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Treffinger Learning with Collaborative Assessment in Achievement of Creative Thinking Skill and Student Mathematical Disposition

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Abstract

The aim of this study is to determine the quality of Treffinger learning model with collaborative assessment on the achievement of students' creative thinking abilities and mathematical disposition. This study uses a mixed method with concurrent embedded design. Subject of this research is grade VIII students of SMP N 36 Semarang. Data collection on mathematical creative thinking ability was using tests, data collection mathematical disposition was using questionnaires and data collection on self-assessment and peer-assessment was using assessment sheets. The quality of learning was qualitatively valued from planning stage, performing stage and assessment stage. The result of mathematical creative thinking ability test was analyzed qualitatively using mean test, comprehensive test, mean deviation test and deviation proportion test, then an improvement test is performed on the selected student. Result of this research shows Treffinger learning model with collaborative assessment on the achievement of students' creative thinking abilities and mathematical dispositions is considered well both qualitatively and quantitatively. Improvement of creative thinking abilities and mathematical dispositions on selected student have increased. The result of this research showed there was a relationship between mathematical creative thinking ability and mathematical disposition.

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INTRODUCTION

The ability to think creatively is the ability to produce many possible answers or varied ways of solving problems (Siswono, 2011). According to Eragamreddy (2013) the ability to think creatively is needed because in a variety of situations both at school and outside school students need the ability to think creatively to learn strategies to identify problems, make decisions and find solutions to problems.

The ability to think creatively of Indonesian students is in fact far from perfect. This was supported by Trends in International Mathematics and Science Study (TIMSS) in 2011 Indonesia's learning achievement was still at a low level according to international benchmarks and was ranked 40 out of 45 participating countries participating in TIMSS, under Malaysia and Thailand. Specifically, for grade 8 students, the percentage of content domains in geometry is only 20% and the cognitive domain in reasoning is only 25% (Mulis et al., 2012). This lack of reasoning ability can be caused by students' creative thinking abilities that are still lacking, because the ability to think creatively is part of reasoning. This is in line with the opinion of Krulick and Rudnick (Siswono, 2011) that reasoning includes basic thinking, critical thinking, and creative thinking.

Concerns about students' low mathematical thinking ability are also evidenced through data released by the 2018 Program for International Student Assessment (PISA), Indonesia's score is classified as low in the reading, science and mathematics category because it is ranked 74th out of 79 countries or ranked sixth out of under. Following the PISA test since 2000, in 2018 Indonesia's PISA score for mathematics is around 379 or 7th from the bottom. Indonesia is still far behind China with a score of 591 and Singapore with a score of 569 which are ranked second in the sequence (OECD, 2019).

The low positive attitude of students towards mathematics, self-confidence and student curiosity have an impact on low learning outcomes. This is in line with what was stated by Syaban (Sugilar, 2013) "At this time, the power and mathematical disposition of students has not been fully achieved". This is partly because learning tends to focus on teachers who emphasize procedural processes, exercises that are mechanistic and lack of opportunities for students to develop mathematical thinking skills. According to Wardani (2016) mathematical disposition includes aspects of self-confidence, persistence or perseverance, flexibility and openness of thought, interest and curiosity and a tendency to monitor one's own thought processes and performance.

The ability to think creatively and the mathematical disposition of students cannot develop properly if in the learning process the teacher does not actively involve students in concept formation, the learning methods used in schools are still conventional, namely learning that is still teacher-centered. Learning objectives will be achieved if the planning and methods used can affect the potential and abilities of students and success will be achieved if students are involved in the thought process. One learning model that can improve students' mathematical creative thinking is learning the Treffinger model.

According to Munandar in Isnaini and Munzir (2016) the Treffinger model is one of the few models that deals directly with the problem of creativity and provides practical suggestions on how to achieve cohesiveness, by involving both cognitive and affective at each level of this model, the Treffinger model shows mutual the relationship and dependency between the two in encouraging creative learning. Treffinger model learning is a way to learn creatively, through levels that begin with basic elements to more complex creative functions (Wirahayu et al., 2018).

Assessing student learning success, especially in this study, is the ability to think creatively and the mathematical disposition of students is not enough to rely on a single assessment in the form of paper and pencil test. Assessment (assessment) is a general term that includes procedures used to obtain information about student learning (observation, average written test implementation) and learning

progress assessment format (Uno and Satria, 2016).

Utomo (2011) states that the assessment or assessment model used should involve and be centered on students and fulfill the student's improvement and empowerment function so that assessment practices should be avoided that focus only on results, because a single assessment model (paper and pencil test) can cause inaccurate didactic decisions about mastering student competencies, both in planning, processes, and outcomes of learning. As a form of educational innovation in order to improve the quality of the process and learning outcomes, teachers should begin to consider implementing alternative student-centered assessments.

One method of evaluating student-centered learning outcomes is collaborative assessment. Collaborative assessments not only teachers but also involve students in their assessment, namely self-assessment and peer-assessment. Self-assessment according to Masrukan (2014) is an instrument filled by a person to describe his personal experience including emotional, motivational, interpersonal, and attitude characteristics. Self-assessment (self-assessment) is an assessment technique in which students are asked to assess themselves related to the status, process and level of achievement of potentials that they learn in certain subjects (Suwandi, 2010). Self-assessment is a formative assessment process as long as students reflect and evaluate the quality of their work and learning, assess the extent to which they reach explicitly stated goals or criteria, identify strengths and weaknesses in their work (Spiller, 2012).

Taras (2010) states that peer assessment in practice complements the previous assessment and as a condition is self-assessment, to complete formative assessment, students are involved in assessing the competencies of peers in the group, after conducting self-assessment activities. The activity evaluates the mastery of competencies among peers in the group. According to Chukwuyenum and Adunni (2013) peer assessment is a systematic process in peer assessment using rubric instructions in assessing performance. Willey & Gardner in Kartono (2011) stated that self-assessment and peers is suitable to be applied to student-centered learning, from the results of his research concluded that self-assessment and peers have a positive effect on student learning outcomes, which can improve learning outcomes and increase their desires to learn.

The application of collaborative assessment in learning is not intended to replace the conventional assessment method but rather as a support for the assessment that has been applied so far. Collaborative assessments can be applied to assess students' cognitive abilities and non-cognitive abilities. So that this assessment is expected to improve the process of learning mathematics.

The formulation of the problem in this study is how are the creative thinking abilities and mathematical disposition of Grade VIII students in learning the Treffinger model with collaborative assessment?

The purpose of this study was to analyze the creative thinking abilities and mathematical disposition of Grade VIII students in learning the Treffinger model with collaborative assessment.

METHOD

This study uses a type of mixed method concurrent embedded model. The mixed methods research method is a research approach that combines or links qualitative research methods with quantitative (Creswell, 2014). The concurent embedded model combination method is a research method that combines qualitative and quantitative research methods by mixing the two unevenly (Sugiyono, 2015).

This research was conducted at SMPN 36 Semarang in the academic year 2016/2017. The sampling technique used in this study is simple random sampling. The sample of this study was students VIII B as the experimental class, class VIII A as the control class and class VIII I as the pilot class. Then 6 students were selected from the results of the initial mathematical creative thinking ability of students who received high rank 2 people in the upper group, while 2 people

in the middle group and 2 people in the lower group.

Sources of data in this study are answer sheets for students 'mathematical creative thinking ability tests, students' mathematical disposition questionnaires, self-assessment and peer-assessment assessment sheets, observation sheets of student performance and student response questionnaire sheets. Data collection techniques used in this study were test, questionnaire, assessment and observation techniques. The questionnaire technique was used to obtain students' mathematical disposition data and student responses, test techniques were used to obtain students' mathematical creative thinking abilities data by using students' mathematical creative thinking abilities tests and observations to obtain more data in assessing student performance in the learning process.

The criteria used to determine whether a research instrument is appropriate is if the instrument meets valid criteria. Validated research instruments including syllabus, lesson plans, worksheets, tests of mathematical creative thinking abilities, student mathematical disposition questionnaire, self-assessment and peer-assessment, student response questionnaire, implementation of learning. The results of the validation of the research instrument are minimal, including good criteria.

The analysis of students' mathematical creative thinking ability test items used in this study was a trial covering validity, reliability, level of difficulty and distinguishing power. The trial results of 7 questions will only be used 4 of them, namely item number 1, 5, 6 and 7. This is because item number 3 is included in the category of invalid, the distinction is very poor and for questions number 2 and 4 indicators the same has been represented by another item.

Quantitative data analysis is divided into two namely initial analysis and final analysis. Preliminary analysis is taken from the results of the initial mathematical creative thinking ability test that aims to determine the average similarity of the experimental class and the control class. The initial analysis uses the test of morality and homogeneity test. The mathematical creative thinking ability of students in the experimental class and the control class is normally distributed, homogeneous and the average is the same. While the final analysis is done after learning the Treffinger model with collaborative assessment using the average test, completeness test, proportion difference test, average difference test and improvement test on selected students. Qualitative data analysis refers to the opinion of Miles and Huberman in Sugiyono (2015) namely data reduction, data presentation and drawing conclusions or verification.

RESULTS AND DISCUSSION

Treffinger Learning Model

Hightower et al., (2011) quality learning is a series of activities that can improve the achievement of student competencies. The quality of learning uses the Treffinger learning model with collaborative assessment of students' mathematical creative thinking abilities based on Danielson (2013), namely (1) planning (planning and preparation), (2) implementation (classroom environment) and (3) evaluation or assessment (professional responsibility).

The quality of learning in this study was reviewed qualitatively and quantitatively. Qualitatively quality learning if the data obtained at the planning and implementation stages of learning fall into minimal good criteria, while quantitatively quality learning if the evaluation results reach completeness and are better than the control class. The quality of learning using the Treffinger learning model with collaborative assessment results obtained from the learning planning stage obtained an average score of the results of the assessment of learning tools that is 4.16 included in the criteria well.

Learning implementation phase obtained an average total assessment of teachers in managing learning that is 92.09% included in the criteria very well. The results of the self-assessment and peer-assessment need to be utilized and acted upon. The results of the self-assessment obtained 5 indicators of achievement of student competencies 100% understood, namely indicators 1, 3, 4, 7 and 8. Indicators 5, 6,

9, 11, and 12, students who understood reached 96.9%, namely 1 student who still experiencing difficulties with these indicators. Then for indicator 2, students who understand reach 93.8%, there are 2 students who still have difficulty in indicator 2. While for indicator 10, students who understand reach 90.6%, there are 3 students who still have difficulty in indicator 10. Peer results -assessment obtained 5 indicators of attainment of student competencies already 100% understood namely indicators 1, 3, 7 and 8. Indicators 4, 5, 6, 9 and 11, students who understood reached 96.9% ie 1 student who was still experiencing difficulties in the indicators the. Then for indicators 2 and 12, students who understand reach 90.6%, there are 3 students who still have difficulty in indicator 2. While for indicator 10, students who understand reach 81.3%, there are 6 students who still have difficulty in indicator 10.

Learning assessment stage seen students' responses to learning and the effectiveness of learning. Student responses to learning reached more than or equal to 70% which gave a positive response to the learning of the Treffinger model with collaborative assessment. This shows that the majority of students assess learning that has been implemented well.

The effectiveness of learning with the control and experimental prerequisites for normal and homogeneous distribution. The effectiveness of learning is seen from the results of the posttest of students 'mathematical creative thinking abilities, namely the average test of t arithmetic = 7.192 and t table = 1.696 so that t arithmetic> t table it is shown that the average progress of students' mathematical creative thinking is more than minimum completeness criteria (65), for completeness test obtained z count value = 2,041 while z table = 1,645 so z count> z table then it was shown that 75% of students in the experimental class completed classically, for different test the proportion obtained z count = 3.776 and z table = 1.645 then it was shown that the proportion completeness of mathematical creative thinking ability of experimental class students more than the proportion of mathematical creative thinking ability completeness of control class students, for the average difference test obtained dk = 32 + 32 - 2 = 62, then obtained t count = 4.961 and t table = 1.670 so t count> t table then it can be shown that the average mathematical creative thinking ability of students in the experimental class is better than students in the control class.

Improvement test on selected students is used to find out the improvement of creative thinking ability and mathematical disposition of 6 selected students. The selection of the six students was obtained from the initial mathematical creative thinking ability test results.

The following is a recapitulation of students' Mathematical Creative Thinking improvement tests in Table 1.1.

Table 1. Recapitulation of Mathematical Creative Thinking Improvement Test

Selected Students	Pretest	Postest	Improvement Score Gain (g)	Criteria
A-21	60.71	88.24	0.70	High
A-16	60.71	85.29	0.63	Medium
A-02	39.29	73.53	0.56	Medium
A-26	46.43	82.35	0.67	Medium
A-11	14.29	64.71	0.59	Medium
A-07	10.71	67.65	0.64	Medium

Based on Table 1.1, it can be seen that all research subjects experienced an increase in mathematical creative thinking skills after learning with the Treffinger model with collaborative assessment. A-21 has increased in the high category and the others have increased in the medium category. Then to see the increase in students' mathematical disposition used also tests to increase the average normalized gain (average normalized gain) as listed in the following Table 1.2.

Table 2. Recapitulation of Mathematical Disposition Improvement Test

Selected Students	Pretest	Postest	Improvement Score Gain (g)	Criteria
A-21	70.00	83.75	0.46	Medium
A-16	61.25	73.75	0.32	Medium
A-02	56.25	72.50	0.37	Medium
A-26	60.00	75.00	0.38	Medium
A-11	58.75	72,50	0.33	Medium
A-07	73.75	76.25	0.10	Low

Based on Table 1.2 it can be seen that all research subjects have increased mathematical disposition abilities after learning with the Treffinger model with collaborative assessment. A-07 has increased in the low category and the others have increased in the medium category.

The results of the above analysis increase the ability to think creatively and mathematical disposition of students supported by research conducted by Lestari et al., (2015) shows that there is an increase in mathematical spatial ability with an average classical gain of 0.73 with high criteria in learning the Treffinger model. Research by Triwibowo et al., (2017) shows that the Treffinger learning model can improve students' mathematical creative thinking abilities with a gain index of 0.47 medium criteria.

The learning process requires a method, strategy or model in conveying material to be taught by the teacher. The learning process will never be created without the existence of a model or method that regulates the course of learning. The results showed that the quality of learning with the Treffinger model was in the good category, this is in line with research conducted by Silfiana et al., (2016) the results of the study showed that learning using the Treffinger model with a good quality scientific approach.

The implementation of Treffinger learning model with collaborative assessment becomes the teacher's infrastructure in improving students' mathematical creative disposition and thinking abilities. Sugilar (2013) students' creative thinking ability cannot develop properly if the teacher learning process does not actively involve students in concept formation, the learning methods used in schools are still conventional, namely learning that is still teacher centered. Therefore, teachers need effective learning in improving students' mathematical creative thinking abilities.

The quality of learning qualitatively in this study was measured from 3 stages, namely (1) the planning and planning stages, the results of the assessment of the validator obtained an average value for the lesson plans, worksheets and tests of mathematical creative thinking abilities included in the minimal good category. Based on these results it can be concluded that learning is appropriate for use in research. (2) the implementation stage (classroom environment), the measurement of the quality of learning at the implementation stage can be seen from the observation sheet of the quality of learning and student activities on learning. The results obtained that the average quality of student observations and activities in learning included in the category of minimal good, then at the fifth meeting conducted Self and Peer Assessment. (3) evaluation / assessment stage (professional responsibility), qualitative assessment of learning is carried out by giving questionnaires to students' responses to the learning that has been done. The results obtained that students gave a positive response to learning reaching more than or equal to 70%. This shows that the majority of students assess learning that has been implemented well.

The quality of quantitative learning in this study aims to find out that the proportion of mathematical creative thinking ability of experimental class students who reach mastery value 65 exceeds 75% and the average mathematical creative thinking ability of experimental class students is better than the mathematical creative thinking ability of control class students. The results of the average test show that the average mathematical creative thinking ability of students in learning the

Treffinger model with collaborative assessment is more than minimum completeness criteria. Then the results of completeness test that classical learning completeness on the average value of students' mathematical creative thinking abilities in the experimental class taught by learning the Treffinger model is achieved. Then the results of the different proportions test showed that the proportion of students' mathematical creative thinking completeness in Treffinger model learning with collaborative assessment was more than the proportion of mathematical creative thinking completeness in expository learning. Then the results of the average difference test that the mathematical creative thinking ability of students in the experimental class is better than students in the control class. The results of this study are in line with Ndiung et al., (2019) that the Treffinger learning model has a significant influence on students' creative thinking skills.

The results of the improved test on selected students, all research subjects experienced an increase in mathematical creative thinking skills after learning with Treffinger's model with collaborative assessment. A-21 has increased in the high category and the others have increased in the medium category. Then, to increase the ability of mathematical disposition in selected students, all research subjects have increased after being given learning with the Treffinger model with collaborative assessment. A-07 has increased in the low category and the others have increased in the medium category.

The results of the quality of learning both qualitatively and quantitatively conclude that the class implementing Treffinger learning models with good quality collaborative assessments, this is supported by research conducted by Maulana et al., (2019) the results of the study indicate that the quality of the Treffinger learning model has a good category. Fikriya et al., (2018) the results of the study showed that the Treffinger learning model had good qualities in improving students' adaptive reasoning abilities. Ayuningsih et al., (2019) the results of his study showed that students who took Treffinger learning were better than students who took conventional learning. Muhaiminu and Nurhayati (2016) in their research showed that the Treffinger learning model can improve student learning outcomes and there is an increase in cognitive, affective and psychomotor achievement in students and this model gets a positive response by students.

Mathematical Creative Thinking Skill

Data on students' mathematical creative thinking skills were obtained by analyzing test worksheets and interview results. The analysis was conducted on 6 students each taken by two students from the upper group namely students with code A-21 and A-16, students A-02 and A-26 in the middle group and students A-15 and A-31 in the lower group. Mathematical creative thinking abilities of students are analyzed based on predetermined indicators, namely fluency, flexibility, originality and elaboration.

Indicators of fluency of top group students can be said to be very good. Selected sis the average score obtained is the maximum score. Also seen in the results of the process he was able to work on the problem with time efficiency and obtain correct answers. The results of the interview found that he was able to explain the steps / ideas of the process and answer each of the researchers' questions smoothly. Students in the middle group in the process of searching for the base area incorrectly wrote down the formula for the area of the trapezoid, but in the process and the results were correct. The lower-class students mistakenly wrote prism height and base height, but the process was correct.

Indicator of flexibility of top group students can be quite good. He was able to provide two ways of settlement, only that there was a slight error in finding the area of the base. The results of the interview found that he was able to explain the workmanship and answer the researcher's questions well, he understood how to solve them but there was little difficulty in explaining the area of the base in finding height. Middle group and lower-class students only use one method, in the process there are obstacles in understanding the formulas used to find the surface area of the pyramid.

Indicator of authenticity (originality) of top group students can be said to be good, he did not

experience significant difficulties in solving the problem and get the maximum score. The results of the interview found that he was fluent in answering and explaining the results of the process. Middle group and lower-class students can be quite good. The results of the process are seen to be able to assume the size of a triangular base of 3 cm and a height of 4 cm, only that there is a slight error in writing the prism volume formula.

The elaboration indicator of top group students can be said to be good. The results of the process can provide 2 possible answers with a comparison that has been given. The results of the interview found that he was fluent in answering and explaining the results of the process. The middle group student can calculate the height of the prism well, it's just that he hasn't written down the volume of the prism. The lower class students in the process are only able to give 1 possible answer and he has difficulty in finding the height and volume of the prism but has been able to think of the length and width of the given comparisons which in the process has not been completed. In line with the research of Kim et al., (2019) that creative problem-solving programs have a positive impact on improving creativity and character.

Mathematical Disposition

The mathematical disposition of students in this study is seen from 4 prominent indicators, namely confidence, flexibility, willingness and interests, curiosity, student meeting. The selection of indicators is based on the results of the questionnaire and observations of students' mathematical dispositions.

Confidence students from the observations show that most students have pretty good self-confidence, dare to ask things they don't know or are not clear yet, not a few of them can express their opinions in front of the class then when the discussion takes place in part of them can exchange opinions and sometimes ask the teacher directly if there are things that are asked. The results of the questionnaire as a whole students on indicators of confidence are in the medium category with an average () = 78.28, standard deviation (s) = 7.79 with $\bar{x}+s=86,07$ and $\bar{x}-s=70,49$.

Flexibility of students from observations shows that some students have been able to provide answers in a unique way, can provide an alternative process of answers that are slightly different from the teacher, but the resulting answer is correct. Then not a few of those who try to do the problem using more than one way. Results of the questionnaire Overall students on the indicator of flexibility (Flexibility) are in the medium category with an average () = 76.56, standard deviation (s) = 7.46 with $\bar{x}+s=84,03$ and $\bar{x}-s=69,10$.

Willingness of students from observations shows quite high. The average student in the class prepares learning tools such as books, worksheets that they always carry at each meeting. They can discuss in each group to work on the worksheets assigned by the teacher. Approximately 80% of students are always present at each mathematics learning meeting, the rest there are those who can not participate in learning even then because of illness or permission not absent. The results of the questionnaire as a whole of students on the Willingness indicator are in the medium category with an average () = 72.27, standard deviation (s) = 10.40 with $\bar{x}+s=82,67$ and $\bar{x}-s=61,83$.

The results of observations of interest, curiosity, and the ability of students to meet shows good results. Some of them can find the right strategy and can find the right answer for each given problem. However, some of them have not been able to find the right strategy to answer every question given, but they care and respond back when there are among their friends who have different ways or strategies. The results of the questionnaire as a whole of students on indicators of interest, curiosity, meeting ability of students are in the medium category with an average () = 73.83, standard deviation (s) = 8.32 with $\bar{x}+s=82,14$ and $\bar{x}-s=65,51$. In line with the research of Samosir and Fuady (2018) that learning the Treffinger model can improve students' mathematical disposition.

Creative Thinking and Mathematical Disposition on Treffinger Learning Model

Wardani (2011) in his research stated that the disposition of mathematics is a prerequisite in achieving mathematical creativity. Mathematical disposition includes a genuine interest in learning mathematics, persistence in finding problem solving, a willingness to find alternative solutions or strategies, and an appreciation of mathematics and its application in various fields. The results of his research show that creativity and mathematical disposition find that there is a relationship between mathematical creativity and mathematical disposition, this is in line with research researchers that there is a relationship between creative thinking ability and mathematical disposition of students.

The learning model used also influences students' creative thinking abilities and mathematical disposition, such as Nisa (2011) research learning by implementing the Treffinger model can foster student creativity in solving problems. Rosiyanti's research (2015) shows that the average student mathematics learning outcomes using the Treffinger learning model are higher than without using the Treffinger learning model and students' attitudes to the mathematics learning process using the Treffinger learning model are better than without using the Treffinger learning model.

Following are the average scores of students' creative thinking abilities and mathematical disposition shown in Table 1.3 below.

Table 3. Average Score of Mathematical Disposition and Mathematical Creative Thinking Skill

Group	Average Score	
	Disposition	Creative Thinking
Upper	80.95	85.29
Middle	75.23	73.40
Lower	72.32	67.65

Based on Table 1.3, the difference in average scores of students' disposition scores and mathematical creative thinking skills is not too significant in each group. However, the average disposition score is directly proportional to the mathematical creative thinking skill of students. The ability to think creatively and mathematical disposition of students with Treffinger learning model is shown in Figure 1 below.

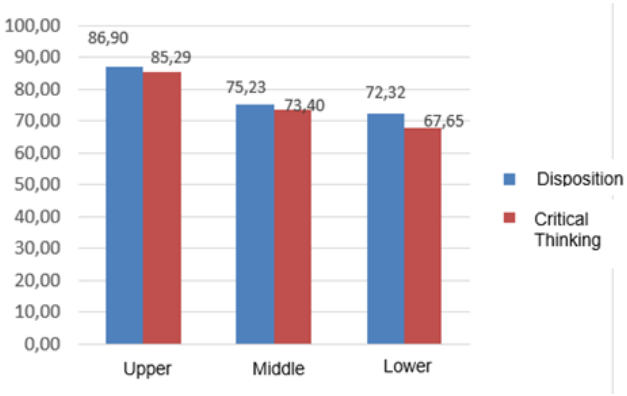

Figure 1. Mathematical Creative Thinking Skill and Mathematical Disposition of Upper, Middle, and Lower Group

Based on Figure 1, the mathematical disposition that exists in students affects students mathematical creative thinking skill. The average score of mathematical disposition of students in the lower group is low, so the mathematical creative thinking skill scores of the lower group students also appear to be low compared to the mathematical creative thinking skill scores of the middle and upper group students. The av erage score of mathematical disposition of students in the upper group is high, so the average score of the mathematical creative thinking skill obtained is also high compared to the average score of the mathematical creative thinking skill of the lower and middle group students. The results of this study are in line with Nugraheni et al., (2019) that learning the Treffinger model can improve students' mathematical creative thinking abilities and is better than conventional classes. Retnowati and Murtiyasa (2013) research shows that the use of the Treffinger model in mathematics learning can improve students' mathematical dispositions.

CONCLUSION

The results showed that there was a relationship between the ability to think

creatively and the mathematical disposition of students. The mathematical disposition that exists in students influences students CBC. The average score of mathematical disposition of students in the lower group is low, so the mathematical creative thinking skill scores of the lower group students also appear to be low compared to the mathematical creative thinking skill scores of the middle and upper group students. The average score of mathematical disposition of students in the upper group is high, so the average score of the mathematical creative thinking skill obtained is also high compared to the average score of the mathematical creative thinking skill of the lower and middle group students. The difference in the average disposition score and the mathematical creative thinking ability of students is not too significant in each group, but the average score of disposition is directly proportional to the mathematical creative thinking skill students.

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