AKSIOMA: Jurnal Program Studi Pendidikan Matematika
Volume 10, No. 1, 2021, 229-239

ISSN 2089-8703 (Print)
ISSN 2442-5419 (Online)

DOI: https://doi.org/10.24127/ajpm.v10i1.3251

THE CREATIVE THINKING ABILITY IN ELEMENTARY SCHOOL MATHEMATICS PROBLEM SOLVING

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Received 17 November 2020; Received in revised form 31 March 2021; Accepted 02 April 2021

Abstract

The purpose of this research are (1) to know the learning quality using Treffinger model with scientific approach through the creative thinking ability in mathematical problem solving, and (2) to describe of studet's creative thinking ability in mathematical problem solving. The subjects of this research were 10 students of fifth grade in SDN Candirejo 01, West Ungaran District, Semarang Regency, 2020/2021 academic year. The instruments of this research are test of creative thingking ability in mathematical problem solving, interview guidlines, and questionnaire of student's response. The data analysis of this research are data reduction, data display, and conclusions. The results of this research are (1) the quality of Treffinger model with scientific approach is good and (2) students of 4th level creative thinking fulfill of fluency, flexibility, dan novelty; students of 3rd level fulfill of fluency and flexibility; each students of 2nd level just fulfill of flexibility or novelty; students of 1st level fulfill of fluency; and for the last is zero level didn't fulfill all indicators of creative thinking ability.

Keywords: Creative thinking; problem solving; learning quality.

Abstract

Tujuan dari penelitian ini adalah untuk mengetahui kualitas pembelajaran yang menggunakan model Treffinger dengan pendekatan Scientific terhadap kemampuan berpikir kreatif siswa dalam pemecahan masalah matematis, dan mendeskripsikan kemampuan berpikir kreatif siswa dalam pemecahan masalah matematis. Subjek dari penelitian ini adalah 10 siswa kelas 5 SDN Candirejo 01, Ungaran Barat, Semarang pada tahun pelajaran 2020/2021. Instrumen penelitian yang digunakan, yaitu tes kemampuan berpikir kreatif, lembar observasi, pedoman wawancara, angket respon siswa, dan triangulasi data. Teknik analisis data yang digunakan, yaitu: reduksi data, penyajian data, dan kesimpulan. Hasil yang diperoleh dari penelitian yaitu: (1) kualitas pembelajaran yang menggunakan model Treffinger dengan pendekatan Scientific masuk dalam kategori baik, dan (2) siswa dengan kemampuan berpikir kreatif tingkat 4 memenuhi indikator fluency, flexibility, dan novelty; selanjutnya untuk siswa dengan kemampuan tingkat 3 hanya memenuhi 2 indikator yaitu fluency dan flexibility; untuk siswa dengan kemampuan tingkat 2 masing-masing menguasai 2 indikator, yaitu flexibility atau novelty, namun keduanya hanya memenuhi dengan baik untuk satu indikator; siswa dengan kemampuan tingkat 1 hanya memenuhi indikator fluency; dan siswa dengan tingkat 0 belum memenuhi semua indikator.

Kata kunci: *Kemampuan berpikir kreatif; kualitas pembelajaran; pemecahan masalah.*

INTRODUCTION

The improvement of a nation is greatly influenced by the quality level of human resources. The quality of human resources depends on the quality of education. Education has a very important role in realizing intelligent, quality and advanced human resources. Currently, Indonesia has a low quality of education based on the results obtained by Indonesian students on international assessments. One of the

ISSN 2089-8703 (Print)
ISSN 2442-5419 (Online)

DOI: https://doi.org/10.24127/ajpm.v10i1.3251

international assessments that Indonesia has participated in is PISA (the program of international students assessment). Based on the results of the 2018 PISA assessment, Indonesia obtained a score of 379 for math ability and is ranked 73 (Hewi & Shaleh, 2020). Apart from showing that the quality of Indonesian education is low, PISA results further show the weak thinking ability of Indonesian students. One of the low thinking skills based on the PISA results is the ability to think creatively. This is in accordance with the statements of Handayani, Sa'dijah, & Susanto (2018) which state that the mathematical creative thinking skills of Indonesian students are low. One of the factors causing the low scores of Indonesian students is that Indonesian students are not trained to solve PISA questions which are substantially contextual, requiring reasoning, argumentation and creativity in solving them (Wardhani & Rumiati, 2011). Hasil penelitian lain juga menyebutkan bahwa soal-soal PISA bersifat non rutin dan merupakan soal pemecahan masalah membuat anak-anak Indonesia mengalami kesulitan dalam memecahkannya (Haji, Yumiati, & Zamzali, 2018)

Creativity or creative thinking is one of the important ability to solve problems. When the creative thinking ability develops in a person, it will generate many ideas, make many connections, have many perspectives on something, create and do imagination, and care about the results (Budiman, 2011). One way to see the ability to think creatively is through the problem solving process carried out by students. Problem solving is one of the important and fundamental components for developing students' thinking skills because the learning process of mathematics is basically problem solving and it is necessary to create ideas or ideas in various ways (Rahmazatullaili, Zubainur, & Munzir, 2019). In addition to measuring or seeing the ability to think creatively through the problem solving process, what is more important is how to improve students' creative thinking skills. One part of learning that can be designed to improve creative thinking skills is the learning model used. One of the learning models that are expected to directly encourage creativity is the Treffinger learning model. This is in accordance with the research results of Isnaini, Duskri, & Munzir (2016) which concluded that the Treffinger learning model can positively improve students' creative thinking skills. The research conducted by Jumroh, Sartika, dan Andinasari (2019) showed that the Treffinger learning model affected the creative thinking ability. The same thing was also conveyed by Munawarah (2018) in his research which concluded that the Treffinger learning model positively influences students' creative abilities. And then, the research conducted by Maharani (2018) showed that there was a significant influence between the Treffinger learning model on the creative thinking ability in mathematics on geometry material.

The learning process is expected to prioritize personal experience through the process of observing, questioning, reasoning, trying (observation based learning) and building networks to increase student creativity (Kemendikbud, 2013). The scientific approach is believed to be the golden step for the development in attitudes, skills and knowledge of the student in approaches or work processes that meet scientific criteria (Atsnan & Gazali, 2013). The Scientific Approach is an approach that will be used in every

ISSN 2089-8703 (Print)
ISSN 2442-5419 (Online)

DOI: https://doi.org/10.24127/ajpm.v10i1.3251

subject in Elementary School and all grade levels. No exception in mathematics learning.

Research on analyzing the creative thinking abilities of fifth grade students in problem solving on the Treffinger learning model with the scientific approach has not been done by many researchers. Therefore, with limited sources that have the same theme, the researchers try to explore previous studies.

Based on the research context that has been described, the objectives will be achieved through research are: (1) Obtaining an overview of the learning quality using the Treffinger model with a Scientific Approach through the creative thinking abilities of fifth grade students in mathematical problem solving; (2) Obtaining the construction of the fifth grade students' creative thinking skills in mathematical problem solving on the Treffinger learning model with the Scientific approach.

METHOD

This research is a qualitative research. The subject of this research activity are 10 students of fifth grade in SDN Candirejo 01, West Ungaran Subdistrict, Semarang Regency, Central Java, who have different types of creative thinking ability, such as very creative, quite creative, less creative and not creative. The subject selection technique used the purposive sampling method based on the test results of the creative thinking ability in problem solving.

The data sources to determine the learning process quality of Treffinger model with students' creative thinking abilities were obtained based on learning tools including syllabus, lesson plans, student worksheets, teaching materials, tests of creative thinking skills in problem solving, student observation sheets in the learning process and student response questionnaires to Treffinger model learning with the scientific approach, while the learning outcomes are obtained from the tests result of the creative thinking ability in student problem solving when completing questions on solving problems.

The data collection techniques used in this study included: (1) test techniques using creative thinking skill tests in student problem solving with problem solving questions; (2) non-test techniques in this study, such as a) observation to observe classroom activities during learning activities; b) student response questionnaires to the learning. It is used to determine the quality of learning activities by using Treffinger model and scientific approach; c) documentation aims to obtain data directly from the research site including photos, documentary films, and other relevant data to the research; d) field notes containing a summary of all field data collected during the research implementation; e) triangulation or combining some sata collection techniques.

There are two instruments for this research, such as the main instrument and the extra instrument. Main Instruments According to Sugiyono (2016), researchers are the main instrument in qualitative research, while the extra instrument is as a measuring tool to describe the students creative thinking level in solving problems includes: (1) Creative Thinking Ability test (TKBK); (2) learning tools; (3) student response questionnaire. In qualitative research, checking the validity of the data conducted by researchers includes trust degree check (credibility), transferability checks

ISSN 2089-8703 (Print)
ISSN 2442-5419 (Online)

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(transferability), dependency check (dependability), and objectivity test (confirmability) (Sugiyono, 2016).

The data analysis technique of this research includes: (1) validity data analysis of the learning tools used to determine the learning tools validity. The learning tools in this study include (a) syllabus, (b) lesson plan, (c) student worksheets, (c) teaching materials, and (d) creative thinking skills questions (TKBK). The learning tools validity is only construction validation. Construct validity is carried out by asking for expert opinion (judgment expert); (2) the instrument feasibility analysis of this non-test research includes the interview guidelines instrument, observation sheets of learning implementation and student response questionnaires toward the learning process. The non-test research instrument was only done with content and construct validation to verify its feasibility as a measuring tool.

The research data analysis includes: (1) the criteria for the learning process quality of the Treffinger model with good students' creative thinking ability as evidenced by the interaction between students with educators and learning resources in a learning environment to achieve good learning goals. (2) analysis of the ability to think creatively in student problem solving following the concepts given by Miles and Huberman (Miles, 2007). Activities in data analysis are data reduction, data display (data presentation), and conclusions: drawing / verification.

The research stages carried out included Analyze, Preparation Stage, and Implementation Stage. The following is an explanation for each stage of the research that will be carried out. The analysis stage is the stage for analyzing the problem to formulating a solution to the problem. The preparation stage is the stage of compiling learning tools with the Treffinger model and the scientific approach which includes syllabus, lesson plans, worksheets, and teaching materials, as well as compiling tests of creative thinking skills in problem solving. After compiling learning tools and tests of creative thinking skills, it is followed by validation by experts. The implementation stage, which is implementing learning with the Treffinger model and scientific approach, then continues with an analysis of the quality of learning. Furthermore, giving a creative thinking ability test to determine the research subject and the results of the creative thinking ability test of 10 selected research subjects were then analyzed.

RESULTS AND DISCUSSION

Based on the research stages that have been designed, the following is an explanation of each stage.

1. Analyze

The first thing to do is analyze the problem and formulate a solution to the problem. The problem found, namely the low ability of students to think creatively identified from the PISA test results. Then, the formulation of the solution to the problem obtained is to compile learning with the Treffinger model and scientific approach. The research to be carried out is based on the analysis of students' creative thinking skills in solving problem solving problems.

2. Preparation Stage

At the preparation stage the researchers made learning tools including syllabus, lesson plans, teaching materials, worksheets, and creative thinking skills questions (TKBK). The device made was

ISSN 2089-8703 (Print)
ISSN 2442-5419 (Online)

DOI: https://doi.org/10.24127/ajpm.v10i1.3251

validated by an expert validator. The validators of the learning devices were 2 mathematics lecturers. The assessment given by the validator referred to the rating scale from 1 to 5. The results of the assessment from the validator were analyzed based on the average score of learning tool assessment acquisition that given by the validator. The description of the final score was used with the assessment criteria with R being the average of the validator. The result of validity test can be seen in Table 1.

Table 1. The average of Learning Tool Assessment Acquisition

No	Validity Value	Interpretation
1	$1{,}00 \leq R \leq 1{,}80$	Poor
2	$1{,}80 < R \leq 2{,}60$	Deficient
3	$2{,}60 < R \leq 3{,}40$	Pretty good
4	$3{,}40 < R \leq 4{,}20$	Good
5	$4{,}20 < R \leq 5{,}00$	Very good

The data from the experts' assessments for each instrument were analyzed by considering the suggestions and comments of the validators. The names of the learning device validators can be seen in Table 2.

Table 2 The list of the learning device validator name

No	Validator Name	Position
1.	Lisa Virdinarti Putra, S. Pd., M. Pd.	Bachelor of Mathematics Education and Master of Basic Education, Concentration of Mathematics
2.	Zulmi Roestika P., S. Pd., M. Pd.	Bachelor of Mathematics Education and Master of Mathematics Education

Table 3 The result of learning device assessment

Devices	Validator Score		Total Average	Category
	V001	V002		
Syllabus	4,00	4,05	4,01	Good
Lesson Plan	4,09	4,18	4,14	Good
Worksheets	3,40	3,20	3,30	Good
Teaching Materials	3,43	3,40	3,42	Good
Creative Thinking Skills Questions (TKBK).	3,33	3,67	3,50	Good

There are 4 aspects assessed in the learning devices assessment including the formulation of learning objectives, the content presented, language, and time. In terms of the assessment in learning objective aspects including the clarity of (Core Competencies) KI and (Basic Competencies) KD, the suitability of KI and KD with the learning objectives, the accuracy of the description of KD into indicators, and the suitability of indicators with the goals and level of student development. The content aspect includes the systematics of learning tools, the sequence of learning activities, the suitability of activities in encouraging students' creative thinking, the suitability of the material with fluency aspects, flexibility and novelty, and instrument completeness. The language aspect includes the use of language according to (Perfect Spelling) EYD, communicative language, and simplicity of sentence structures. While the time aspect includes the suitability

ISSN 2089-8703 (Print)
ISSN 2442-5419 (Online)

DOI: https://doi.org/10.24127/ajpm.v10i1.3251

of time and details of the time for each activity. The assessment results of each validator toward learning devices can be seen in Table 3.

Based on Table 3, this shows that each learning device arranged has met valid criteria so that it can be used in learning with the Treffinger model and scientific approach and can be used to measure students' creative thinking abilities.

3. Implementation Stage

The quality measurement of the learning implementation can be seen from the learning implementation sheet. The learning implementation is in a good quality if the observation results on the learning implementation are at least in the good category. In the Covid-19 Pandemic, the learning process was done by online class. The teacher's assessment in managing this learning was done three times in five meetings. The following are the results of an assessment toward the learning implementation. The result of observation during learning implementation can be seen in Table 4.

Table 4 The Observation Result of Learning Implementation

No	Implementation	Average	Category
1.	1st Observation	3,53	Good
2.	2nd Observation	3,66	Good
3.	3rd Observation	3,72	Good

The results of observation during learning implementation in Table 4 show that the implementation of learning with the Treffinger model and the scientific approach was carried out well from the beginning of the lesson to the end. This is important to know as an effort to carry out learning in accordance with the plan or as much as possible not out of the design. After observing the implementation of learning, at the end of the learning process, students were given the opportunity to provide an assessment through a questionnaire for the implementation of learning.

The learning assessment was done by providing student response questionnaires to the learning that has been done. Based on the student response questionnaire filled out by 22 students after learning the Treffinger model with the Scientific approach to improve creative thinking skills in solving mathematical problems, student positive responses from all aspects are above half of the number of students who are research subjects. It can be said that in this student response questionnaire, every aspect was responded positively more than 50%. From the student positive responses, more than half of the number of students, it can be concluded that the quality of learning seen from the student positive responses is in a good category.

After obtaining the results of the quality of learning using the Treffinger model and scientific approach, then it provides a creative thinking ability test to determine the research subject. The test of students' creative thinking abilities was obtained through giving written tests to students. The test instrument provided was in the form of essay questions and consisted of three items containing geometrical shapes (two-dimentional shape). There is a tool for classify of student's creative thinking ability. In this case, the tool for classify of students is the characteristics of creative thinking ability levels according to Siswono (2011) to classify the creative thinking level (TKBK) based on the criteria of fluency, flexibility, and novelty are shown in Table 5.

ISSN 2089-8703 (Print)
ISSN 2442-5419 (Online)

DOI: https://doi.org/10.24127/ajpm.v10i1.3251

Table 5. The description for each level of creative thinking ability

No	Level	Description
1	4 (Very Creative)	Result of student's task satisfied all criterion of creativity product. Student can synthesize ideas, generate new ideas from mathematical concepts and little real life experience, and apply the ideas to construct some problems also revised when they find a hindrance.
2	3 (Creative)	Result of student's task satisfied all criterion of creativity product. Student can synthesize ideas, generate new ideas only from mathematical concepts, and apply the ideas to construct some problems. Students is also able to revised these when a hindrance is met.
3	2 (Creative Enough)	Result of student's task satisfies one or two criterion of creativity product. Student can synthesize ideas from mathematical concepts or real life experience, and generate new ideas from either mathematical concepts or real life experience, but not both. Student hasn't applied all ideas to construct some problems, but is able to revise a problem when a hindrance is met.
4	1 (Less Creative)	Result of student's task satisfies one or two criterion of creativity product. Student can not synthesize ideas from mathematical concepts or real life experience, and generate new ideas only from mathematical concepts or real life experience. Student hasn't applied all ideas to construct some problems, or revised a problem when a hindrance is met.
5	0 (Not Creative)	Result of student's task did not satisfy all criterion of creativity product. Student can not synthesize ideas from mathematical concepts or real life experience, and can not generate new ideas.

The descriptions for each level of students' creative thinking abilities as described in Table 5 are used to group students according to their level of creative thinking abilities. Identification of students' creative thinking skills is done by analyzing the answers to the creative thinking skills test. The results of the mathematics creative thinking test are used as a reference for grouping students into creative thinking ability levels which will be triangulated later with the results of interviews. Based on the test analysis for the creative thinking ability in problem solving, the results of grouping the creative thinking ability level in problem solving of grade V students are obtained in Table 6.

Table 6 The grouping of creative thinking ability level

Level	Name	The number of students
4	TKBK 4	3
3	TKBK 3	4
2	TKBK 2	7
1	TKBK 1	6
0	TKBK 0	6

After obtaining student grouping based on the level of creative thinking ability, then 2 students were selected as research subjects. The selection is based on certain criteria, namely students can communicate well and recommendations from teachers of related subjects.

After obtaining the subject for each level of creative thinking ability, proceed with an interview. Then, the

ISSN 2089-8703 (Print)
ISSN 2442-5419 (Online)

DOI: https://doi.org/10.24127/ajpm.v10i1.3251

results of the interview are triangulated with the results or answers to the students' creative thinking ability tests. The quantitative results of the test and interview results can be seen in Table 7.

Table 7 Achievement of indicators of the ability to think creatively in solving problem solving problems

Level	Subject	Indicator of creative thinking		
		novelty	fluency	felxibility
TKBK 4	S1	√	√	√
	S2	√	√	√
TKBK 3	S1	x	√	√
	S2	x	√	√
TKBK 2	S1	-	x	√
	S2	√	x	-
TKBK 1	S1	x	√	x
	S2	x	√	x
TKBK 0	S1	x	x	x
	S2	x	x	x

Information:
√ : fulfills good
- : fulfills but not very good
x : unfulfilled

The explanation for each level of students' creative thinking skills in Table 7 is as follows:

a. TKBK 4

TKBK 4 of the specified subjects found that Subject 1 and Subject 2 have the same creative thinking indicators, such as fluency, flexibility and novelty. But Subject 1 is better than Subject 2 in terms of Fluency. Besides Subject 1 has a high level of curiosity to solve creative thinking problems so that it opens up many possible answers that Subject 1 can get, and it demands Subject 1 to be able to provide new forms or ways of solving problems;

b. TKBK 3

TKBK 3 of the specified subjects found that Subject 1 and Subject 2 had the same creative thinking indicators, such as fluency and flexibility. But Subject 1 is better than Subject 2 in terms of Flexibility. Subject 1 has more diverse ways of solving problems than Subject 2. Subject 1 can present several ways to solve the area of geometrical shapes (two-dimentional shape) in various ways. Both Subject 1 and Subject 2 do not have novelty aspects. Subject 1 and Subject 2 form a shape from a combination of several other shapes. They can make other shapes but they cannot form other shapes, irregular geometrical shapes, or other shapes that do not have a special name or that are not "common" to learn in class.

c. TKBK 2

TKBK 2 of the specified subjects found that Subject 1 and Subject 2 have different creative thinking indicators. Subject 1 good in the flexibility aspect component but poor in the novelty and Subject 2 good in the novelty aspect but poor in the flexibility. Subject 1 is not yet fluent in making other flat shapes, but Subject 1 can solve the problem in many ways, but has not own the novelty aspect yet Whereas Subject 2 can make other geometrical shapes in different ways, such as combining rectangles and triangles.

d. TKBK 1

TKBK 1 of the specified subject found that Subject 1 and Subject 2 have the same creative thinking indicators, which only fulfilled the fluency aspect. Fluency in Subject 1 and Subject 2 have the same ability, Subject 1 and Subject 2 both can only solve problems by making 1 shape and one way.

e. TKBK 0

TKBK 0 of the specified subjects found that Subject 1 and Subject 2 did

ISSN 2089-8703 (Print)
ISSN 2442-5419 (Online)

DOI: https://doi.org/10.24127/ajpm.v10i1.3251

not fulfill all aspects of fluency, novelty and flexibility. Even though they have been directed in creative thinking, they still cannot solve the problem with the aspects of fluency, novelty and flexibility.

The results of the research that has been done indicate that the quality of learning using the Treffinger model and scientific approach meets the good category. This is in line with previous research which concluded that there are differences between students who learn with the Treffinger model with a scientific approach and students who do not (Wardani, Sariyasa, & Marhaeni, 2017). This is because the Treffinger learning model teaches students to explore students' thinking skills in generating ideas and problem solving, and trains students to be brave in making decisions to solve problems (Herdianti, 2018).

Treffinger's learning model combined with a scientific approach also shows positive things. The quality of learning using the Treffinger model and scientific approach shows a good category. This is in line with research conducted by Khoiriyah, Junaedi, & Supriyadi (2016), namely learning using the Treffinger learning model and a good quality scientific approach. These results indicate that the use of the Treffinger learning model and the scientific approach can facilitate learning, especially in terms of improving students' creative thinking skills. Apart from the Treffinger model which is able to improve students' creative thinking abilities, the scientific approach also has a positive influence in increasing creative thinking skills. Sariningsih and Kadarisma (2016) state in their research that there is an increase in the creative thinking ability of students whose learning uses a scientific approach.

The next thing to be discussed is the creative thinking ability of students for each level. There are 5 levels of creative thinking skills, namely TKBK 4, TKBK 3, TKBK 2, TKBK 1, and TKBK 0. Each level has a different level of achievement of indicators. The results obtained in this study are in accordance with Siswono's research (2011) which concludes the characteristics for each level of creative thinking ability. There is a slight difference for TKBK 3, namely after conducting an in-depth interview, it is found that the research subject only fulfills 2 indicators well, while for one other indicator it cannot be said that it is fulfilled.

CONCLUSION AND SUGGESTION

Based on the results of research and discussion, it can be concluded that the quality of learning using the Treffinger model and the scientific approach fulfills the good category, especially in relation to students' creative thinking skills in solving problem solving problems. Furthermore, a description of students' creative thinking skills in solving problem solving problems, namely: 1) TKBK 4 subjects (very creative) fulfill fluency, flexibility, and novelty indicators well; 2) TKBK 3 subjects fulfill 2 indicators, namely fluency and flexibility well; 3) TKBK 2 meets flexibility and novelty indicators, but each only fulfills well for one indicator and the other indicators have not been fully mastered, subject 1 meets the flexibility criteria and subject 2 meets the novelty criteria; 4) TKBK 1 subjects only meet fluency indicators; 5) and TKBK 0 subjects do not meet any of the indicators.

ISSN 2089-8703 (Print)
ISSN 2442-5419 (Online)

DOI: https://doi.org/10.24127/ajpm.v10i1.3251

Suggestions for research that will be carried out next, namely comparing the level of creative thinking skills before carrying out learning with the Treffinger model and the scientific approach with afterward, so that it will be clear whether the Treffinger model and the scientific approach can have a positive effect. In addition, it is suggested to analyze the increase or development of students' creative thinking abilities between before and after implementing the Treffinger model and scientific approach.

REFERENCES

Atsnan, M. F. & Rahmia Y. Ghazali. (2013). Penerapan Pendekatan Scientific dalam Pembelajaran Matematika SMP Kelas VII Materi Bilangan (Pecahan). *Prosiding Seminar Nasional Matematika dan Pendidikan Matematika untuk Indonesia Lebih Baik* (pp. 429 – 436). Sleman, Yogyakarta.

Budiman, H. (2011). Peningkatan Kemampuan Berpikir Kritis dan Kreatif Matematis Siswa Melalui Pendekatan Pembelajaran Berbasis Masalah Berbantuan Program Cabri 3D. *Tesis*, Universitas Pendidikan Indonesia, Bandung, Indonesia). Retreived from: http://repository.upi.edu/9304/

Haji, S., Yumiati, & Zamzali. (2018). Analisis Kesulitan Siswa dalam Menyelesaikan Soal-soal PISA (*Programme for International Student Assessment*) di SMP Kota Bengkulu. *Jurnal Pendidikan Matematika Raflesia, 03*(02), 177 – 183.

Handayani, U. F., Sa'dijah, C., & Susanto, H. (2018). Analisis Kemampuan Berpikir Kreatif Matematis Siswa SMP dalam Menyelesaian Soal Adopsi PISA. *Jurnal Math Educator Nusantara (JMEN),4*(2), 143 – 156.

Herdianti, E. V. (2018). Pengaruh Model Pembelajaran Treffinger Terhadap Kemampuan Berpikir kreatif Matematis Siswa: Penelitian Kuasi Eksperimen terhadap Siwa Kelas V pada Dua SD di Kecamatan Sumedang Utara Kabupaten Sumedang. *Skripsi*, Universitas Pendidikan Indonesia. Bandung. Indonesia. Retreived from: http://repository.upi.edu/32371/

Hewi, L. dan Shaleh, M. (2020). Refleksi Hasil PISA (*The Programme For International Student Assessment*): Upaya Perbaikan Bertumpu pada Pendidikan Anak Usia Dini. *Jurnal Golden Age, 4*(1), 30 – 41.

Isnaini, I. Duskri, M., dan Munzir, S. (2016). Upaya Meningkatkan Kreativitas dan Kemampuan Pemecahan Masalah Matematika Siswa Sekolah Menengah Pertama Melalui Model Pembelajaran Treffinger. *Jurnal Didaktik Matematika, 3*(1), 15 – 25.

Jumroh, Sartika, S., & Andinasari. (2019). Pengaruh Model Pembelajaran Treffinger Terhadap Kemampuan Berpikir Kreatif Matematis Berdasarkan Self Efficacy. *Prosiding Seminar Nasional Pendidikan Dasar* (SENDIKSA) (pp. 192 – 201). Palembang, Indonesia.

Kemendikbud. (2013). *Salinan Lampiran Peraturan Menteri Pendidikan dan Kebudayaan Nomor 68 Tahun 2013 tentang Kerangka Dasar dan Struktur Kurikulum Sekolah Menengah Pertama/Madrasah Tsanawiyah.*

ISSN 2089-8703 (Print)
ISSN 2442-5419 (Online)

DOI: https://doi.org/10.24127/ajpm.v10i1.3251

Jakarta: Departemen Pendidikan dan Kebudayaan.

Khoiriyah, I. S. A., Junaedi, I. & Supriyadi. (2016). Model *Treffinger* dengan Pendekatan Saintifik untuk Meningkatkan Kemampuan Berpikir Kreatif dalam Pemecahan Masalah Siswa Kelas V. *Journal of Primary Education*, *5*(2), 155 – 161.

Maharani, R. K. (2018). Pengaruh Model Pembelajaran Treffinger Terhadap Kemampuan Berpikir Kreatif Pelajaran Matematika Materi Bangun Ruang. *Jurnal Penelitian Pendidikan Guru Sekolah Dasar*, *6* (4), 506-515.

Munawarah, R. (2018). Pengaruh Model *Treffinger* Terhadap Kemampuan Berpikir Kreatif Matematis dan Rasa Ingin Tahun pada Siswa SMP. *Skripsi*. Universitas Islam Negeri Ar-Raniry Darussalam Banda Aceh.

Rahmazatullaili, Zubainur, C. M., dan Munzir, S. (2019). Kemampuan Berpikir Kreatif dan Pemecahan Masalah Siswa Melalui Penerapan Model *Project Based Learning*. *Jurnal Peluang*, *7*(1): 94 – 105.

Sariningsih, R. & Kadarisma, G. (2016). Meningkatkan Kemampuan Berpikir Kreatif Matematis dan Kemandirian Belajar SIswa SMP Melalui Pendekatan Saintifik Berbasis Etnomatematika. *Jurnal Ilmiah UPT P2M STKIP Siliwangi, 3*(1), 53 – 56.

Siswono, T. Y. E. (2011). Level of Student's Creative Thinking in Classroom Mathematics. *Education Research and Review,6*(7), 548 – 553.

Sugiyono. (2016). *Metode Penelitian Kuantitatif Kualitatif dan R&D*. Bandung: Alfabeta.

Wardani, N. P. C., Sariyasa, & Marhaeni, A. A. I. N. (2017). Pengaruh Model Pembelajaran Treffinger Berpendekatan Saintifik Terhadap Kemampuan Berpikir Kreatif Ditinjau dari Gaya Kognitif Siswa. *PENDASI: Jurnal Pendidikan Dasar Indonesia, 1*(1), 1 – 11.

Wardhani, S., & Rumiati. (2011). *Modul Matematika SMP Program Bermutu Instrumen Penilaian Hasil Belajar Matematika SMP: Belajar dari PISA dan TIMSS*. Jakarta: Kemendiknas dan PPPPTK.