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***Abstract*:** Online trading arithmetic is a new learning that is used to improve students' creative thinking skills in solving mathematics higher order thinking skills problems. Besides, it can also improve students' entrepreneurship skills. The learning process online trading arithmetic uses several market place applications such as Shopee, Bukalapak, and Tokopedia in which many online sellers offering the same item at different price. In addition, there are many possibilities to change the price of an item so students are interested in getting the best price for maximum profit. This research aimed to determine the differences of students' level of creative thinking in solving mathematics Higher Arithmetic Order Thinking Skills (HOTS) problems after the learning of online trading arithmetic. This research employed a descriptive method with a qualitative approach. The research subjects were junior high school students consisting of 20 students which was divided into two groups; the control and experimental groups. The control group received regular arithmetic learning (control class) while the experimental group received online trading arithmetic (experimental class). The results of this research indicated that: (1) the level of students' creative thinking skills in solving mathematics HOTS questions in the experimental group showed the majority of students are in the creative category, while in the control group was less creative; (2) the metacognitive level of the majority of students at MTs Miftahul Huda Muncar Banyuwangi was at level 3 (aware use) for the experimental group while it was at level 2 (aware use) for the control group; (2) the result of statistical analysis showed the significance value of Sig. (2-tailed) was 0.00 < 0.05; it can be concluded that the implementation of online trading arithmetic learning had a significant effect on students' creative thinking skills; moreover, (3) there was an effect of the students' metacognition level on their creative thinking abilities, which indicated that the higher the students' metacognition level, the higher their creative thinking level.

1. Introduction

Mathematics is a learning subject which is used widely in various aspects of life; therefore it plays an active role in the development of education. An education will develop if the learning process is improved to make the students has creative and innovative abilities in utilizing information and technology, as well as being collaborative. According to Tohir, Maswar, Atikurrahman, Saiful, & Pradita, education is a conscious attempt to educate people so that they are able to think wisely and thoughtfully [1]. Mathematics learning in the industrial revolution 4.0 era aims to shape someone's mindset to be able to think critically, creatively, communicatively, and collaboratively. Therefore, he

or she is able to help actualizing 21st century skills that is learning which demands students to have competence in critical and creative thinking, communication, and collaboration [2] [3].
La Moma stated that creative thinking in mathematics can be seen as an orientation or disposition about mathematics instruction, including discovery task and problem solving [4]. The activity can help students to develop more creative approach in mathematics. Krutetskii mentioned that creativity is identical to mathematics talent [4]. Furthermore, he added that creativity in mathematics problem solving is the ability in formulating mathematics problem independently, which is inventive, and new [5] [6]. Whereas, according to Nurmasari, creative thinking in mathematics and other subjects is a part of life skills that needs to be developed especially in facing the information and competitive era. The development creative activity is by involving imagination, intuition and discovery through the development of divergent and original thought, curiosity, prediction-making, and experiment [7].

In 2018, the government through the Ministry of Education and Culture provided Higher Order Thinking Skills (HOTS) questions in the mathematics test which were then responded negatively by some students who took the national exam. Most of them complained about the difficulty of the HOTS questions. Why there are so many students who have difficulty solving HOTS questions? It is because most of the students have not been able to organize their own way of thinking. They solve problems only based on exercises they often encounter. Therefore, if they get the HOTS problem, they will find it very difficult since HOTS questions require students' creativity and reasoning.

Therefore, someone's creative thinking is an essential ability in mathematics learning especially on higher order thinking skills (HOTS). According to Ariandari, higher order thinking skills elicit students to interpret, analyze, and even manipulate information to be more interesting [8]. Musfiqi defines HOTS as the thinking process involving information processing critically [9]. According to Abidin & Tohir, higher order thinking skills is a thinking activity incorporating the highest hierarchy of cognitive level of Bloom's taxonomy [10]. In the development, it covers remembering, understanding, applying that is categorized into recalling, and processing, analyzing and evaluating which is categorized into critical thinking, and creating which is categorized into creative thinking. According to Tohir, thinking about thinking, in this case, is related to the students' awareness toward their ability to develop any possible ways to be used in solving problems, or what is called as metacognition [11].

Metacognition has an essential role in monitoring and controlling someone's cognitive process in learning and thinking. Gartmann & Freiberg stated that in problems solving, there is a process of being aware and regulates thought of how students make an approach toward problems, select a strategy to find the solution, and ask themselves about the problem [11]. Metacognitive skills affect students' intelligence and their development of creative thinking. According to Saiful, Hobri, & Tohir, metacognition is a mental activity that cannot be taught by the teacher but it can be embedded into learning and training [12]. This is in line with Tohir, Susanto, Hobri, Suharto, & Dafik, stated that a good mental activity that is embedded in oneself during the learning will elicit a good thinking process, therefore, metacognition ability is closely related to students learning activities [12].

The results of a research conducted by Widiatsih, Wardani, Royhana, Djamali, & Septory, showed the effect of problem-based learning that improved teacher's creative thinking in making higher order thinking skills-based mathematics problems [14]. Research results by Zaiyar & Rusmar, revealed that students' level of creative thinking in solving HOTS problem was in the level of creative [15]. It is supported by Abidin & Tohir research which revealed the percentage of HOTS aspects covering analyzing (C4) of 88.89%, evaluating (C5) of 83.33%, and creating (C6) of 66.67% [10]. Moreover, Kholid & Lestari's research showed that students with high mathematics ability have an excellent metacognition. In contrast, students with moderate and low mathematics ability fulfill only under level 5 of the sub-indicator of metacognitive knowledge and under level 3 of the sub-indicator of metacognitive skills [11]. This is in line with the research conducted by Saiful, Hobri, & Tohir which showed that students who had good metacognitive knowledge implemented metacognitive aspect more effective and efficient, so the students who has poor metacognition find difficulty when they implement metacognitive aspects [12].

Based on the explanation above, there was no research investigating the relationship of creative thinking, HOTS, and mathematics problem solving through online trading. Accordingly, this research was conducted due to arithmetic online trading is considered as a new learning that is used to improve students' creative thinking skills in solving HOTS problems. It can also improve students' entrepreneurial skills. The learning process of online trading arithmetic uses several market place applications such as Shopee, Bukalapak and Tokopedia where there are many online sellers offering the same items at different prices. In addition, there are many possibilities to change the price of an item so students are interested in getting the best price for maximum profit. The purpose of this study was to determine differences of students' level of creative thinking in solving mathematics higher order thinking skills (HOTS) problems after the learning of online trading arithmetic.

2. Research Method

2.1 Research design and participants

This research employed a descriptive method with a qualitative approach in which the research described students' creative thinking skills in solving mathematics higher order thinking skills problems on the learning of online trading arithmetic and analyzed the improvement of the creative thinking skills. The characteristics of qualitative research covers natural background (the context of a whole), human as the instrument, the use qualitative methods, inductive data analysis, theory development based on the data, descriptive data, concerns more with the process than results, the focus determines the limitation, specific criteria for the validity of the data, temporary design, and result of a joint decision [1] [13]. This research was conducted at MTs Miftahul Huda Muncar Banyuwangi. The research subjects were 20 MTs students. A pretest was distributed to determine the level of students' creative thinking abilities. The results showed that they were divided into two groups in which each group involved ten students. Each group had students with different levels of creative thinking skills ranging from the lowest to the highest level of creative thinking so that two groups were equally formed. Furthermore, the two groups were given different arithmetic learnings, the conventional arithmetic learning (control class) was taught to the first group. In contrast, the second one was given online trading arithmetic learning (experimental class).

2.2 Data collection and data analysis

In this research, the data collection done were through (1) the test method consisting of pretest and posttest by using the higher-order thinking skills arithmetic questions and (2) interview method which was done to the students after delivering the pretest and posttest, it aimed at getting more in-depth information about their creative thinking processes in solving the problem. The theory of Miles & Huberman covering three stages was used in the process of qualitative data analysis: (1) Data Reduction: The researcher summarized the main things which were considered essential and most needed in the research to get a clearer picture and facilitate data collection; (2) Data Exposure: in this research, the data obtained were the results of students' tests, sentences, and words related to the focus of the research which was then arranged in a tabular form. Thus, the data presentation referred to a collection of information arranged systematically and it was possible to draw temporary conclusions; and (3) Drawing Conclusions: The researcher drew conclusions from the analysis results of the interview and test data [16].

3. Result and Discussion

3.1 Result

The first stage was the implementation of pretests and interviews to test the students' creative thinking skills in doing the higher-order arithmetic thinking skills; 20 students were involved randomly. The following is the pretest data of 20 MTs Miftahul Huda students.

Table 1. The list of 20 students' pretest scores

Test	Range	Minimum	Maximum	Sum	Mean		Std. Deviation	Variance
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic
Pretest	55	25	80	1000	50.00	3.591	16.059	257.895

The results of pretest revealed that the students' creative thinking skills in solving arithmetic higher-order thinking skill questions were found to be below the average; the interview also showed that most students did not understand arithmetic especially the one in higher-order thinking skills so that they worked on it carelessly.

The second stage done was dividing the students into two groups with ten students each. Each group consisted of 10 students with different levels of creative thinking skills ranging from the lowest to the highest level of creative thinking skills so that two equal groups were formed. Moreover, the two groups were given different arithmetic learnings. The conventional arithmetic learning was taught to the first group while the second one was given online trading arithmetic learning.

After having the six time-learning, the posttest and interview with each group were done to the next meeting. The following are the data on the posttest results of both groups.

Table 2. The list of posttest scores

Class	**Range**	**Minimum**	**Maximum**	**Mean**		**Std. Deviation**	**Variance**
	Statistic	**Statistic**	**Statistic**	**Statistic**	**Std. Error**	**Statistic**	**Statistic**
Pre-Test Experimental Class	50	30	80	52.50	5.439	17.200	295.833
Post-Test Experimental Class	65	35	100	67.50	6.466	20.446	418.056
Pre-Test Control Class	45	25	70	47.50	4.845	15.321	234.722
Post-Test Control Class	60	30	90	58.50	6.327	20.007	400.278

The posttest results showed that all had an increase in grades, but within a variable increase, especially the students in the control class compared with the experimental ones. Data analysis used to determine the effect of online trading arithmetic learning on the students' creative thinking skills was a prerequisite test. It was performed before the presumption test which covered the normality and homogeneity tests. The Kolmogorov-Smirnov statistic was used as the normality test, as shown in Table 3 below.

Table 3. The Normality test by using the Kolmogorov-Smirnov

Class	**Kolmogorov-Smirnov[a]**			**Shapiro-Wilk**		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
Pre-Test Experimental Class	0.158	10	0.200*	0.943	10	0.591
Post-Test Experimental Class	0.151	10	0.200*	0.970	10	0.891
Pre-Test Control Class	0.235	10	0.124	0.891	10	0.173
Post-Test Control Class	0.165	10	0.200*	0.956	10	0.735

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

As shown in Table 3, the significant value of students' creative thinking skills of the pre-test obtained in the experimental class was sig = 0.200, and the control one was sig = 0.124. In contrast, the significant value of the post-test carried out in the experimental class as sig = 0.200, and the control one was sig. = 0.200. Thus, it can be concluded that the pre-test and post-test data of both classes were normally distributed. Thus the normality test was fulfilled. Since the significance value was greater than 0.05, it means that the data on the students' connection abilities (pre-test and post-test) of both classes were normal. Thus, the parametric statistical test was further implemented to determine the effect of online trading arithmetic learning on the students' creative thinking skills. The results of the Paired Samples Test are shown in Table 4 below.

Table 4. Paired Sample Test

Test	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pre_Test - Post_Test	-15.000	6.236	1.972	-19.461	-10.539	-7.606	9	0.000

The Basis for Decision Making

1. If the sig. value (2-tailed) < 0.05, then there was a significant difference in the learning achievements between pre-test and post-test.
2. If the sig. value (2-tailed)> 0.05, so there was no significant difference in the learning achievements between pre-test and post-test.

Based on the test results, the difference in the improvement of the students' creative thinking skills in the two classes was obtained by using Paired test as its Sig. (2-tailed) 0.000 < 0.05; hence it can be concluded that there was found a difference in the average increase in the pre-test and post-test; furthermore, it also revealed that there as a significant difference found in the students' creative thinking skills between the control class which were taught by conventional arithmetic learning with the experimental class which were given by online trading arithmetic learning.

As for the results of the overall analysis, the following table 5 describes the level of students' creative thinking skills based on detailed indicators.

Table 5. Level of Students' Creative Thinking Skills

Experimental Class	**Category**	Control Class
-	Tingkat 0 (*not creative*)	30%
10%	Tingkat 1 (*less creative*)	30%
30%	Tingkat 2 (*quite creative*)	40%
40%	Tingkat 3 (*creative*)	-
20%	Tingkat 4 (*very Creative*)	-

Based on the data in Table 5 above, for the experimental class it shows that students' creative thinking skills were in the less creative category as many as 10% of the subjects, there were 30% of subjects who were in the quite creative category, there were 40% of subjects who were in the creative category, and there were 20% of subjects who were in the very creative category. Whereas for the control class it shows that students' creative thinking skills were in the not creative category as much as 30% of the subjects, there were 30% of the subjects who were in the less creative category, and there were 40% of the subjects who were in the quite creative category.

While the results of the research based on the students' metacognitive level can be explained in Table 6 below.

Table 6. Level of Students' Metacognition

Experimental Class	**Category**	Control Class
10%	Level 1 (*tacit use*)	30%
20%	Level 2 (*aware use*)	50%
40%	Level 3 (*strategic use*)	20%
30%	Level 4 (*reflective use*)	-

Based on the data presented in Table 6, it shows that most of the students were at level 3 for the experimental class and were at level 2 for the control class.

3.2 Discussion

The test results done by researchers also showed that there were some data of the students' difficulties in solving HOTS questions. The following is the analysis result of the students 'creative thinking skills and its identification on the students' metacognition abilities. The components of metacognition ability were planning, monitoring, and evaluation.

The Alternative solution to subject A.

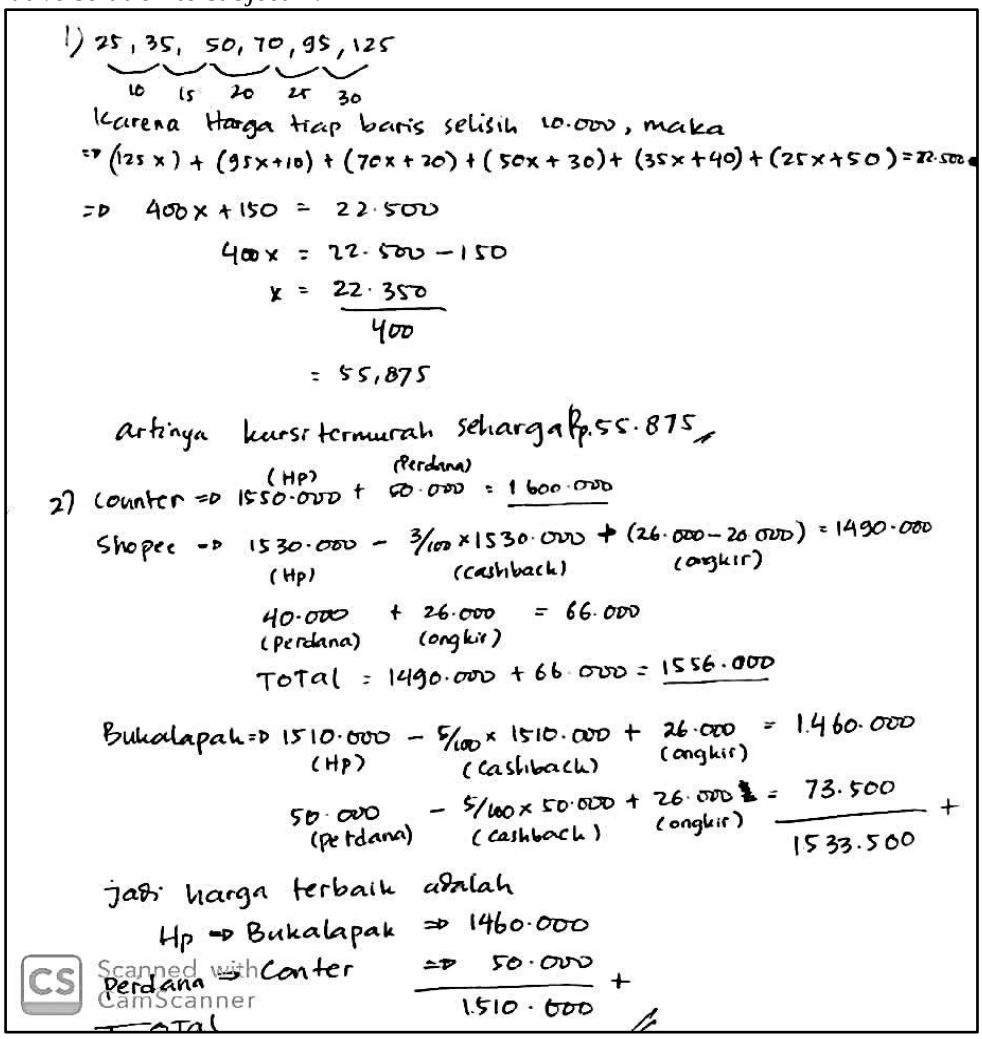

Figure 1. The Alternative solution of HOT questions to subject A

Subject A referred to a student whose creative thinking skill was in the "creative" category and level 4 of metacognition abilities. In solving the questions, Student A often thought of several ways and chose the relevant sources of information (planning). Thus, the author conducted a specific interview to him, how he found the strategy and applied it. The following is the recording script of the interview.

Researcher : What initial information did you get after reading the problems?
Subject A : Hemm…. The problems were in the form of series and arithmetic.

Researcher : What were asked from the problems?
Subject A : About ticket prices and looked for the cheapest price.

Researcher : Have the materials been taught?
Subject A : Yes… I've learned them

Researcher : Please explain the problems using your own sentences?
Subject A : In the first problem, we were asked to find the cheapest ticket price so that the committee could get a certain amount of income from the rows of seats; and in the second problem, we were asked to find the cheapest price from several online shops by estimating the cost of postage.
Researcher : After reading the problems, did you get any ideas for solving them?
Subject A : Yes, I was reminded of lines and series and social arithmetic.

Researcher : When did you get the idea? When you think about how to solve it? When you read the problems? Or in another time?
Subject A : When I read the problem carefully and repeatedly.

Researcher : Have you ever seen problem like these before?
Subject A : Yes, I have ... but not as complicated as these.

Researcher : What were your steps to solve the problem?
Subject A : First, I read the problem carefully; next, look for the type of material; then solved it.

Researcher : How many ideas did you come up with?
Subject A : Only one, sir.

Researcher : What ideas did you get? Please explain!
Subject A : Solving with lines and series and arithmetic only.

Researcher : After you solved the problems, have you checked your answers?
Subject A : Yes, I have checked it.

Researcher : How did you check your answer?
Subject A : Just checked the calculations.

Researcher : Was the checking proved that your answer was correct?
Subject A : There was something incorrect, then I fixed it.

Subject A answered that sometimes setting specific goals (planning), asking himself about the material, drawing pictures or diagrams, and asking himself whether what was read was related to what was known (monitoring) or not, concluding the material, asking himself how well he learned something, changing strategies when it fails, and re-evaluating (evaluation). Subject A answered that rarely seeking for sufficient time and determines the time needed (planning), translating information (monitoring), reviewing material, and examining strategies (evaluation). Student S.1 answered that never thinking about what was needed to learn and managing time (planning), asking himself whether he understood the problem or not, asking himself whether he learned enough or not, and making examples (monitoring). The results of this research are in line with the results of research by Ramos on thinking skills showing HOTS (Higher Order Thinking Skills) which showed that students' abilities to

do analyzing, evaluating, and creating were at a low level, this was because students found it challenging to do analyzing, evaluating, and creating processes [17]. The results of this research are supported by the results of Wulantina research which concluded that students with high abilities in the preparation stage, they identified the problems being asked well, they chose the information needed and information that was not needed in solving problems appropriately [13]. Duning stated that metacognition is a strong predictor of academic achievement. Students with adequate/high levels of metacognition showed better academic achievement than students with poor/low levels of metacognition [11]. According to Murti, this happens because metacognitive develops with age and is influenced by exercise [19].

The data in Table 5 showed that the results of this research following what Guilford has said that a person's creative thinking ability has levels, according to the works produced in the relevant field [20]. According to Edward de Bono, creative thinking can be learned, general aspects of this cognitive can be strengthened by teaching and training [21]. Meanwhile, based on the results of research by Tohir, it showed that there was a need for a particular stage to teach students how to find initial ideas when facing math Olympics questions and how to develop the right strategy based on the initial ideas obtained [13]. Therefore, there is always a need for creative and innovative learning so that students can always develop their creative thinking skills and increase their level of metacognition to a higher level.

The data in Table 6, showed that there these results were factors that affected the level of students' metacognition, namely internal and external factors. As for the results of research obtained by Alkadrie, Mirza, & Hamdani, it showed that external factor was the dominant one affecting the level of students' metacognition [22]. Meanwhile, according to Anggo, Metacognition is useful in building one's awareness of knowledge, as well as regulating thinking during the problem-solving process [11]. Therefore, the more often someone sharpens one's abilities, the higher the metacognition ability of that person, so the higher one's ability and skills to solve the problems at hand.

4. Conclusion

Based on the results of research and discussion, it can be concluded that the increase in the value of the experimental class was higher than the control class. This is also supported by the results of interviews that students in the experimental class were more eager to work on arithmetic questions with Higher order thinking skills because they felt confident that the questions were not as difficult as they had imagined. While students in the control class claimed that they did not understand the flow of arithmetic higher-order thinking skills, they had difficulty solving the problems because they felt unfamiliar with the higher-order thinking skills questions. The value of improvement in students with low pretest scores tended to be higher than students with high pretest scores. This was because students with low pretest scores only saw from the form of complex questions, so they were discouraged and felt unable to work on the problems, but after doing arithmetic learning as many as six meetings, some of these students began to recognize and have little mastery about arithmetic so that they were more confident and dared to try to solve the problem. The pretest questions were math problems that they can do easily, but after being given arithmetic learning for six meetings, they realized that arithmetic questions of higher-order thinking skills are not more than everyday problems.

Creative thinking skills in solving math problems higher-order thinking skills (hots) based on students' metacognition level, there are suggestions including: (1) creative thinking skills in solving math problems with Higher order thinking skills (hots) based on students' metacognition level would be better if tested on students by linking with learning methods; and (2) research that has been found by researchers should be able to develop more about the use with other types of higher-order thinking skills.

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