

Creative Thinking Ability Based on Self Efficacy on an Independent Learning Through Google Classroom Support

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Abstract

Junior high school students need to be accustomed to thinking creatively. The 2015 TIMSS results show that the creative thinking ability of junior high school students still need to be optimized. This research aimed to discuss creative mathematical thinking ability based on self efficacy on an independent learning through Google Classroom support. This research employed qualitative descriptive design. The population of this research was the students of class VIII. The subjects of the research were 6 students of class VIII selected based on three categories of self efficacy, they were: high, medium, and low. Two students were found in the high self-efficacy category, two students from the medium self-efficacy category and two students from the low self-efficacy category. The results of this research showed that students with high self-efficacy level were able to complete the four qualifications of creative thinking abilities, they were fluency, flexibility, originality, and elaboration. Students with the medium self-efficacy level were still having difficulty showing up ideas to determine the unusual way of being used. Students with low self-efficacy level had difficulty in understanding the problem so that it is only able to meet one qualification of creative thinking ability that is fluency. Based on the explanation of the results of this research, it can be concluded that no student with low self efficacy level has a high score of creative thinking ability

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INTRODUCTION

Mathematics is the center of science and technology (Li & Schoenfeld, 2019). Furthermore, mathematics is an important category used to measure the progress of a country's education (Pratama & Retnawati, 2018). Good mathematics learning outcomes will make Indonesia a developed country. However, the facts show that students experience difficulties in mathematics (Saironi & Sukestiyarno, 2017; Wijaya, Retnawati, Setyaningrum, Aoyama, & Sugiman, 2019; & Putra, Setiawan, & Afrilianto, 2020). The reason is that Indonesian students' math scores are not able of solving PISA and TIMSS questions which require reasoning, argumentation, and creativity in solving them (Wardono & Mariani, 2018).

The National Council of Teachers of Mathematics (NCTM) recommends that math study must be given to students aims to have creative thinking ability (Ahmad et al., 2018). The ability to think creatively is one of the high order thinking skills used to come up with new ideas from a non-routine problem (Rusinah, Herman, & Dahlan, 2016; Maharani & Sukestiyarno, 2017; & Puspitasari, In'am, & Syaifuddin, 2018). Creative thinking ability need to be developed by training students to think flexibility, fluency, originality, and elaboration (Mawaddah, Kartono, & Suyitno, 2015 & Ulinnuha, Waluya, & Rochmad, 2019).

According to the 2015 TIMSS survey results show that the creative thinking skills of students at the junior high school level in Indonesia are still below the national average value (Puspitasari et al., 2018). It shows that Indonesian students creative thinking ability still needs to be optimized. This coincides with previous research that students' creative thinking ability is still low and therefore need to be optimized (Sunaringtyas, Asikin, & Junaedi, 2017; Qadri, Ikhsan, & Yusrizal, 2019; Setianingsih et al., 2020; Sholihah et al., 2020; & Susanti, Waluya, & Masrukan, 2020).

Based on the results of observations at SMP Negeri 1 Rembang, it shows that the mathematical creative thinking ability of grade VIII students need to be optimized. The low ability of students to think creatively is due to several factors, namely teacher-centered learning, the unavailability of appropriate learning media, students' difficulties in understanding learning material, and the teacher only giving routine questions. Giving these questions causes students to get used to working questions with the same pattern, so that students cannot develop their creative thinking ability.

The creative ability of the student to another varies so as to require learning conditions that involve learning experiences and enable one to develop creativity (Yusnaeni et al., 2017). The selection of this learning model must also be adjusted to the condition of the Corona Virus (Covid-19) pandemic as it is today. Covid-19 affects all facets of socio-culture, health, economy and education (Pawar, 2020). This requires humans to innovate in all virtual activities to break the chain of contagion. The covid-19 plague causes a global gap in education (Onyema et al., 2020). The condition presents a challenge for teachers to change the habits of face-to-face learning trough online learning. One of the learning models that can be used to enable students to think creatively during a pandemic is online independent learning.

Independent learning is an active learning activity that is driven by a pattern to master competence in solving a problem that is developed on the competence possessed (Bahri & Sukestiyarno, 2018). The independent learning stages include planning, monitoring, and evaluating (Rachmawati, 2010). Independent learning can motivate students to learn and continuously seek information as an attempt to increase their ability (Khoo, 2018). In the independent learning process, students need to set learning objectives, make learning plans, monitor the learning process, and evaluate their learning result (Cheng, 2011). In the independent learning process, the teacher is tasked with monitoring and evaluating the

independent learning activities carried out by students. Monitoring of learning activities can be done online with the help of a Learning Management System (LMS).

The benefits of LMS are one of the ways to support the implementation of online learning. One of the LMS that can be applied in online learning is Google Classroom. Google Classroom is an application that permits the creation of classrooms in cyberspace (Iftakhar, 2016; Alim, Linda, Gunawan, & Saad, 2019; & Murtikusuma et al., 2019). The use of Google Classroom aims to facilitate communication between teachers and students, facilitate task distribution, and assessment (Al-Marroof & Al-Emran, 2018; Abidin & Saputro, 2020).

The success of learning is also affected by the student's internal factor, namely self-efficacy. Self-efficacy is defined as one's belief in a person's ability to solve a problem to achieve a particular goal of learning. Self-efficacy is one of the key characteristics that determine the success of students' learning (Kuswidyanarko, 2017; Shahzad & Naureen, 2017; & Razzaq, Samiha, & Anshari, 2018). The success of student learning is characterized by an increase in students' ability to think creatively.

Based on the background discussed, then the formulation of the research problem is how students' creative thinking ability in terms of self-efficacy in independent learning are supported by Google Classroom. The purpose of this research is to analyze students' creative thinking ability in terms of self-efficacy.

METHOD

This research employed descriptive design. The population of this research were students of class VIII SMP Negeri 1 Rembang in the odd semester of 2020/2021. The research sample was taken by random sampling, two classes were obtained as samples, namely class VIII A and VIII B. Class VIII A as the experimental class which was treated independent learning support by Google

Classroom and class VIII B as the control class which was taught by online learning.

The determination of the research subject was collected based on the self-efficacy level, then 2 students were selected from the high self-efficacy level, 2 students from the medium self-efficacy level, and 2 students from the low self-efficacy category. The data collected techniques used in this research were creative thinking ability tests, they were self-efficacy questionnaires and interviews. The qualitative data analyzed in this research were the results of the students' creative thinking ability tests and the results of interviews with students in answering creative thinking ability test questions.

RESULTS AND DISCUSSION

After the independent learning supported by Google Classroom was complete, students were given a creative thinking ability test and a self efficacy questionnaire. Giving the test of this research aims to determine the ability to think creatively and the self efficacy questionnaire aims to categorize students based on self efficacy scores. The results of grouping the self efficacy scores of class VIII A students are displayed in Table 1.

Table 1. Student Grouping Based on Self Efficacy

Self Efficacy Category	Students	Percentage (%)
High	8	25.81
Medium	16	51.61
Low	7	22.58
Total	31	100.00

Analysis of creative thinking ability based on self efficacy was divided into three groups based on the self efficacy category, namely high, medium, and low. Based on the results in Table 1, 6 students were selected as research subjects. The selection of research subjects was taken from students with the highest self efficacy score taken by 2 students, students with a self efficacy

score in the medium were taken by 2 students, and students with the lowest self efficacy score were taken by 2 students. The research subjects selected were S-06 and S-03 from the high self efficacy category, S-18 and S-31 from the medium self efficacy category, and S-27 and S-30 from the low self efficacy category.

Analysis of creative thinking ability in students with high self efficacy categories was carried out on subjects S-06 and S-03. The results of the work of the S-06 subject are presented as in Figure 1.

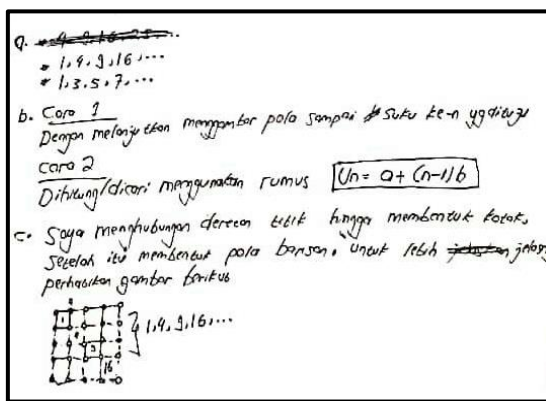


Figure 1. Subject Work Result of S-06

Figure 1 shows that S-06 can understand problems, so that it can solve all aspects of creative thinking ability. This is supported by the results of the interviews which show that S-06 can provide an explanation of the answers written on the question sheet. In addition, S-06 can also explain this can be seen in the following interview excerpt.

- P : Why isn't your answer finished?
 S-06 : What do you mean Mrs.? I think that is over Mrs.
 P : How come method 1 and method 2 are not fully explained?
 S-06 : I wrote that it was crossed out Mrs.

The results of the work of the S-03 subject are presented as in Figure 2.

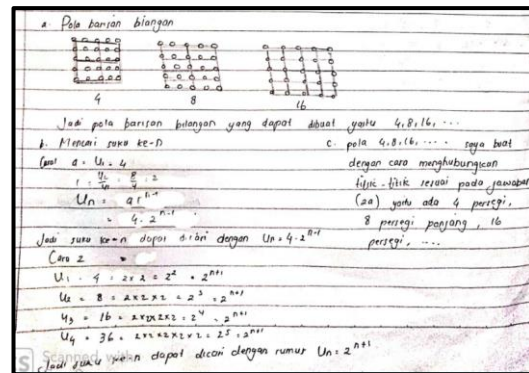


Figure 2. Subject Work Results of S-03

Figure 2 shows that the S-03 subject can understand the information contained in the questions so that they can determine the sequence of numbers according to the question request. However, the aspect of fluency cannot be answered perfectly, because students can only arrange one sequence of numbers. In addition, the S-03 subject can write two different ways than usual so that it is able to meet the flexibility and originality aspects as well as being able to detail the explanation of the methods used in arranging the sequence of numbers that have been written. This is in accordance with the following interview excerpt.

- P : Try to make another sequence of numbers.
 S-03 : 1, 2, 3, 4, ... Mrs
 P : Why don't you write it down on your answer sheet?
 S-03 : I have not thought of it, Mr
 P : Explain how you define the formula?
 S-03 : The first way I use the formula to find the nth term of the geometric sequences.
 P : Then, the second formula?
 S-03 : I tried to arrange the pattern from the first to the fourth term and then I concluded the general formula.

The results of the work are supported by the results of interview subjects S-06 and S-03. It is known that students with high self-efficacy categories have great confidence and do not give up easily when facing problems. So that students find it easier to understand the problems contained in the questions so that they do not

experience difficulties in generating new ideas and can find many solutions to a problem. Students with high self-efficacy categories can fulfill all aspects of creative thinking ability, namely fluency, flexibility, originality, and elaboration. Even though the subjects S-06 and S-03 there are still a few shortcomings in writing written explanations of answers.

Analysis of students' creative thinking abilities with the category of self efficacy is being carried out on S-18 and S-31 subjects. The results of the work of the S-18 subject are presented as in Figure 3.

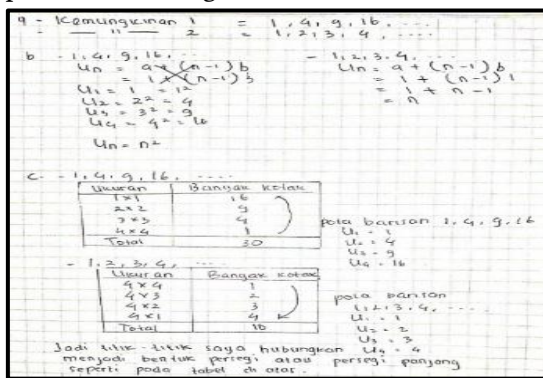


Figure 3. Subject Work Results of S-18

Figure 3 shows that the S-18 subject with the self efficacy category is still confused about finding different ways to determine the nth term. Students can only use the method commonly used to determine the nth term of the arithmetic sequence and geometric sequence. Students feel lazy trying to find formulas that are not commonly used. This is supported by the following interview results.

- P :The method you wrote was in the e-module?
 S-18 :Yes ma'am
 P :Why don't you use other methods?
 S-18 :I don't know Mrs.
 P :Have you tried finding other ways?
 S-18 :No, Mrs.

The results of the work of the S-31 subject are presented as in Figure 4.

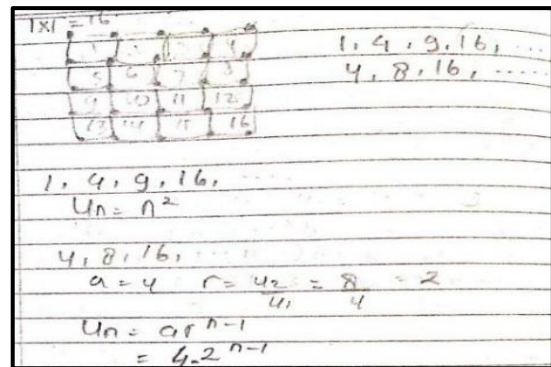


Figure 4. Subject Work Results of S-31

Figure 4 shows that the S-31 subject with the moderate self efficacy category has not been able to fulfill the four aspects of creative thinking ability. The fluency aspect can be solved by students by giving two different numbers. But on the flexibility aspect, students can only write the formula that is usually used. In addition, in the aspects of originality and elaboration, students can write down their answers. This is because students feel unsure of the ideas that appear in their minds so that some aspects are not answered. This is in accordance with the following interview excerpt.

- P : Why don't you write any other way?
 S-31 : No idea Mrs
 P : Are you trying to find another way?
 S-31 : No.
 P : Why?
 S-31 : I'm lazy to try

Subjects S-18 and S-31 with the medium self efficacy category have not been able to fulfill all indicators of creative thinking abilities perfectly. Based on the results of the study, it is known that students with the self efficacy category are having difficulties in generating new ideas in determining different methods appropriately, so that the originality aspect cannot be fulfilled. While on the flexibility aspect, students with the moderate self efficacy category are able to provide answers using one method that is usually used before so that the completion given is still incomplete.

Analysis of creative thinking ability in students with low self efficacy categories was carried out on subjects S-27 and S-30. The results of the work of the S-27 subject are presented as in Figure 5.

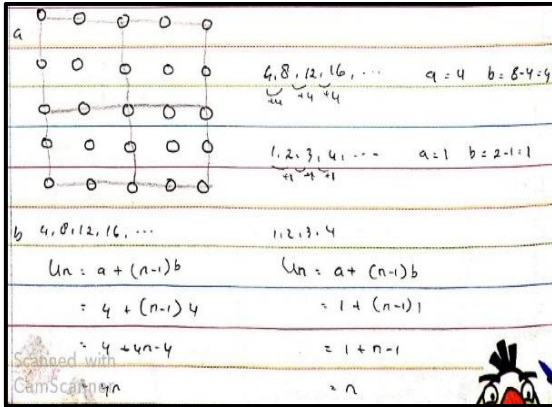


Figure 5. Subject Work Results of S-27

Figure 5 shows that students with low self efficacy categories are only able to fulfill aspects of creative thinking skills, namely fluency. Students find it difficult to understand the problems that exist in the questions so that there are problems that are not answered. The flexibility aspect cannot be fulfilled because students have not been able to write two different ways to determine the nth term of the number sequence that has been made. The formula chosen to solve the problem is the formula to determine the nth term of the arithmetic sequences that is usually taught during learning. In addition, students cannot write a formula to determine the nth term that is different or comes from their own findings so that the originality aspect cannot be resolved. In the elaboration aspect, students cannot specify the answers asked by the questions. This is supported by the following interview.

- P : Did you answer question 2c?
- S-27 : No Mrs.
- P : Did you forget to answer?
- S-27 : No Mrs.
- P : So what?
- S-27 : Because I'm confused about writing the explanation, Mrs.

The results of the work of the S-30 subject are presented as in Figure 6.

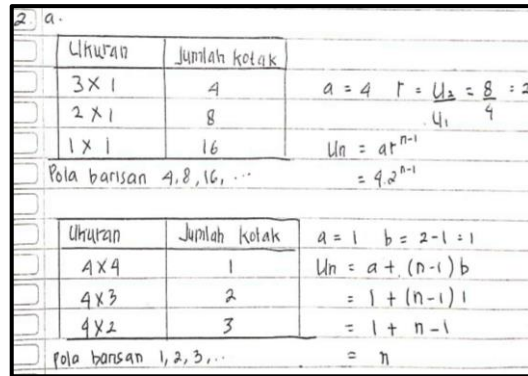


Figure 6. Subject Work Results S-30

Figure 6 shows that the creative thinking ability of the S-30 subject is not much different from that of the S-27 subject. This can be seen in the work of the S-30 subject which is only able to solve the fluency aspect smoothly. The other three aspects of thinking abilities cannot be fulfilled by the S-30 subject. This is supported by the following interview.

- P : Why didn't you answer all the questions?
- S-30 : I can't
- P : No ideas or not trying?
- S-30 : No ideas ma'am
- P : Have you tried trying?
- S-30 : Lazy to try

Meanwhile, S-27 and S-30 subjects with low self efficacy tend to be less confident, lazy, and easily give up on facing a problem. In addition, students with low self efficacy categories have difficulty understanding the problems contained in the questions, so that students have not been able to solve existing problems optimally. Based on this, the S-27 and S-30 with the low self efficacy category have not been able to fully solve aspects of creative thinking abilities. The aspect of creative thinking ability that can be achieved by students with the low self efficacy category is fluency.

Based on the results of student work on independent learning supported by Google Classroom, it is analyzed on each aspect of creative thinking abilities. The results of the analysis on each aspect of creative thinking ability can be seen in Table 2.

Table 2. Analysis of Creative Thinking Ability on Each Aspect

Aspects of Creative Thinking Ability	Average
Fluency	3.90
Flexibility	2.61
Originality	0.74
Elaboration	2.97

Based on Table 2, it is known that most students are capable to answer aspects of fluency and elaboration easily, although there are still some students who are not maximal in giving answers. On the aspects of flexibility and originality, students find it difficult to complete. This is because students only provide answers according to the formulas that have been studied previously. However, this study shows that students with high, medium, and low self efficacy categories alike experience difficulties in completing aspects of originality. This can be seen in Table 2 which shows that the originality aspect gets the lowest score. These findings are different from the results of research by Novianti & Hidayat (2020) have concluded that the aspect of creative thinking ability that has the lowest score is elaboration. In addition Ratnaningsih (2017) concluded that students experienced many errors in answering aspects of sensitivity, flexibility, and originality.

In this research, students with high self efficacy could fulfill all aspects of creative thinking ability, while students with low self efficacy on average could only fulfill the fluency aspects. This is because students with high self efficacy are more enthusiastic about taking tests of mathematical creative thinking ability. In line with this research from Arifin et al., (2018) & Pasandaran & Rusli (2016) students who have light self efficacy level do not feel afraid, doubtful and embarrassed to submit opinions while those who have low self efficacy do not have the enthusiasm to do the problem.

Based on the explanation of the results of this research, it can be concluded that no student with low self efficacy level has a high score of creative thinking ability. This is because students

with low self efficacy categories are lazy to try the exercises given so that they are not accustomed to working on questions that are in accordance with aspects of creative thinking ability. In line with Nadia, Waluyo, & Isnarto (2017) who concluded that students with heavy self efficacy level have difficulty bringing up abstract ideas. Arifin, Trisna, & Atsnan (2018) argued that students with high self efficacy do not feel afraid, doubt, and ashamed to argue. In addition, students with high self efficacy feel confident that they can solve the problems given (Ahmad, 2013 & Faozi et al., 2020).

This is in line with the opinion of Sunaryo (2017) regarding the use of self efficacy, which is to help someone in making choices, efforts to progress, persistence and persistence in facing difficulties, degrees of anxiety or calm, and maintaining tasks. Wulansari et al. (2019) states that self efficacy has a positive influence on the achievement of mathematics achievement that can be achieved by students. If students do not have good self efficacy, students will feel hesitant about working on problems in mathematics. In addition, research from Nadia et al. (2017) shows that students with low self efficacy still have difficulty solving a problem by expressing their abstract ideas.

CONCLUSION

According the results and discussions, it showed that students of the high self efficacy level were capable of fulfilling all four qualifications of creative ability, they were fluency, flexibility, originality, and elaboration. Students at the medium self efficacy level were capable of fulfilling qualifications of creative thinking, they were fluency, flexibility, and elaboration. Even though they were writing down the student's answers, there were still deficiencies that are not perfect. Meanwhile, students with low self efficacy level was only capable of fulfilling the qualification of creative thinking ability, namely fluency.

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