

THE INFLUENCE OF STUDENT CREATIVITY AND REASON SKILLS ON THE CLASS VIII ALGEBRA TESTING RESULTS OF SMP STUDENTS

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ABSTRACT

The lack of students' creativity and reasoning ability in the mathematics lesson in Grade VIII of State Junior High School 3 Kasihan Bantul (SMP Negeri 3 Kasihan Bantul) of the academic year 2016/2017 is due to frequent students. They are reluctant to ask, even though the explanation of mathematics subject material presented by the teacher has not been understood. This study aims to determine whether or not there the influence of students' creativity and reasoning skills on the algebra test result of year VIII students of SMP Negeri 3 Kasihan Bantul Semester 1 2016/2017 academic year. The population in this research, there are five classes. The samples are taken two classes by random sampling technique and VII C as a first-class and VII D as a second class. Techniques for collecting data use non-test and test. The research instrument is a reasoning skill reasoning test, multiple-choice learning test, and student creativity questionnaire. Instrument-tests include validity tests, different capacity, and reliability. Techniques for analyzing data use prerequisite test analysis consist of normality test, homogeneity test, and hypothesis testing use t-test and LSD test. The results show that (1) Thereof $F_{\text{count}} = 4,169237$ and $F_{0,05(1,56)} = 4,016$, with $F_{\text{count}} > F_{\text{table}}$ on the significant level 5%, $df : v_1 = 1$ and $v_2 = 56$. Based on t-test calculation obtained $t_0 = 1,0792583$ and $t_{(0,05)}(58) = 1,67193$ which mean $t_0 < t_{(0,05)}(58)$ it can be concluded that the creativity of low students has more influence on learning outcomes. (2) Thereof $F_{\text{count}} = 15,9874$ and $F_{0,05(1,56)} = 4,016$, with $F_{\text{count}} > F_{\text{table}}$ on the significance level 5%, $df: V_1 = 1$ and $V_2 = 58$. Based on t-test calculation obtained $t_0 = 11,683722$ dan $t_{(0,05)}(58) = 1,67193$ that means $t_0 > t_{(0,05)}(60)$ it can be concluded that high reasoning ability has more influence on learning outcomes. (3) Thereof $F_{\text{count}} = 65,65621$ and $F_{0,05(1,56)} = 4,016$, with $F_{\text{count}} > F_{\text{table}}$ on the significance level 5%, $df: V_1 = 1$ and $V_2 = 56$. Based on the LSD test and t-test the results obtained are low student creativity combined with high reasoning ability influence on learning outcomes

Keywords: The Influence, Students' Creativity, Reasoning skills.

INTRODUCTION

Indonesia is a country that is developing into a developed country. One of the government's efforts to achieve this progress is to provide education to the nation's children. With education, the nation's children can have a variety of good knowledge, skills, and personalities, so that quality human resources are formed and highly competitive. This effort is considered important because students are the heirs of the nation who will run the leadership of the Indonesian nation. Good knowledge, skills, and personally acquired through education make provision in achieving success, especially the future success of the Indonesian nation. Learning outcomes are a picture of the quality of educational outcomes obtained from teaching and learning activities. Also, achievement reflects the level of understanding and ability of students in taking education.

One of the subjects that contributed significantly to the development of human resources in mathematics, there is not a single field of science that does not involve mathematics, as history tells us that mathematics plays a role in building human clash of all time (Sukardjono: 2007). Erman Suherman et al. (2003: 60) states that especially for students, mathematics is needed to understand the fields of science such as physics, chemistry, architecture, pharmacy, geography, and economics. However, after the researchers made observations, students' learning outcomes in mathematics subjects had not achieved

satisfactory results. Many hours of mathematics are expected to improve mathematics learning outcomes, making students feel bored and bored. Likewise, it is often found students who are reluctant to ask questions, even though the explanation of mathematics subject matter delivered by the teacher is not yet understood. The totality of this behavior achieves in mathematics subjects low. Based on the results of a study conducted by researchers, mathematics learning outcomes on the results of the Final Examination Semester class VIII SMP N 3 Kasihan Bantul are still low and under the Minimum Completeness Criteria (MCC), which is 75.

Besides that, the low performance of students in mathematics class VII SMP N 3 Kasihan Bantul is influenced by the factor of reasoning and creativity. This is known from when students work on problems, and they cannot analyze the contents of the questions and what is asked of the problems. Simultaneously, the weaknesses of students' creative abilities are still unable to solve a difficulty in mathematics. Erman Suherman (2003: 55) said that mathematics education in Indonesia is known as school mathematics, which means mathematics taught in schools. The process of organizing mathematics lessons in schools is regulated in the Education Unit Level Curriculum. Education Unit Level Curriculum suggests that the most important aspect of learning mathematics is the development of student's reasoning abilities. Orientation: The ability of mathematical reasoning is directed at students' ability to understand and solve math problems. In addition to the ability to reason also requires creativity. With the creativity in students will be able to explore and solve difficulties in mathematics.

Through a combination of mastery of reasoning ability and creativity of expectations, students can have excellent abilities in understanding concepts and creative problem-solving. Reasoning and creative skills are useful when solving problems in the learning activities of mathematics, the scope of personal life, and the wider community. The problem in this research is: 1) The results of mathematics lessons in SMP Negeri 3 Bantul students in class VIII are still low. 2) Often found students who are reluctant to ask questions. 3) Lack of student reasoning abilities. 4) The ability of creativity is still low in each student.

The objectives of this study are 1) To find out whether there is an influence of student creativity on mathematics learning outcomes in class VIII SMP N 3 Kasihan Bantul odd semester of the 2016/2017 school year. 2) To determine whether there is an influence of reasoning ability on mathematics learning outcomes in class VIII SMP N 3 Kasihan Bantul odd semester of the 2016/2017 school year. 3) To determine whether there is an influence of student creativity and reasoning ability on mathematics learning outcomes in students of class VIII SMP N 3 Kasihan Bantul odd semester 2016/2017 school year

Mathematics is a subject that has interrelated material. So that in learning mathematics must understand the material well before continuing on the discussion of the next material, as revealed by Hamzah B. Uno (2011: 130) that the essence of learning mathematics is mental activity to understand the meaning and relationships and symbols, then it applies to real situations. According to Hamzah B. Uno (2011: 139), student learning outcomes in mathematics are the results of activities in learning mathematics in the form of knowledge as a result of the treatment or learning done by students. Alternatively, in other words, student learning outcomes in mathematics subjects are what students learn from the process of learning mathematics.

Students' student creativity with other students can vary due to differences in experiences gained by students during school, family, and in the community. Experience and knowledge allow a student to be more creative than students who do not have much experience and knowledge. Experience and knowledge enable students to be more creative compared to someone who does not have much experience. Creativity can be realized anywhere and by anyone regardless of age, gender, socioeconomic conditions, or a certain level of education. In essence, student creativity is owned by everyone and can be improved so that it needs to be developed and fostered early on. Creativity is a complex field of study, which gives rise to various opinions. The difference lies in how creativity is defined. According to Utami Munandar (1992: 47): creativity is the ability to make new combinations, based on existing data, information, or elements. In a sizeable Indonesian Dictionary, the word ability comes from the word capable, which means power, able to do something or can. Then get an affix so that the word ability means the ability to

do something. In other words, ability means a person's ability to do something. Reasoning can be defined as the process of determining new relationships to determine conclusions based on facts. According to Fadjar Sadiq (2004: 2), the reasoning is an activity, a process, or an activity of thinking to draw conclusions or make a new statement that is true based on several statements whose truth has been proven or assumed before.

METHODS

This research is non-experimental research using a 2 x 2 factorial design. According to Suparman (2015: 1), non-experimental research is research conducted by studying existing; in other words, researchers do not exercise control but collect data. In this research design, it has two factors, and each factor has two levels. These two factors are student creativity (factor A) and reasoning ability (factor B). Student creativity has two levels, namely, high level (1) and low level (2). Simultaneously, the reasoning ability has two levels: a high level (1) and a low level (2). The population in this study consisted of 5 classes. Samples of 2 classes with a total of 60 students were taken by random sampling technique for classes obtained by class VIII C as class I and class VIII D as class II. Data collection techniques used non-tests and tests. The research instrument was in the form of a reasoning ability test in the form of question matter. It was a learning achievement-test in the form of multiple-choice and student creativity questionnaire in the form of multiple choice. Instrument-testing includes validity, differentiation, and reliability. Data analysis techniques used analysis prerequisite tests, including normality and homogeneity tests, followed by hypothesis testing using one-party t-tests and LSD tests. Research hypothesis testing uses the first hypothesis test and the second hypothesis. The first and second hypothesis tests using a one-party T-test are performed to determine which is better the high or low level of a factor in student mathematics learning outcomes. At the same time, the third hypothesis test uses the LSD test to determine which is more influential on student mathematics learning outcomes with a combination of factors of student creativity and reasoning ability.

RESULTS AND DISCUSSION

From the normality test that has been done in the sample class combined with the factors of student creativity and reasoning ability, the following results are obtained:

1. In the first treatment can be seen $\chi^2_{\text{count}} = 0,4328$ and $\chi^2_{\text{table}} = 3,8415$, consequently $\chi^2_{\text{count}} < \chi^2_{\text{table}}$ then H_0 is accepted, which means that the class with the first treatment has an initial ability value that is normally distributed.
2. In the second treatment can be seen $\chi^2_{\text{count}} = 0,19$ and $\chi^2_{\text{table}} = 3,8415$, consequently $\chi^2_{\text{count}} < \chi^2_{\text{table}}$ then H_0 is accepted, which means that the class with the second treatment has an initial ability value that is normally distributed.
3. In the third treatment can be seen $\chi^2_{\text{count}} = 0,2817$ and $\chi^2_{\text{table}} = 3,8415$, consequently $\chi^2_{\text{count}} < \chi^2_{\text{table}}$ then H_0 is accepted, which means that the class with the third treatment has an initial ability value that is normally distributed.
4. In the fourth treatment can be seen $\chi^2_{\text{count}} = 1,4156$ and $\chi^2_{\text{table}} = 3,8415$, consequently $\chi^2_{\text{count}} < \chi^2_{\text{table}}$ then H_0 is accepted, which means that the class with the fourth treatment has an initial ability value that is normally distributed.

Based on the information above, it can be concluded that the value of the initial ability of the sample class given the treatment of student creativity and reasoning ability has a normal distribution of data distribution.

Based on the calculation, the value of $\chi^2_{\text{count}} = 4,3037$. The table of critical Chi-Square values with a significant level of 5% and degrees of freedom = 3 obtained $\chi^2_{\text{table}} = 7,8147$ like $\chi^2_{\text{count}} = 4,3037$ and $\chi^2_{\text{table}} = 7,8147$. As a result, $\chi^2_{\text{count}} < \chi^2_{\text{table}}$, then H_0 is accepted, which means that both classes have the same initial capability variance (have homogeneous variance).

From the initial ability, a hypothesis test is obtained.

1. First hypothesis. Because $F_{\text{count}} < F_{\text{table}}$, $(0,0705 < 4,016)$ then H'_0 is accepted and H'_1 is rejected. So there is no influence between student's creativity on the students' initial ability scores.
2. Second hypothesis. Because $F_{\text{count}} < F_{\text{table}}$, $(1,1331 < 4,016)$, H''_0 is accepted and H''_1 is rejected. So there is no influence between reasoning ability on student learning outcomes.
3. Third Hypothesis. Because $F_{\text{count}} < F_{\text{table}}$, $(0,5046 < 4,016)$, H'''_0 is accepted and H'''_1 is rejected. So there is no influence between student creativity and reasoning ability on student learning outcomes.

So it can be concluded that there is no influence between student creativity and reasoning ability on the student's initial ability scores.

From the normality test that has been done in the sample class combined with the factors of student creativity and reasoning ability, the results are as follows:

1. In the first treatment can be seen $\chi^2_{\text{count}} = 0,4679$ and $\chi^2_{\text{table}} = 5,991$, consequently $\chi^2_{\text{count}} < \chi^2_{\text{table}}$ then H_0 is accepted which means that the class with the first treatment has the value of learning outcomes in mathematics that are normally distributed.
2. In the second treatment can be seen $\chi^2_{\text{hitung}} = 0,083$ and $\chi^2_{\text{table}} = 3,841$, consequently $\chi^2_{\text{count}} < \chi^2_{\text{table}}$ then H_0 is accepted, which means that the class with the second treatment has to value Mathematics learning outcomes that are normally distributed.
3. In the third treatment can be seen $\chi^2_{\text{count}} = 3,731$ and $\chi^2_{\text{table}} = 3,841$, consequently $\chi^2_{\text{count}} < \chi^2_{\text{table}}$ then H_0 is accepted, which means that the class with the third treatment has to value Mathematics learning outcomes that are normally distributed.
4. In the fourth treatment can be seen $\chi^2_{\text{count}} = 0,205$ and $\chi^2_{\text{table}} = 3,841$, consequently $\chi^2_{\text{count}} < \chi^2_{\text{table}}$ then H_0 is accepted, which means that the class with the fourth treatment has to value Mathematics learning outcomes that are normally distributed.

Based on the information above, it can be concluded that the sample class with the treatment of student creativity and reasoning ability has a normal distribution of data distribution.

Based on the data obtained, values $\chi^2_{\text{count}} = 0,00534$. In the table of critical values, Chi-Squared with a significant level of 5% and degrees of freedom = 2 obtained $\chi^2_{\text{table}} = 3,841$. It turns out that $\chi^2_{\text{count}} = 0,00534$ and $\chi^2_{\text{table}} = 3,841$, consequently $\chi^2_{\text{count}} < \chi^2_{\text{table}}$ then H_0 is accepted which means that both classes have a variance in the value of mathematics learning outcomes the same (has a homogeneous variance). After the t-test was carried out on the first hypothesis, it can be concluded that the creativity of students with low levels has more influence on the learning outcomes of students of class VIII SMP N 3 Kasihan Bantul in the 2016/2017 school year than on the creativity of low-level students. After the t-test was carried out on the second hypothesis, it can be concluded that reasoning with a high level has more influence on the mathematics learning outcomes of students of class VIII SMP N 3 Kasihan Bantul in the 2016/2017 school year than on high-level reasoning ability. Based on the results obtained from the LSD test and t-test in this study obtained results that low student creativity combined with high reasoning abilities affect the learning outcomes of students of class VIII SMP N 3 Kasihan Bantul in the 2016/2017 school year.

CONCLUSION

Based on the analysis of the research data and its discussion, the following conclusions can be concluded:

1. There is an influence of students' creativity on mathematics learning outcomes for students of class VIII SMP N 3 Kasihan Bantul in the 2016/2017 school year. This is indicated by the results of hypothesis testing with a significant level of 5%, and degrees of freedom $v_1 = 1$ and $v_2 = 56$ then earned value $F_{\text{count}} = 4,169237$ and $F_{0,05(1,56)} = 4,016$; as a result, $F_{\text{count}} > F_{\text{table}}$ so that H_0 rejected and H_1 accepted. Based on the t-test calculations obtained $t_0 = 1,0792583$ and $t_{(0,05)(58)} = 1,67193$ which means $t_0 < t_{(0,05)(58)}$ then H_0 is accepted, and H_1 is rejected, so it can be

- concluded that the creativity of low students has more influence on mathematics learning outcomes of Grade VII students of SMP N 3 Kasihan Bantul in the 2016/2017 school year.
2. There is an influence of reasoning ability on mathematics learning outcomes of students of class VIII SMP N 3 Kasihan Bantul in the 2016/2017 school year. This is indicated by the results of hypothesis testing with a significance level of 5% and degrees of freedom $v_1 = 1$ and $v_2 = 56$, then the value obtained $F_{\text{count}} = 15,9874$ and $F_{0,05(1,56)} = 4,016$. As a result, $F_{\text{count}} > F_{\text{table}}$, so H_0 is rejected, and H_1 is accepted. This shows that there is an effect of reasoning ability on student mathematics learning outcomes. Based on the t-test calculations obtained $t_0 = 11,683722$ and $t_{(0,05)}(58) = 1,67193$ which means $t_0 > t_{(0,05)}(60)$ then H_0 is rejected, and H_1 is accepted, so it can be concluded that high reasoning ability has more influence on mathematics learning outcomes of Grade VII students of SMP N 3 Kasihan Bantul in the 2016/2017 school year.
 3. There is an influence between students' creativity and reasoning ability on the learning outcomes of students of class VIII SMP N 3 Kasihan Bantul in the 2016/2017 school year. This is indicated by the results of hypothesis testing with a significant level of 5% and degrees of freedom $v_1 = 1$ and $v_2 = 56$, then the value obtained $F_{\text{count}} = 65,65621$ and $F_{0,05(1,56)} = 4,016$. As a result, $F_{\text{count}} > F_{\text{table}}$, so H_0 is rejected, and H_1 is accepted. This shows that there is an influence of student creativity and reasoning ability on student mathematics learning outcomes. Based on the results obtained from the LSD test and t-test in this study obtained results that low student creativity combined with high reasoning abilities affect the learning outcomes of students of class VIII SMP N 3 Kasihan Bantul in the 2016/2017 school year.

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