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EFFECT OF LEARNING STRATEGY AND MATHEMATICAL LOGICAL INTELLIGENCE ON LEARNING MATHEMATICS SCHOOL AT GRADE VI OF ELEMENTARY SCHOOL: A CASE STUDY

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This study aims to determine the effect of learning strategy and logical –mathematical intelligence as well as its interaction with mathematics learning outcomes. This study used experimental research by level 2 x 2 with 18 people were taken by simple random sampling in SD Islam Karya Mukti. The result showed that there is an interaction effect between learning and logical – mathematical intelligence to match learning outcomes. Thus, the selection of the relevant strategy and the acquisition of mathematics learning outcomes are influenced by the ability of teacher to understand the characteristics of their students. Strategy applied to optimize the mathematics teacher of mathematics learning outcomes of students who have a logical –mathematical intelligence.

Keywords: strategy, logical –mathematical intelligence, learning outcomes mathematics

INTRODUCTION

Mathematics is a frightening subject for some students, whereas math is very important to apply in our daily lives. The most frequent activities require the application of math in our daily life when we are transacting, converting currency, and calculating taxes, preparing expenditure budgets, calculating bank interest, and calculating the size of a space. In the learning process, teachers are expected to present mathematical materials with fun for students. Teaching mathematics from an early age can make students enjoy the mathematics that will be useful in daily life later (Van De Walle, 2006:13). Through learning strategies that can provide simulation to students to provide immediate experience is expected to develop aspects of students' multiple intelligences. Based on the description that has been put forward, the role of learning strategies is important in the acquisition of mathematics learning outcomes by observing students' logical mathematical intelligence. Therefore, it is need for research on the influence of learning strategies and mathematical logical intelligence of students to the results of learning mathematics in class VI of elementary school. One strategy that can be used in accordance with the application of active and meaningful student learning is contextual learning strategy (Contextual Teaching and Learning) (Johnson, 2011:67). Contextual learning is a learning concept that helps teachers connect between the materials they teach to the real-world situations of the students and

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encourages students to make connections between their knowledge and their application in their daily lives (Trianto, 2009: 107).

The problems in this research are: (1) is there a difference between mathematics learning outcomes of students who get contextual learning strategies than those who got expository strategy? (2) Is there any interaction between learning strategy and logical-mathematical intelligence on learning outcomes in mathematics? (3) Are there differences in the results of a study of Mathematics for students who have logical-mathematical intelligence higher learning with contextual learning strategies than learning with expository strategy? And (4) is there a difference Mathematics learning outcomes for students who have a low logical-mathematical intelligence to learn the contextual learning strategies than learning with expository strategy?

The hypothesis of this research is as follows: (1) Overall learning outcomes of Mathematics students who learn with contextual learning strategy is higher than students who learn with expository learning strategy, (2) There is an interaction effect between learning strategy and logical-mathematical intelligence on learning outcomes Mathematics, (3) Mathematics learning outcomes of students who have high logical-mathematical intelligence who learn with contextual learning strategies higher than students who learn with expository learning strategies, And (4) Mathematics learning outcomes of students who have low logical-mathematical intelligence who learn With a contextual learning strategy lower than students learning with an expository learning strategy.

RESULT OF THE STUDY

Based on results of testing the analysis requirements in the form of data normality test using Liliefors Test obtained that overall of 8 (eight) cells of data group of students compared to the value of Lo is smaller than value of Lt ($\alpha = 0.05$). This indicates that the overall group of student data is normal. Furthermore, the test results of the analysis requirements in the form of homogeneity test of variance using the F test in the data group of students taught through the two different learning strategies and data of students groups who have different logical mathematical intelligence obtained that overall value F count smaller than F table ($\alpha = 0, 05$). This shows that overall both data groups of student have homogeneous variance. The results test of homogeneity of variance using Barlett Test on 4 (four) groups of student data cells obtained Xh2 (3, 26) <Xt2 (7, 81). This shows that in four groups students have homogeneous variance. A summary of two-way ANOVA result of mathematics learning result is presented in Table 1 below:

Source of Varian	*JK*	*db*	*RK (JK/db)*	F_h *(RK/RKD)*	F_t *($\alpha = 0,05$)*
Inter Coloum (C)	16	1	16	4,37	4,15
Inter line (B)	25	1	25	6,83	4,15
Interaction (I)	177,78	1	177,78	48,58	4,15
inside (D)	117,11	32	3,66		
Total	335,89	35			

Based on table 1 the results of data analysis with two-way ANOVA, it can be explained testing hypothesis as follows: *First*, the difference of learning result of student's mathematics based on learning strategy. From result of calculation of Anova Two Direction obtained F count = 4, 37> F table = 4, 15 at significant level 0, 05, so that statistic hypothesis Ho rejected and H1 accepted. This suggests that student learning outcomes that follow contextual learning strategies are higher than students who follow an expository learning strategy. Based on the results of Two-way Anova calculation shows that the groups of students who follow contextual learning strategies have an average score of learning outcomes mathematics of 24.725 is greater than the average score of learning outcomes of mathematics groups of students who followed expository learning strategies of 23.39. *The second* is the interaction between learning strategy and mathematical logical intelligence in its effect on mathematics learning outcomes. From result of calculation of Anova Two Direction obtained F count= 48, 58> F table = 4, 15 at significant level 0, 05, so statistic hypothesis Ho refused and H1 accepted. This shows that there is a very significant interaction between learning strategy and mathematical logical intelligence on mathematics learning outcomes. The interaction forms are graphically represented in Figure 1:

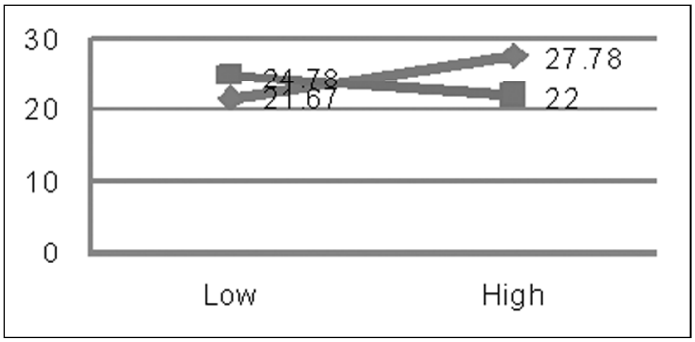

Figure 1: Interaction between Learning Strategy and Mathematical Logical Intelligence on Mathematics Learning Outcomes

Based on the results of hypothesis testing of research proved that there is interaction between learning strategies and logical-mathematical intelligence on student learning outcomes by using two-way ANAVA 2x2 then continued test with Tukey test. The Tukey test is performed to test the difference in absolute values and the two groups paired by comparing that value with the HSD (Honestly Significant Difference) value. The summary of Tukey's ui results in each of the cell groups compared at a significant level (α) = 0.05 is presented in Table 2.

Compared Group	*Q count*	Q_{table}
A_1B_1 with A_2B_1	9,03	4,41
A_1B_2 with A_2B_2	4,86	4,41

Third, the difference of mathematics learning result of students who have high mathematical logical intelligence based on learning strategy. Tukey test calculation results obtained Q count value of 9.03, while the value of Q table to 0. 05 significances level of 4.41. So the Q value is greater than Q table, so Ho is rejected and H1 is accepted. That is, there is a significant difference to the learning outcomes of mathematics groups of students who have high mathematical logical intelligence between those using contextual learning strategies with those using expository learning strategies. *Fourth*, the result of calculation of Tukey test obtained Q value equal to 4,86 while value of Q table to level of significance 0,05 equal to 4,41. So the Q value is greater than Q table, so Ho is rejected and H1 is accepted. That is, there is a significant difference to the learning outcomes of mathematics groups of students who have low logical mathematical intelligence between those using contextual learning strategies with those using an expository learning strategy. This suggests that students with low mathematical logical intelligence using contextual learning strategies earn lower mean mathematics learning outcomes than those using expository learning strategies.

The results of the hypothesis testing presented above illustrates that the use of learning strategies plays an important role in the learning process. Because in the learning activities should consider the condition of student characteristics. Contextual learning strategies used in the experimental class and expository learning strategies used in the control class. Learning activities using contextual learning strategies in the experimental class and expository learning strategies in control classes tested both can give effect to the results of learnings mathematics students who have high mathematical logical intelligence and students who have low logical mathematical intelligence

DISCUSSION AND CONCLUSION

The result of this study reveals a review of the finding facts obtained from the results of hypothesis testing of the theory used as conceptual research. The results of hypothesis testing showed that the four hypotheses in this study have been tested. Here is the discussion of each hypothesis:

(i) The results of research and hypothesis testing shows that the results of students who learning mathematics learn to use contextual learning strategies higher than the results of students who learn mathematics to use expository learning strategies. This is can be Seen from the differences mean value of mathematics learning outcomes of students between those using contextual learning strategies and those using expository learning

strategies. From this finding, it can be said that the use of contextual strategy can improve students' mathematics learning outcomes, (ii) the results of research and hypothesis testing show that there is interaction between learning strategy and mathematical logical intelligence of students to mathematics learning outcomes. For students who have high logical mathematical intelligence that follows contextual learning strategies achieve higher learning outcomes than students who follow an expository learning strategy. While for students who have low logical mathematical intelligence that follow the expository learning strategy achieves higher learning outcomes than students who follow contextual learning strategies, (iii) the results of research and hypothesis testing show that the mathematics learning outcomes of students who have high mathematical logical intelligence and use Contextual learning strategy is higher than the group of students who have high mathematical logical intelligence and using expository learning strategies, and (iv) The results of research and hypothesis testing shows that the mathematics learning outcomes of students who have low mathematical logical intelligence and use expository learning strategy is higher than Groups of students who have low logical mathematical intelligence and use contextual learning strategies.

Based on results of hypothesis testing, found some results of the research as follows:

(1) Overall results of mathematics learning in students who follow contextual learning strategy is higher than students who follow expository learning strategies. From these findings it can be concluded that the use of contextual strategies can improve student learning outcomes of mathematics

(2) There is an interaction effect between learning strategies and mathematical logical intelligence on mathematics learning outcomes. From this finding can be concluded that to optimize mathematics learning outcomes students who have high mathematical logical intelligence can be done with contextual learning strategies, while students who have low logical mathematical intelligence can be done with expository learning strategies

(3) For students who have Mathematic logical intelligence high, students' mathematics learning outcomes that follow contextual learning strategies are higher than those that follow an expository learning strategy. Thus, to further optimize mathematics learning outcomes students who have high mathematical logical intelligence can be done with contextual learning strategies, and

(4) For students who have low mathematical logical intelligence, the results of mathematics learning students who follow expository learning strategies are higher than students who follow Contextual learning strategies. Thus

to improve student learning outcomes that have low logical mathematical intelligence can be done with expository learning strategies. Selection of appropriate learning strategies by considering the mathematical logical intelligence of students can optimize the results of learning mathematics. Students with high mathematical logical intelligence are more relevant to be taught using contextual learning strategies whereas students with high mathematical logical intelligences are more relevant to be taught using an expository learning strategy.

References

Johnson, Elaine B. (2011). Contextual Teaching and Learning: Menjadikan Kegiatan Belajar Mengajar Mengasyikkan dan Bermakna. Bandung: Kaifa.

Trianto. (2010). Mendesain Model Pembelajaran Inovatif-Progresif, Jakarta: Kencana.

Van de Walle, John A. (2006). Matematika Sekolah Dasar dan Menengah Edisi Keenam. Jakarta: Erlangga.