with oneself, parents and teachers. This process is in the form of education and the results of life experiences experienced by students. Parents build students' self confidence since childhood at home. The teacher also plays a role in instilling students' self confidence to be able to increase their potential so that students' self confidence is formed and develops and is able to socialize with their environment.

The following are some of the characteristics of people who have self confidence, namely (Bachtiar, 2020): (a) Believe in their own abilities, (b) Act independently in making decisions, (c) Have a positive feeling about themselves, (d) Dare to express opinions, (e) Be calm in doing something, (f) Have adequate potential and ability, (g) Be able to neutralize tension that arises in certain situations, (h) Be able to adapt and communicate, (i) Have good mental and physical conditions support appearance, (j)

Have sufficient intelligence, (k) Have expertise and other skills that support life, (l) Have social skills, (m) Have life experiences that forge mental and resilience in various situations, (n) Have a positive attitude in dealing with problems, (o) having confidence in oneself, (p) not boasting, (q) having the courage to act. According to Santrock (2003), indicators of self confidence are as follows.

Table 1. Indictors of Self Confidence

Positive Indicators	Negative Indikators
1. Directing or commanding others	Putting others down by teasing, calling or gossiping
2. Use the sound quality according to the situation	Moves body dramatically or out of context
3. Express opinions	Moves body dramatically or out of context
4. Sit with others in social activities	Give reasons when you fail to do something
5. Work cooperatively in groups	Look around to monitor others
6. Look at the other person when inviting or being spoken to	Boasting excessively about accomplishments, skills and physical appearance
7. Maintain eye contact during the conversation	Verbal self-deprecation, depression
8. Initiate friendly contact with others	Talking too loudly, suddenly or in a dogmatic voice
9. Maintain an appropriate distance between oneself and others	Doesn't express gaze, especially when asked
10. Speaks fluently, experiencing only slight hesitation	Position yourself submissively

Confidence can be influenced by several factors, namely (Bachtar, 2020): (1) Internal factors, including self-concept (ideas about oneself); self-esteem (assessment made on oneself); physical condition (is the main cause of a person's low self-esteem) and life experience (disappointing experiences are usually the most frequent cause of low self-esteem). (2) External factors, including education (a low level of education tends to make a person feel inferior, whereas a high level of education makes a person independent and not completely dependent on others); work (self confidence can arise by doing work because they feel satisfied and proud of being able to develop one's abilities) and environment (family, school and community environments collaborate with each other in developing one's self confidence).

1.2 Mathematics Learning Outcomes

Every learning in school must have learning objectives, one of which is to achieve optimal learning outcomes. Good learning outcomes indicate that students are considered to have understood the material and its concepts and their application in everyday life. Learning is not just transferring knowledge from teacher to students, but rather focusing on the learning process that occurs. From learning activities, students are expected to experience changes in behavior which are referred to as learning outcomes. According to Fontana (in Chusni et al, 2021) learning is a series of relatively fixed processes of changing behavior as a result of the experiences of each individual. Someone is said to learn if there is a change in behavior within him in a more positive direction that is obtained from the results of training and experience when learning and interacting with his environment.

Learning outcomes are clear evidence of student achievement after carrying out learning activities within a certain time. Whether students pass or fail is based on the teacher's assessment during the learning process. Learning outcomes are the achievement of changes in behavior that tend to settle in the cognitive, affective and psychomotor domains of the learning process carried out within a certain period of time (Jihad & Haris, 2012). The point is that changes in behavior experienced by students

from the learning process during a certain time (one semester) can be seen from three sides, namely cognitive (knowledge, information), affective (attitudes, emotions) and psychomotor (skills) which will continue to settle in the student's personality. Good student learning outcomes indicate that learning objectives are achieved optimally and vice versa. With the learning outcomes, the teacher can see the extent to which student learning is progressing and the steps that must be taken to improve student learning outcomes.

Mathematics is a learning process that involves students actively constructing mathematical knowledge (Nuriana & Adi, 2022). Constructing here means that learning mathematics makes students active in finding information so that a thorough understanding of knowledge is formed. Mathematics is a symbolic language that functions practically to express quantitative and spatial relationships while the theory is to facilitate thinking (Indah, 2019). Furthermore, mathematics is a communication tool that can be used to solve a problem more quickly and accurately because it can provide exact answers. Therefore, it is very unlikely that in this century, humans can live their daily lives in various fields without using and utilizing mathematics.

2 RESEARCH METHODS

This research includes correlational research using quantitative descriptive methods. Correlational research is conducted to determine the level of relationship between two or more variables, without changing, adding, or manipulating existing data (Agustyaningrum & Suryantini, 2016). The purpose of descriptive research is to make systematic, factual and accurate descriptions, drawings or drawings regarding the facts, characteristics and relationships between the phenomena being investigated (Rukajat, 2018). The variables in this study are students' self confidence as the independent variable (X) and mathematics learning outcomes as the dependent variable (Y). This research was conducted at MTs Miftahul Huda Bekasi City, West Java. The population in this study included all class VIII students of MTs Miftahul Huda for the 2022/2023 Academic Year, totaling 30 students in the material for sequences and series. The sampling technique used is Cluster Random Sampling. The sample in this study was 15 students in class VIII.1 as the research class and 15 students in class VIII.2 as the trial class.

The instrument used is a self confidence questionnaire with an assessment in the form of a scale Likert and an objective ability test with the assessment of correct answers is given a score of 1 and wrong answers are given a score of 0. The two instruments have the same number of 30 items or statements. This instrument must be tested first to determine its validity and reliability. Next, a data analysis prerequisite test was carried out using: (1) the normality test (Lilliefors) to find out whether the data obtained is normally distributed or not, (2) linearity test using analysis of variance to find out whether the regression is linear or not, (3) test the correlation coefficient hypothesis using correlation techniques Product Moment and correlation significance test (*t*-test).

3 RESULT AND DISCUSSION

Based on the results of the instrument trials in class VIII.2, as many as 15 respondents obtained 23 valid and reliable statement items for variable X (self confidence) and 22 valid and reliable questions for variable Y (mathematics learning outcomes).

3.1 Self Confidence

Based on the research data that has been collected regarding student self confidence, the highest score is 73 and the lowest score is 44 with a mean (average) of 60.9, a median of 60.9, a mode of 60, a variance of 50.4 and a standard deviation of 7,10.

3.2 Mathematics Learning Outcomes

Based on research data that has been collected through objective tests regarding mathematics learning outcomes in Rows and Series material, the highest score is 82 and the lowest score is 59 with a mean of 70.67, a median of 69.75, a mode of 65.17, a variance of 55.24 and a standard deviation of 7.43.

3.3 Data Analysis Prerequisites Test

Before testing the hypothesis, a normality test is first performed to find out whether the data is normally distributed or not.

Table 2. Normality Test of Variable X and Variable Y

Variable	n	α	L_{count}	L_{table}	Conclusion
X	15	0,05	0,0764	0,220	Normal Distribution
Y	15	0,05	0,1209	0,220	Normal Distribution

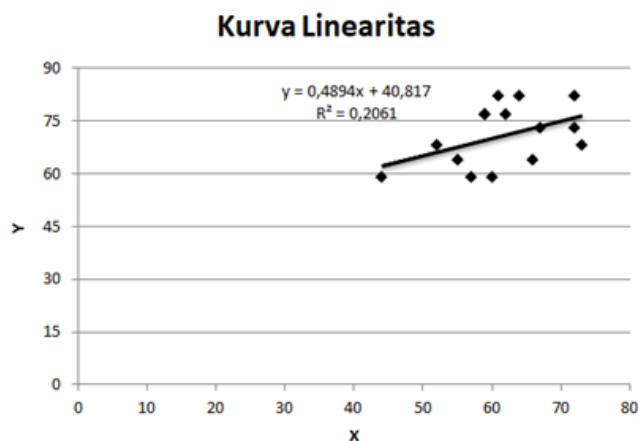
Based on Table 2, after calculating using the testLilyfors obtained by $L_{count}=0.0764$ (variable X) and $L_{count}=0.1209$ (variable Y) at a significant level of 0.05, the $L_{table}=0.220$ up to $L_{count}<L_{table}$ then it can be concluded that H_0 accepted and both data are normally distributed.

Next is the linearity test to find out whether the data is linear or not. This test was performed using simple linear regression analysis.

Table 3. Regression Linearity Analysis of Variance

Varians Source	dk	JK	RJK	F_{count}	F_{table}
Total	15	76500	-	0,39	4,67
Regression (a)	1	75473,07	75473,1		
Returns (b/y)	1	211,94	211,94		
Residue	13	814,99	62,69		
Tuna Match (TC)	11	554,99	50,45		
Confusion (error)	2	260	130		

Based on Table 3, the value $a=40.82$ and the value $b=0.49$ is obtained, so the regression equation is $\hat{Y}=40.82+049X$. This means that for each addition of one unit of self confidence, the value of learning mathematics will increase by 0.49. In the table above, the value of $F_{count}=0.39$ and $F_{table}=4.67$ at a significant level of 0.05 up to $F_{count}<F_{table}$ then it can be concluded that H_0 accepted and the relationship between variable X and variable Y is linear. Here is a Figure 1 as a linear curve.



3.4 Research Hypothesis Test

To find out the closeness of the relationship between variable X and variable Y, a correlation coefficient test was carried out using the correlation formula Product Moment. From the calculation results obtained value $r_{xy}=0.45$ means that there is a fairly strong and positive correlation between self confidence and learning outcomes in mathematics.

To find out whether there is a significant influence between the X variable and the Y variable, a correlation significance test is carried out. From the results of the calculations performed, the value is obtained $t_{\text{count}}=1.8169$. If consulted with t_{table} at a significant level of 0.05 and $dk=13$ the value is obtained $t_{\text{table}}=1.771$ so $t_{\text{count}} > t_{\text{table}}$ it can be concluded that there is a significant influence between variable X and variable Y.

3.5 Relationship between Self Confidence and Learning Outcomes

Based on the research results obtained, it can be said that students' self confidence has an influence on mathematics learning outcomes that is equal to 20.25%. The results of this study are reinforced by Vandini's (2015) research entitled The Role of Confidence in Students' Mathematics Learning Achievement. From the results of research conducted in class VII SMPN Ciracas, it can be concluded that self confidence in mathematics learning achievement has a strong and significant influence and the contribution of self confidence to mathematics learning achievement is 68.89%. Research by Lestari et al. (2022) with the title Effects of self confidence and Learning Styles on Mathematics Learning Outcomes. From the results of research conducted in class VIII SMP Negeri 2 Kediri, it can be concluded that there is a significant influence between self confidence on mathematics learning outcomes and the relationship level of 7.4% with the regression value equation, meaning that if the confidence value increases by 1 unit, then the results of learning mathematics will increase by 0.544. Another study by Fatia et al. (2022) concluded that there is a positive correlation between self confidence and students' mathematics learning outcomes. Furthermore, research conducted by Nova and Nailul (2019) also found that self confidence contributes to students' mathematics learning outcomes.

In accordance with the studies above, it can be concluded that there is a relationship between students' self confidence and mathematics learning outcomes. Thus an increase in self confidence will be followed by an increase in learning outcomes, which means that if students want to get good and optimal learning outcomes, students are also expected to have good self confidence.

4 CONCLUSION

Based on the results of the analysis that has been done, it can be concluded that there is a positive relationship between students' self confidence and the results of learning mathematics in class VIII MTs Miftahul Huda Bekasi City. From the results of hypothesis testing, values are obtained $r_{xy}=0.45$ means that there is a fairly strong correlation between students' self confidence and mathematics learning outcomes. The significance test of the correlation coefficient shows the value $t_{\text{count}} > t_{\text{table}}$ ($1.817 > 1.771$) means that there is a significant influence between students' self confidence and mathematics learning outcomes. From the results of the linearity test, the value of $F_{\text{count}} < F_{\text{table}}$ ($0.39 < 4.67$) so that it can be concluded that the regression model is linear. This means that the relationship between students' self confidence and mathematics learning outcomes is unidirectional. If students have high self confidence in learning, then learning outcomes will also be high and if students have low self confidence or even do not have self confidence, then learning outcomes will also be low.

5 REFERENCES

- Agustyaningrum, N., Suryantini, S. (2016). Hubungan Kebiasaan Belajar dan Kepercayaan Diri dengan Hasil Belajar Matematika Siswa Kelas VIII SMP N 27 Batam. *Jurnal Ilmiah Pendidikan Matematika*, 1(2), 158-164.
- Bachtiar, A. (2020). Obat Minder : *Rahasia Menjadi Pribadi Percaya Diri, Berani Tampil Beda dan Dikagumi*. Araska.
- Chusni. M. M., dkk. (2021). *Strategi Belajar Inovatif*. Pradina Pustaka.
- Dewi, N, R., Ardiansyah, A, S. (2022). *Dasar dan Proses Pembelajaran Matematika*. Lakeisha.
- Erayani, F, N., dkk. (2022). Hubungan Kepercayaan Diri dan Kemampuan Komunikasi Matematis dengan Hasil Belajar Matematika. *Jurnal Ilmiah Profesi Pendidikan*, 7(3), 1875-1884.
- Faradhila, N., Sujadi, I., & Kuswardi, Y. (2013). Eksperimentasi Model Pembelajaran Missouri Mathematics Project pada Materi Pokok Luas Permukaan serta Volume Prisma dan Limas Ditinjau dari Kemampuan Spasial Siswa Kelas VIII Semester Genap SMP Negeri 2 Kartasura Tahun Pelajaran 2011/2012. *Jurnal Pendidikan Matematika Solusi*, 1(2), 67-74.
- Jihad, A., Haris, A. (2012). *Evaluasi Pembelajaran*. Multi Presindo.
- Lestari, G. P., Hayati, L., Kurniawan, E., Amrullah. (2022). Pengaruh Kepercayaan Diri dan Gaya Belajar terhadap Hasil Belajar Matematika. *Griya Journal of Mathematics Education and Application*, 2(3), 748-756.
- Marina, Indah. (2020). *Generasi Hebat Generasi Matematika (Kumpulan Essay Karya Mahasiswa Tadris Matematika Angkatan 2019)*. NEM.
- Oktarini, K., Suarjana. I. M., Arini. N. W. (2018). Hubungan Pola Asuh Orang Tua dan Percaya Diri dengan Hasil Belajar Matematika. *Jurnal Pedagogi dan Pembelajaran*, 1(2), 76-83.
- Rukajat, A. (2018). *Pendekatan Penelitian Kuantitatif*. Deepublish.
- Santrock, J. W. (2003). *Adolescence Perkembangan Remaja*. Gelora Aksara Pratama.
- Sarastika, P. (2014). *Buku Pintar Tampil Percaya Diri*. Araska.
- Sari, N, V., Hasibuan, N, H. (2019). Pengaruh Kedisiplinan, Rasa Percaya Diri, dan Kecerdasan Logis Matematis terhadap Hasil Belajar Matematika Siswa. *Jurnal Phytagoras*, 8(1), 49-59.
- Vandini, I. (2016). Peran kepercayaan diri terhadap prestasi belajar matematika siswa. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, 5(3), 210-219.