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THE INFLUENCE OF PROBLEM- BASED LEARNING MODELS AND SELF-CONCEPT ON HIGHER ORDER THINKING ABILITIES (HOTS)

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This study aims to determine (1) the influence of PBL strategy on higher order thinking skills, (2) the influence of on Highe rOrder Thinking Ability, (3) to see the interaction between learning strategies and intellectual intelligence, this type of research is experimental research with design Experimental research design. The sample in this study is the IVc class as the experimental class and IVd class as the control class in Parmiyatu Wassa'adah Tembung. Data collection method is done by test, the initial test is done to classify the level of Self Concept, in this case, is done using the Quetionnaire test, then the results are divided into two levels, namely self concept high and self concept on average, always given action with the PBL model and strategy expository. Post tests are given to measure high-level thinking skills, with Mathematics questions designed by researchers following Olympic and TIMSS questions, which are then expertly Expected. The results of the high-level thinking skills test are then analyzed by prerequisite tests which include, normality test, homogeneity test, and Anava test. Based on the results of data analysis obtained a significant influence on the application of the PBL model to higher-order thinking skills than the expository strategy of fourth grade students of Parmiyatu Wassa'adah Elementary School, there is a significant influence on high self concept on higher-order thinking skills than average self concept average fourth grade students of Parmiyatu Wassa'adah Elementary School, then there is interaction between learning strategies and self concept on high-level thinking skills of class IV students of Parmiyatu Wassa'adah Elementary School.

1. INTRODUCTION

Learning targets in the 21st century encourage students to become active learners so they can search, discover, construct, process and use their knowledge so that meaningful learning will be created. The processes of active students in the 21st century have been adapted to the education system in Indonesia through the 2013 curriculum which is currently in effect with a scientific approach. The application of a scientific approach to learning is carried out by involving the activities of observing, asking, trying, reasoning and communicating. Therefore, learning conditions are directed at encouraging students to find out from various sources (observation), to be able to formulate problems (asking) rather than just solving problems (Hosnan, 2016).

The implementation of the 2013 curriculum trains students to improve high-level thinking skills or what is usually called High Order Thinking Skills (HOTS). In implementing the learning process, students' thinking abilities can be developed by enriching meaningful experiences through decision making and problem solving related to analyzing, evaluating and creating (Anderson & Krathwohl, 2015). Teachers are expected to be able to train students to improve high-level thinking skills where students are encouraged to become critical students.

Zubaidah (2016) also stated that in the 21st century teachers play the role of mentors who try to help students when they encounter difficulties in the process of constructing their knowledge and skills. Teachers need to strengthen students' intellectual curiosity, problem identification and solving skills, and their ability to build new knowledge with others. In order for this to happen, teachers need to be systematically prepared to design effective learning. So it is necessary to apply an appropriate learning model so that it can facilitate students to improve their ability to think HOTS (Hodiyanto, 2018; Jailani & Retnawati, 2016). By implementing a learning model that helps students interact and

emphasizes student-centered learning by using unstructured problems and having many problem solutions, it can potentially trigger students to become accustomed to working on questions that fall into the HOTS category (Tarmizi & Bayat, 2012).

Problem-based learning (PBL) is a problem-based learning model chosen by mathematics teachers as the best solution for improving students' low problem-solving, reasoning, critical thinking and creative abilities (Du, Emmersen, Toft, & Sun, 2013). Problem-based learning requires a thinking process to find relationships between principles and concepts obtained from learning to solve problems (Seyhan, 2014). During the problem solving process, students will be trained in thinking and get used to solving problems, especially HOTS-based problems, Suradijono (2004: 71) Problem Based Learning (PBL) is a learning environment that uses problems to learn. That is, before students learn something, they are required to identify a problem, either a real problem or a case study. Problems are posed in such a way that students discover the learning needs necessary for them to solve the problem.

(Departemen Pendidikan Nasional, 2003: 3) states that national education aims to develop the potential of students to become human beings who believe and are devoted to God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent and become democratic citizens. and be responsible for making the nation's life more intelligent. However, in the learning process, teachers will be faced with a number of diverse student characteristics. There are students who can take or participate in teaching and learning activities smoothly, and on the other hand there are also students who have difficulty participating in these activities. Mathematics is a subject that is considered difficult and even scary for some students. Learning difficulties faced by students can be caused by several factors, namely internal factors (factors from within the child himself) such as talent, interest, motivation, self-concept, etc., as well as external factors (factors from outside the child), namely factors from within the home. and the surrounding environment. Self-concept is an internal factor and is also a very important foundation for a person's success. Not only success in the academic field, but what is more important is success in life. Because self-concept is a person's view of himself.

Self-concept is one of the most important things that can influence a person's life. There are several definitions of self-concept, including according to Desmita (2009: 164) states: "self-concept is an idea about oneself which includes a person's beliefs, views and assessment of himself. Self-concept consists of how a person sees himself as a person, how a person feels about himself, and how a person wants himself to be as human as he hopes to be. Based on the explanation above, the researcher concludes that even though the teacher has tried to facilitate students in learning, students still have to have confidence in themselves that they are also capable of achieving a goal, thus the writer is interested in conducting research entitled "The Influence of the Problem Based Learning Model and Self-Concept on Higher Order Thinking Abilities (HOTS) of Elementary School Students".

2. METHOD

This type of research is experimental research with design This experimental research design uses a 2x2 treatment by level design. In the design the independent variable is formed into two sides, namely the first side of the variable treatment with PBL model and expository learning strategy (A), the second side is attributed independent variable that is self concept classified into two, namely high and low (B). the sample in this study is the IV^C class as the experimental class and the class and IV^d class as the control class. Data collection method is done by test, the initial test is done to classify the level of self concept, in this case, is done using the Questionnaire test, then the results are divided into two levels, namely high self concept and self concept on average, always given action with the PBL model and strategy expository. posttests are given to measure high-level thinking skills, with Mathematics questions designed by researchers following Olympic and TIMSS questions, which are then expertly Expected. The results of the high-level thinking skills test are then analyzed by prerequisite tests which include, normality test, homogeneity test, and Anova test.

3. RESULT AND DISCUSION

Descriptive Statistics

Dependent Variable:HOTS

SC	Learning Strategy	Mean	Std. Deviation	N
1 High	1. PBL	83.29	11.832	13
	2. Expository	77.43	9.294	7
	Total	160.72	21.126	20
2 Average	1.PBL	74.18	11.255	11
	2.Expository	71.00	6.871	15
	Total	145.18	18.126	26
Total	1.PBL	154.29	20.473	24
	2.Expository	151.61	16.165	22
	Total	305.9	36.638	46

Dependent Variable:HOTS

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	3240.218[a]	3	1080.073	29.746	.000
Intercept	235414.327	1	235414.327	6483.452	.000
SC	2958.848	1	2958.848	81.488	.000
Learning Strategy	754.282	1	754.282	20.773	.000
IQ * Learning Strategy	.302	1	.302	.008	.012
Error	1525.021	42	36.310		
Total	269095.000	46			
Corrected Total	4765.239	45			

a. R Squared = ,680 (Adjusted R Squared = ,657)

Based on the results of the analysis of variance (ANOVA) of the two pathways above, the hypothesis testing can be explained as follows:

First Hypothesis

The difference in higher-order thinking skills in students taught with the PQ4R learning strategy is higher than that of students taught with expository learning strategies.Based on the ANOVA calculation above, it can be seen that the significant value of data is 0.000 <significant value of 0.05, thus H_0 is rejected and the alternative hypothesis H_1 is accepted, meaning that the hypothesis states that there is a difference in higher-order thinking skills between the two groups of students taught with the PBL model and taught with the expository learning strategy as a whole proved to be significant.

Second hypothesis

Differences in higher-order thinking skills in students who have an high and average level of intellectual intelligence.

Based on the ANOVA calculation above, it can be seen that the significant value of data is 0.000 < significant value 0.05, thus H_0 is rejected and the alternative hypothesis H_1 is accepted, meaning that the hypothesis states that there is a difference in high-level thinking ability between the two groups of students who have self concept high and students who have average self concept have proven to have a significant influence.

Third hypothesis

The interaction between learning strategies and intellectual intelligence on higher-order thinking skills (INTAXB). ANOVA calculation results can be seen that the results of testing the third hypothesis presented in ANAVA table obtained F value of IQ * SP = 0.008 with a significance value of 0.012< 0.05 or H_0 is received based on value, thus it can be stated that there is significant interaction effect between learning strategies and self concept of students towards higher-order thinking skills.

Discussion

Based on the research results, it is proven that there is a significant influence between learning models on higher order thinking abilities (HOTS). This shows that the results of HOTS thinking abilities will increase with the PBL learning model. Choosing a learning method that is fun and not boring can make students explore themselves more quickly to understand the lesson. The PBL learning model aims to improve HOTS thinking skills, this research is in line with previous research, namely research conducted by (Nurul Hikmah: 2013). The results of this research reveal that the PBL model and the application of self-concept have an influence on creative thinking abilities, creative abilities are one part of higher order thinking abilities (HOTS).

4. CONCLUSION

Higher-order thinking skills of students taught with PBL model are higher than high-level thinking skills taught by expository learning strategies. Self concept above average has a significant effect on higher-order thinking skills than students who have average self concept. There is significant interaction between learning strategies and self concept on higher-order thinking skills.

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