THE INFLUENCE OF LEARNING PREPARATION AND LEARNING STYLE INTERESTS TOWARD MATHEMATICS LEARNING OUTCOMES IN STUDENTS CLASS VII

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ABSTRACT

This study is based on students' low learning outcomes, low learning preparation, and lack of optimization of learning style math learning causes less effective mathematics study. This research aims to determine whether there is influence toward math learning outcomes among students who have a high or low learning preparation and learning style visual, auditorial, or kinesthetic in the students Class VII of State Junior High School (SMP Negeri) 1 Banjarmangu Banjarnegara Regency in Even Semester Academic Year 2017/2018. This research population was the students of class VII SMP Negeri 1 Banjarmangu Banjarnegara Regency in even semester academic year 2017/2018, which consists of 7 classes. With Random Sampling Technique to the class and obtained class VII G as a class of research sample and class VII F as a class of research trial. Data collection techniques used a questionnaire form and test. A multiple-choice test is a matter of learning mathematics outcomes in the form of a questionnaire for the learning preparation and learning style. Instrument test: validity test, different power tests, and reliability test. Test requirement analysis includes a test of normality and tests its homogeneity. Data analysis used a two-way analysis of variance 2×3 with the different cells and Tukey's HSD test. This research indicates a positive and significant influence of learning preparation and learning styles in the mathematics learning outcomes in students class VII SMP Negeri 1 Banjarmangu Banjarnegara Regency in even semester academic year 2017/2018. It is showed by $f_{count} = 3,6634$ and $f_{table} = 3,3852$ so that $f_{count} > f_{table}$ with a significance level of 5%.

Keywords: preparations, style, learning outcomes.

INTRODUCTION

Education has an important role in achieving the success of a nation. Therefore education will change an object of not knowing to know, from not understand to understand, and from not understand to be understood. Education is expected to develop each human resource's potential to contribute to his personal life, environment, nation, and country. Mathematics is a complex science because, through mathematics education, students acquire various critical thinking skills, logical, thorough, systematic, creative, and innovative. Mathematics in education in Indonesia has an important role in developing science and technology, so students need to learn mathematics. The students are less able to understand the mathematical material seen from the low students' learning outcomes. As a result of the author's observation on SMP Negeri 1 Banjarmangu District Banjarnegara, the learning outcomes of students are still below expectations seen in table 1 below.

Table 1. Middle of Semester in mathematics class VII SMP Negeri 1 Banjarmangu Regency, State of the year even Semester 2017/2018

Class VII	A	B	C	D	E	F	G
Average	47,357	44,357	50,586	47,2	48,29	49,355	47,103
The Highest Score	63	58	71	66	72	85	70
The Lowest Score	32	25	35	34	24	30	30
≥ MCC	2	0	5	4	6	8	6
< MCC	26	28	23	26	25	23	23

Based on the source above, it appears that the results of a semester assessment of mathematics class VIII of SMP Negeri 1 Banjarmangu are still relatively low.

Several factors essentially influence student learning success. According to Muhibbin Syah, the factor was divided into three internal and external factors and a learning approach factor. Internal factors include physiological aspects (physical tonus, eyes, and ears) and psychological aspects (intelligence, attitudes, interests, talents, motivation). External factors include social environment (family, teachers and staff, community, friends) and non-social environment (home, school, equipment, nature). While the students ' learning approaches include high approaches (speculative and achieving), moderate approaches (both analytical and deep), and low approaches (reproductive and surface).

Learning Readiness is one of the internal factors of students who can influence students ' mathematical learning outcomes. Slameto revealed that readiness is the whole of all the individual conditions that make it ready to respond or answer certain situations in a certain way. Certain conditions are physical and psychological to achieve the maximum level of readiness, necessary physical and psychic conditions that support the individual's readiness in the learning process, and learning readiness, and other internal factors can influence student mathematics learning results are learning style. According to Nasution, learning is a consistent way of being done by a disciple in capturing the stimulus or information, remembering, thinking, and solving the problem. Nasution also said that the suitability of teaching style teachers with students' learning style heightens learning effectiveness.

This study formulated the following problems: (1) is there a positive and significant influence from the learning readiness and learning style of mathematics learning outcomes of grade VII students at SMP Negeri 1 Banjarmangu District Banjarnegara semester 2017/2018 school?

From the subject of problems that have been formulated above, the purpose of this research is to know the presence or absence of positive and significant influences from the learning readiness and learning style of mathematics learning outcomes of Class VII SMP Negeri 1 Banjarmangu District Banjarnegara even semester of the school year 2017/2018.

METHODS

This study was conducted in class VII SMP Negeri 1 Banjarmangu District Banjarnegara school year 2017/2018 in the even semester. The trial class is a class VIII-G, and the sample class is VIII-F, where class VIII-G and Grade VIII-F respectively consist of 29 students and 31 students. In this study, three variables are consisting of two free variables, namely Learning readiness (X_1), learning Style (X_2), and one bound variable, i.e., math learning results (Y). Based on the research variables above, the model linkage between the free variables and the bound variables is depicted in table 2 below.

Table 2. Design Research

		Learning Style (B)		
		Visual	Audiovisual	Kinesthetic
Readiness does Learn (A)	High	Y_1	Y_2	Y_3
	Low	Y_4	Y_5	Y_6

Description:

A: Students learning readiness

B: Student Learning Style

Y_1: Students mathematical learning test scores with a high learning style with visual types

Y_2: The value of students mathematical learning test results with a high learning style with the auditory type

Y_3: The value of student's mathematics learning test results in high-learning readiness with kinesthetic type learning style

Y_4: Students mathematical learning test scores that are low in learning with a visual-type study style

Y_5: Students mathematical learning test scores that are low in learning with auditory-type study style

Y_6: The value of students mathematical learning test results is low learning with kinesthetic-type study style

Data collection techniques using poll methods to obtain learning readiness data and learning style and test methods to obtain the data of mathematics learning results. Test of the research instrument that is a validity test, different power tests, and reliability test. Test prerequisite analysis includes a test of normality and homogeneity testing. It analyzed data using analysis of two-way variances 2 x 3 with the same cells and the test of Tukey's HSD.

RESULTS AND DISCUSSION

The learning readiness score was obtained from the poll given to students who numbered 20 items, with the highest score of 78 and the lowest score of 43, earned an average value of 58.468, and a standard deviation of 9.931. From these criteria, a grouping of learning interest scores is obtained as follows:

Table 3. Number of students by Category learning Readiness Score

Category	Score	f	Percentage (%)
High	X≥ 58,468	14	45,161
Low	X < 58,468	17	54,839
Total		31	100

From the results of the categorization in the table above, it is known that the level of learning readiness of class VII SMP Negeri 1 Banjarmangu Regency Banjarnegara even semester of the school year 2017/2018 belongs to the low Category because the most significant frequency is located at intervals X < 58.468 that is as much as 17 students or 54.8397%.

The learning style score was obtained from the poll given to the students numbering 30 items, with the highest score of 103 and the lowest score of 67, earned an average value of 83.323, and a standard deviation of 9.792. Of these criteria obtained grouping scores of learning styles as follows:

Table 4. Spread of student numbers by Category learning style score

Learning Style Type	f	Percentage (%)
Visual	14	45,161
Auditorial	9	29,032
Kinesthetic	8	25,807
Total	31	100

From the results of the categorizing in the table above, it is known that the learning style of class VII Junior high School SMP Negeri 1 Banjarmangu Regency of Banjarnegara school year 2017/2018 Most have a visual learning style type as many as 14 students or 45.161%.

The value of learning mathematics is derived from the test of learning results, amounting to 15 questions. A summary of the value of mathematics learning results is presented in table 5 below.

Tabel 5. Summary description of Math learning outcomes Value

Variable	Treatment					
	1	2	3	4	5	6
The Highest Score	93,333	86,667	53,333	73,333	46,667	66,667
The Lowest Score	66,667	40	26,667	40	20	26,667
Average	75,556	65	43,333	54,167	32	45
Standard Deviation	10,887	19,907	12,766	12,567	9,888	21,344
Variance	118,519	396,296	162,963	157,937	97,778	455,556

Classification of mathematical learning values based on average value and the standard deviation is presented in table 6 below.

Table 6. Classification of test scores student mathematics with high readiness and Visual learning style (treatment 1)

Score	Criteria	Score	f	%
$X > \bar{X} + SD$	High	$X > 86,442$	1	16,667
$\bar{X} - SD \leq X \leq \bar{X} + SD$	Medium	$64,669 \leq X \leq 86,442$	5	83,333
$X > \bar{X} - SD$	Low	$X > 64,669$	0	0

The table above shows the criteria of study results in Mathematics 1 students. The high criterion gained as much as one student (16.667%), the criteria are being obtained by as many as five students (83.333%), and no students are included in the low criteria (0%).

Table 7. Classification of test scores results of mathematics students with high readiness and auditory learning style (treatment 2)

Score	Criteria	Score	f	%
$X > \bar{X} + SD$	High	$X > 84,907$	1	25
$\bar{X} - SD \leq X \leq \bar{X} + SD$	Medium	$45,093 \leq X \leq 84,907$	2	50
$X > \bar{X} - SD$	Low	$X > 45,093$	1	25

The table above shows the criteria of learning mathematics for treatment two students of the high criteria gained as much as one student (25%), the criteria is being obtained as much as two students (50%), while the low criteria obtained as much as one student (25%).

Table 8. Classification of test scores results of mathematics students with high readiness and kinesthetic learning style (treatment 3)

Score	Criteria	Score	f	%
$X > \bar{X} + SD$	High	$X > 56,009$	0	0
$\bar{X} - SD \leq X \leq \bar{X} + SD$	Medium	$30,568 \leq X \leq 56,009$	3	75
$X > \bar{X} - SD$	Low	$X > 30,568$	1	25

The table above shows the criteria of learning math treatment Results 3 students of high criteria were obtained as much as 0 students (0%), the criteria was obtained as much as three students (75%), while the low criteria were obtained by one student (25%).

Table 9. Classification of test scores student mathematics with low readiness and Visual learning style (treatment 4)

Score	Criteria	Score	f	%
$X > \bar{X} + SD$	High	$X > 66,734$	1	12,5
$\bar{X} - SD \leq X \leq \bar{X} + SD$	Medium	$41,559 \leq X \leq 66,734$	4	50
$X > \bar{X} - SD$	Low	$X > 41,559$	3	37,5

The table above shows the criteria of learning mathematics for treatment 4 The high criteria students were obtained as much as one student (12.5%), the criteria was obtained as much as four students (50%), while the low criteria were obtained as much as three students (37.5%).

Table 10. Classification of test scores results of mathematics students with low readiness and auditory learning style (treatment 5)

Score	Criteria	Score	f	%
$X > \bar{X} + SD$	High	$X > 41,888$	1	20
$\bar{X} - SD \leq X \leq \bar{X} + SD$	Medium	$22,112 \leq X \leq 41,888$	3	60
$X > \bar{X} - SD$	Low	$X > 22,112$	1	20

The table above shows the criteria of learning math treatment Results 5 students the high criteria gained as much as one student (20%), the criteria were being obtained as much as three students (60%), while the low criteria were obtained as much as one student (20%).

Table 11. Classification of test scores results of mathematics students with low readiness and kinesthetic learning style (treatment 6)

Score	Criteria	Score	f	%
$X > \bar{X} + SD$	High	$X > 66,344$	1	25
$\bar{X} - SD \leq X \leq \bar{X} + SD$	Medium	$23,656 \leq X \leq 66,344$	3	75
$X > \bar{X} - SD$	Low	$X > 23,656$	0	0

The table above shows the criteria of learning Mathematics treatment six the high criteria students gained as much as one student (25%), the criteria were obtained as much as three students (75%). In contrast, the low criteria were obtained by 0 students (0%).

The prerequisite testing analysis is conducted to give an overview of how prerequisite analysis assumptions can be fulfilled according to the technical analysis of the data that has been planned. The prerequisite analysis test conducted in this study is the test of normality and test Homogeinity. The normality test is used to test the data's spread on each of the normal distribution variables. Test the normality in this study using statistical trials by the Liliefors method. The decision-making criteria used are the spread of data in each of the normal distribution variables when $L \leq L_{table}$ with a significant 5% level and where n is the number of samples. Test results of normality are presented in table 12 follows:

Table 12. Research variable normality test summary

Variable	L	L_{table}	n	Conclusion
Treatment 1	0,293	0,319	6	Normal
Treatment 2	0,349	0,381	4	Normal
Treatment 3	0,154	0,381	4	Normal
Treatment 4	0,259	0,285	8	Normal
Treatment 5	0,246	0,337	5	Normal
Treatment 6	0,305	0,381	4	Normal

After test normality carried out test homogeneity. A homogeneity test is used to assert that the group has taken (the study). A homogeneity test is based on the normal distribution of samples. The formula used in testing homogeneity is the test of Bartlett (X^2). The decision-making criteria are that the three groups have the same or homogeneous variant when $X^2_{count} < X^2_{table}$, with a 5% level and a degree of freedom of $K - 1 = 5$. A summary of the results of homogeneity tests can be seen in table 13:

Table 13. Summary of test results homogeneity

Alfa	0,05
k-1	5
$X^2_{table} = X^2_{(0,05)}$	11,07049769
X^2_{count}	8,35146785

The purpose of this research is to know the positive and significant influence of the learning readiness and learning style of mathematics learning outcomes of Class VII SMP Negeri 1 Banjarmangu Regency Banjarnegara, even Semester 2017/2018. In this section, further discussion of research results Analyzed with the ANAVA test.

In the first hypothesis test, the value calculation result f_{count} readiness to learn is obtained $f_{count} = 10,902$. Value f_{count} is bigger by comparison f_{table} at a significant level $\alpha = 0,05, V_1 = 1,$ and $V_2 = 25$, which is equal to 4,2417. Based on hypothesis testing, namely $H_{0,1}$ accepted if $f_{count} \leq f_{table}$, because $f_{count} > f_{table}$ is $10,902 > 4,2417$ then $H_{0,1}$ rejected and $H_{1,1}$ accepted. The first hypothesis testing results were accepted, namely that there was a positive and significant effect of

student learning readiness on the mathematics learning outcomes of seventh-grade students of SMP Negeri 1 Banjarmangu, Banjarnegara Regency, even semester of the 2017/2018 academic year.

In the second hypothesis test, the value calculation resultant f_{count} for factor B (student learning style factor) obtained $f_{count} = 5,6062$. Value f_{count} is bigger by comparison f_{table} at a significant level $\alpha = 0,05, V_1 = 2, \text{and } V_2 = 25$ that is 3,3852. Based on hypothesis testing, namely $H_{0,2}$ accepted if $f_{count} \leq f_{table}$, because $f_{count} > f_{table}$ is $5,6062 > 3,3852$ then $H_{0,2}$ rejected and $H_{1,2}$ accepted. The second hypothesis testing results were accepted: there was a positive and significant influence of student learning styles on mathematics learning outcomes of seventh-grade students of SMP Negeri 1 Banjarmangu, Banjarnegara Regency, even semester of the 2017/2018 academic year.

In the third hypothesis test, the value calculation results f_{count} for the AB factor (learning readiness and learning style), obtained $f_{rom\ fcount} = 3,6634$. Value f_{count} is bigger by comparison f_{table} at a significant level $\alpha = 0,05, V_1 = 2, \text{and } V_2 = 25$ that is 3,3852. Based on hypothesis testing, namely $H_{0,3}$ accepted if $f_{count} \leq f_{table}$, because $f_{count} > f_{table}$ is $3,6634 > 3,3852$ then $H_{0,3}$ accepted if $H_{1,3}$ accepted. The third hypothesis test results are accepted. There is a positive and significant influence of the students ' learning and learning style to learn math results of Grade VII students SMP Negeri 1 Banjarmangu Regency Banjarnegara, even Semester 2017/2018.

After the average test carried out after ANAVA (the test of Tukey'S HSD) acquired treatment 1 (High learning readiness with visual learning style) is the most appropriate group than treatment (2, 3, 4, 5, and 6). In contrast, the average group 3 gained does not differ significantly with Group 4. It also occurs between Group 3 and group 6 and also between Group 5 and Group 6, hence the high readiness with kinesthetic learning style, low learning readiness with learning style Auditorial and low learning readiness with kinesthetic style does not have a positive impact on the outcome of mathematics learning students of SMP Negeri 1 Banjarmangu District Banjarnegara.

CONCLUSION

Based on the results of the research and discussion as described in CHAPTER IV, it can be concluded that there is a positive and significant relationship of learning readiness and learning style of students to the Mathematics learning outcomes of Class VII SMP Negeri 1 Banjarmangu Regency of Banjarnegara, in fact, semester 2017/2018. It is demonstrated by $f_{count} = 3,6634$ and $f_{table} = 3,3852$, then $f_{count} > f_{table}$ with a significant 5% level.

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