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INCREASING STUDENTS' MATHEMATICAL CREATIVE THINKING ABILITIES THROUGH THE *DISCOVERY LEARNING* LEARNING MODEL

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ABSTRACT

Mathematics improves higher order thinking skills, especially creative thinking. Creative thinking involves logical and divergent thinking based on intuition. This allows students to solve problems through a variety of methods. However, traditional learning methods limit this ability. The Discovery Learning model that involves active student participation can improve these skills. This research aims to improve students' mathematical creative thinking abilities through the Discovery Learning model. The research method used is quantitative with Non-equivalent Control Group Design. The sample for this research was Class The experimental group received the Discovery Learning model, while the control group used conventional methods. Pretest and posttest data were analyzed using statistical tests including normality, homogeneity and T test. The experimental class used the Discovery Learning method, while the control class used conventional methods. The pretest and posttest results showed a significant improvement in the experimental group. The findings show that Discovery Learning increases creative thinking in mathematics.

Keywords: Mathematical Creative Thinking, Discovery Learning, Quantitative Methods, Higher Level Thinking Skills

INTRODUCTION

Mathematics is an appropriate forum for improving high-level thinking skills, one of which is the ability to think creatively (Santi et al., 2020). in line with Andiyana (2018) that the goal that needs to be achieved in learning mathematics is students' ability to think creatively mathematically. Students who have the ability to think creatively can construct mathematical ideas so that their understanding will be better (Faturohman & Afriansyah, 2020). So that students who have the ability to think creatively will have a better level of understanding and learning objectives will be achieved.

Creative thinking is a combination of logical thinking and divergent thinking that is based on intuition but in awareness that pays attention to flexibility, fluency and novelty (Silver, 1997). Students who have the ability to think creatively can solve problems using various methods. Creative thinking is

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closely related to the divergent thinking process, namely the process of thinking in various directions and producing many alternative solutions (Munandar, 2014). Apart from that, according to Andiyana (2018), creative thinking ability is the ability of students to draw conclusions from a mathematical problem through non-routine steps. So from the description above, creative thinking is an individual's ability to find a solution to a problem in a new way, and related abilities. with cognitive skills, the ability to store a lot of information, think flexibly and creatively.

Students' creative thinking cannot develop because students are too used to procedural learning methods, so students cannot solve problems freely (purwaningrum, 2016). In addition, according to Ginting's (2019) opinion, students' low mathematical creative thinking abilities can occur because many people think Mathematics is a boring, scary subject, it only has a single answer to every problem and can only be understood by some people. Huda (2014) explains that another cause that causes students' creative thinking abilities to not be optimal is that students are used to routine problems and are not accustomed to finding solutions to problems themselves in different ways to their friends.

One learning model that can be applied to develop students' mathematical creative thinking abilities is the Discovery Learning learning model. With this learning model students can be involved in the learning process so that students are more enthusiastic and enthusiastic about learning and student learning outcomes will increase (Hasibuan et al., 2021). The Discovery Learning learning model according to Bruner (1999) states that in discovery learning, learning is carried out actively in designing methods that allow students to determine for themselves the generalizations that exist in mathematical operations and students compare these discoveries with confirmation and evidence. The Discovery Learning Model is a learning model that provides students with the opportunity to discover knowledge in the form of concepts and principles through their own process. In line with (Lestari & Yudhanegara, 2018) explains that through the Discovery Learning learning model students can discover concepts and principles through their own mental processes.

In accordance with Oktaviani's (2019) research results, the Discovery Learning learning model can improve creative thinking abilities and mathematics learning outcomes. Apart from that, research has been conducted by (Relitasari et al., 2018) that the Discovery Learning learning model assisted by ice breaking makes mathematical creative thinking abilities reach completion, the application of the Discovery Learning model assisted by ice breaking is more effective in improving mathematical creative abilities than the application of the Discovery Learning model . Research conducted by Rudyanto (2016) stated that the Discovery Learning learning model with a scientific approach containing character was declared effective for improving creative thinking abilities in the aspects of fluency and flexibility. However, the aspects of originality and elaboration tend not to experience significant improvement and still require coaching.

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Based on the description above, it is necessary to carry out more in-depth research regarding this matter. Here the researcher wants to conduct research related to what has been described in the background above, so the research title chosen is "Improving Students' Creative Mathematical Thinking Abilities Through the Discovery Learning Learning Model."

METHODS

The research method used in this research is a quantitative method because the data used is in the form of numbers and data analysis uses statistics. The design of this research is Non-equivalent Control Group Design. In this study there was a control class and an experimental class which were given pretest, posttest and treatment. The treatment given uses the Discovery Learning learning model for the experimental class and the conventional model for the control class. Both groups were given a pretest (O) to determine their initial condition before conducting the research (Lestari, 2018). This design is used to determine the effect of implementing the Discovery Learning Learning Model on learning outcomes in the experimental student group and control students are needed as comparisons. In this design there are two groups of students, namely the experimental group and the control group which were not chosen randomly (Sugiyono, 2019).

Table 1. Desain Nonequivalent Control Group Design

Eksperimen	O_1	X	O_2
Kontrol	O_3		O_4

Information:

O_1 = pretest results of the experimental student group

O_2 = posttest results of the experimental student group

O_1 = pre-test results of the control student group

O_4 = posttest results of the control student group

X = experimental student group treatment using the Discovery Learning learning model

This research was carried out at SMAN 1 Rajagaluh in the even semester of the 2022/2023 academic year with a population of all class X students at SMAN 1 Rajagaluh. Sampling. The technique used is purposive sampling by determining the sample based on certain considerations. According to the mathematics teacher, all class X students have the same characteristics and mathematical abilities. New classes were not formed but took advantage of those who were underclassmen, so the sample for this research was class X MIPA 6, totaling 30 people. This class was chosen because the learning material that will be delivered has never been received by this class. The variable instrument for Creative Thinking is a written test with 5 questions. Each answer has a value of 20. The instruments used have previously been analyzed, collaborated, including validity and reliability tests, difficulty

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index and question differentiation. The research data obtained was then analyzed and tested for analysis prerequisites, including normality and homogeneity tests, T-Test sample tests to see the increase in students' mathematical creative thinking abilities. Statistical Hypothesis

$H_0 : \mu_1 = \mu_2$: There was no difference in the average increase in mathematical creative thinking abilities between students in the experimental class and the control class

$H_1 : \mu_1 \neq \mu_2$:There is a difference in the average increase in students' mathematical creative thinking abilities between experimental class students and control class students

FINDINGS

Data on students' creative mathematical thinking abilities was obtained through pretest and posttest. The following is a description of the pretest and posttest score data for students' mathematical creative thinking abilities, which can be seen in table 2.

Table 2 Results of Descriptive Statistical Analysis of Pretest and Posttest Scores

	Kelompok	N	Mean	Std. Deviasi	Min	Max
Pretest	Eksperimen	30	21.03	12.469	0	46
	Kontrol	30	24.10	10.835	0	43
Postest	Eksperimen	30	79.70	7.212	58	93
	Kontrol	30	69.83	11.080	46	89
N-Gain	Eksperimen	30	0.7433	0.9076	0.55	0.90
	Kontrol	30	0.5980	0.15562	0.12	0.87

Based on Table 2, it can be seen that the experimental class pretest has an average value that is not much different. From this data it was also obtained that the maximum score for the experimental class was higher than the control class with a difference that was not much different, meaning that the students' abilities were almost at the same point. Meanwhile, the posttest results for the experimental class were much higher than the control class with the average and maximum scores obtained being higher than the control class. The N-Gain value obtained by the experimental class was also much higher than the control class with the average N-Gain value of the experimental class being classified as high while the average N-Gain value of the control class was classified as medium.

To test the normality of the pretest and posttest data, an inferential statistical test will be carried out, namely the Kolmogorov-Smirnov normality test, because the data used is more than 50. The normality test is carried out to determine the pretest and posttest scores obtained from the experimental group and the control group from a normally distributed population. or not.

$H_0 : \mu_1 = \mu_2$: There is no difference in data distribution between students in the experimental class and the control class (Normal)

$H_1 : \mu_1 \neq \mu_2$: There is a difference in the distribution of normal data between students in the experimental class and the control class (Not Normal)

The following normality test results can be seen in the table:

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Table 3. Pretest Normality Test Results

kelas		*Kolmogorov-smirnov*		
		statistic	df	Sig.
Pretest	Eksperimen	.139	30	0.147
	Kontrol	.141	30	0.131

Based on the results of the pretest normality test in Table 3, the significance value of the normality test H_0 was accepted for the experimental class and control class. So it can be concluded that the group pretest data. The experimental and control class groups are normally distributed or there is no difference in data distribution between the experimental class and the control class.

Table 4. Posttest Normality Test Results

kelas		*Kolmogorov-smirnov*		
		statistic	df	Sig.
Postest	Eksperimen	.175	30	0.200
	Kontrol	.134	30	0.177

Based on the results of the posttest normality test in Table 4, the significance value of the normality test H_0 was accepted for the experimental class and control class. So it can be concluded that the posttest data from the experimental group and the control class group are normally distributed or there is no difference in data distribution between the experimental class and the control class.

Table 5. N-Gain Normality Test Results

kelas		*Kolmogorov-smirnov*		
		statistic	df	Sig.
N-Gain	Eksperimen	.157	30	0.58
	Kontrol	.095	30	0.200

Based on the results of the N-Gain normality test in Table 5, the significance value of the H0 normality test is accepted for the experimental class and control class. So it can be concluded that the N-Gain data for the experimental group and the control class group are normally distributed or there is no difference in data distribution between the experimental class and the control class.

The homogeneity test is a test carried out to determine whether the variations in data from the sample being analyzed are homogeneous or not. Provisions for testing criteria for homogeneity tests. The hypotheses in the homogeneity test are:

$H_0 : \mu_1 = \mu_2$: There is no difference in data variation between students in the experimental class and the control class (Homogeneous)

$H_1 : \mu_1 \neq \mu_2$: There are differences in normal data variations between students in the experimental class and the control class (Not Homogeneous)

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The following results from the homogeneity test can be seen in table 6

Table 4.6 Homogeneity Test Results

kelas	*levene Statistic*		Keterangan
	F	Sig.	
Pretes	0.656	0.421	Bervariansi Homogen
Postest	2.984	0.89	Bervariansi Homogen
N-Gain	3.650	0.61	Bervariansi Homogen

Based on the results in table 6, it is known that the homogeneity test results from the pretest, posttest and N-Gain data for the experimental and control classes mean that H0 is accepted or all data variations are homogeneous. So it can be concluded that there is no variation in data between the experimental class and the control class.

The pretest average similarity test was carried out to determine the similarity of initial creative thinking abilities between the experimental class and the control class. The hypothesis in this test is as follows:

$H_0 : \mu_1 = \mu_2$: There is no difference in the average pretest score between experimental class and control class students

$H_1 : \mu_1 \neq \mu_2$: There is a difference in the average pretest score between experimental class and control class students

The following are the results of the pretest average similarity test as follows:

Table 7 Pretest Average Similarity Test Results

Pretest Average Similarity Test	df	Sig(2-tailed)
	58	0.313

Based on Table 4.7, a sig value ≥ 0.05 is obtained so that H0 is accepted, meaning there is no difference in initial creative thinking abilities between experimental class and control class students.

The following are the results of the posttest average similarity test as follows:

Table 8 Posttest Average Difference Test Results

Posttest Mean Difference Test	df	Sig(2-tailed)
	58	0.000

Based on Table 8, the sig value < 0.05 is obtained so that H0 is rejected, meaning that there is a difference in the final ability to think creatively between experimental class and control class students.

Hypothesis testing is a test to determine the increase in students' mathematical creative thinking abilities between the experimental class and the control class. This test uses a two-way Independent Sample T-Test. The hypotheses in this test are:

$H_0 : \mu_1 = \mu_2$: There is no difference in the average increase in creative thinking abilities between students in the experimental class and the control class

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H1 : $\mu_1 \neq \mu_2$: There is a difference in the average increase in creative thinking abilities between students in the experimental class and the control class

Following are the test results in table 9

Table 9 T-Test Results for Increasing Students' Mathematical Creative Thinking Ability

Improved Thinking Ability	df	Sig (2-tailed)
Mathematical Creative	58	0.000

Based on the results of the first hypothesis test, the significance value of increasing mathematical creative thinking abilities was obtained at 0.000, meaning that H0 was rejected. So it can be concluded that students' mathematical creative thinking abilities between experimental class and control class students have increased or there is a significant average increase in mathematical creative thinking abilities between experimental class and control class students.

DISCUSSION

The results of pretest data analysis for the experimental class and control class showed that there was no difference in the average value of creative thinking abilities. This condition shows that there is no initial ability to think creatively between the experimental class and the control class. The experimental class and control class have the same initial abilities so that when given treatment they will see an increase. To improve students' mathematical creative thinking abilities, a learning process that involves students is needed, so that students are more enthusiastic and enthusiastic while learning (Hasibuan et al., 2021)

After being given treatment using the Discovery Learning learning model in the experimental class and using the conventional learning model for the control class, a posttest was then carried out for the data obtained to test the difference in posttest averages. The results of the posttest average difference test show that there is a difference in the average creative thinking ability between students in the experimental class and the control class. The value of creative thinking abilities is based on the scores obtained by students as follows

Table 3. Creative thinking ability

Class	Creative thinking ability	Total	percentage
Eksperimen	tall	20	67%
	currently	8	27%
	low	2	7%
Kontrol	tall	7	23%
	currently	18	60%
	low	5	17 %

Based on Table 3, it can be seen that the creative thinking ability of the experimental class is higher than that of the control class, meaning that students are able to solve the questions that have been given, where the instrument making is adjusted to the indicators of mathematical creative thinking ability. This

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is in accordance with the results of the average scores obtained by students as well as the results of hypothesis testing which show that the increase in creative thinking in the experimental class is better than the control class. This is in accordance with (Yuliawati & Panjaitan, 2017) stating that the Discovery Learning learning model provides positive things for creative thinking abilities as shown by an increase in the average value of creative thinking abilities.

The ability to think creatively in the experimental class received a high score because during the learning process using Discovery Learning, students were freed to find out and solve their own problems and were given the freedom to express ideas. Through Discovery Learning, it encourages students to actively find out and investigate for themselves so that the results obtained will last a long time in students' memories and will not be easily forgotten by students (Aminah, Yahya, Devilla, 2022). During the learning process, students are given a problem to identify so that students are able to discover a concept (Leksani et al., 2018). This trains students to think creatively by expressing ideas that are relevant to the problem. In accordance with (Leksani et al., 2018) stated that Discovery Learning is defined as a learning process that occurs when learning material is not presented in its final form, but students are expected to organize it themselves.

The Discovery Learning learning model requires students to be active and creative by fostering curiosity so that students can ask questions and give their opinions. Discovery Learning can change passive conditions to become active and creative (Martaningsih, 2023). Students who have low thinking abilities because students are not yet familiar with the learning process which makes students actively look for concepts to solve problems on their own. Students must be familiarized with discovery activities to get better results (Rohim et al., 2012)

Control class students who used conventional learning models had lower creative thinking abilities than the experimental class. This result is because students are too used to procedural learning methods, so students cannot solve problems freely (Purwaningrum, 2016). In the control class there were several students who had high creative thinking abilities because in the learning process students tried to be active in class by asking questions about things they did not understand. Creative thinking can increase with students who have a positive response and are willing to play an active role in conventional learning models (Tumurun, 2022)

In accordance with the results of research conducted by (Nahdi et.all, 2015) which resulted in the conclusion that the Discovery Learning learning model is better in improving creative thinking abilities. Increasing the creative mathematical thinking abilities of students who receive the Discovery Learning learning model is better than students who receive ordinary learning (Aminah, Yahya, Devilla, 2022). Then it is also supported by the results of research conducted (Ishak, 2017) The Discovery Learning model has a better increase in creative thinking abilities compared to classes that use the STAD type

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cooperative learning model. From the results, improvements using the Discovery Learning model appear to be more significant or greater compared to other models.

Data from the test results of students' creative thinking abilities based on indicators of the measured aspects of creative thinking abilities can be analyzed for the average level of student achievement in Figure 1:

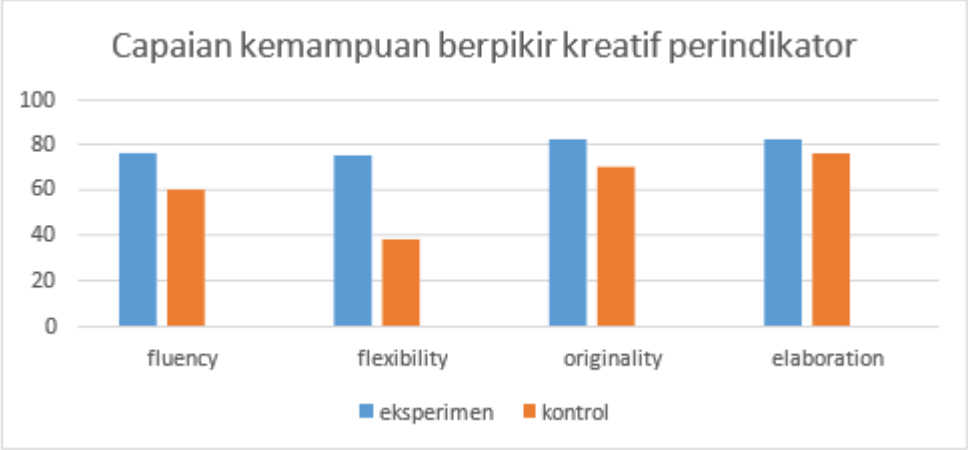

Figure 1. Achievement of creative thinking ability indicators

Based on Figure 1, it can be seen that the achievement of mathematical creative thinking abilities of experimental class students who use the Discovery Learning learning model, creative thinking indicators have a higher average than those of the control class who use conventional learning models. The indicator where the difference is visible is the flexibility indicator where the difference reaches 40%. This is because in the experimental class learning is student-centered so that students play an active role in searching for and conveying ideas to discover a concept. In discovery learning, this focuses on the ability of students to discover and construct a concept in learning activities (Yuliawati & Panjaitan, 2017). Meanwhile, in the control class, students only used the solution method given by the teacher. Students who do not meet flexibility generally tend to only use the steps or formulas given by the teacher (Effendi & Farlina, 2017). However, at the elaboration stage there were no significant differences. In the control class, students have good elaboration skills because students who have a good response to the conventional learning model will pay attention to the teacher when explaining and when solving problems, students can write detailed information.

In the conventional learning model, teachers easily explain lessons well (Novianti et al., 2020) Students who have a positive response will perform learning activities well and produce good creative thinking abilities (Tumurun, 2022). Most students' creative thinking abilities are already possessed by experimental class students who have creative thinking abilities in the high category and are shown by the students' interpretations of each -Each indicator has a high category. The

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creative thinking abilities of control class students are not yet fully possessed by the students, which is shown by the students' interpretation of each indicator which is in the medium interpretation, namely the fluency indicator and low in the flexibility indicator.

Students who do not meet the fluency and flexibility indicators generally tend to only use the steps or formulas given by the teacher (Effendi & Farlina, 2017). The Discovery Learning learning steps are in accordance with the achievements of the mathematical creative thinking ability indicators, so that the learning that is analyzed or tested to see the difference in improvement compared to the control class. At each meeting, the teaching materials provided using the Discovery Learning learning model always contain indicators of creative thinking abilities so that the teaching materials provided stimulate students to think creatively according to the Discovery Learning learning steps. Meanwhile, in the control class, students are not required to actively seek solutions independently. Students only listen to the teacher's explanation and write down the solution process in the way given by the teacher.

Experimental class students have a higher average score than the control class, meaning that the creative thinking ability of the experimental class is better. This is supported by the results of the percentage of students' abilities from each indicator of creative thinking ability. Experimental class students have a better understanding of the questions given, besides that most of the experimental class students are able to solve the questions with correct and correct answers.

CONCLUSION AND SUGGESTION

This research aims to determine the increase in creative thinking abilities through the Discovery Learning learning model. Based on the research results, there is an increase in creative thinking through the Discovery Learning learning model. The Discovery Learning learning model has a statistically significant influence on mathematical creative thinking abilities. Students who have good creative thinking abilities get high marks because during the learning process using Discovery Learning students are freed to find out and solve problems on their own and are given the freedom to express ideas. Based on the research results, it is hoped that teachers can apply the Discovery Learning learning model. Apart from that, more practice is also needed on creative thinking skills so that students' mathematical creative thinking skills become better.

REFERENCE

Aminah, Yahya, Devilla, A. M. R. (2022). Peningkatan Kemampuan Berpikir Kreatif Melalui Model Pembelajaran Discovery Learning. *Didaktis: Jurnal Pendidikan Dan Ilmu Pengetahuan*, *22*(2), 197. https://doi.org/10.30651/didaktis.v22i2.11816

Andiyana, M. A., Rippi, M., & Hidayat, W. (2018). ANALISIS KEMAMPUAN BERPIKIR KREATIF MATEMATIS SISWA SMP PADA MATERI BANGUN RUANG. *Jurnal Pembelajaran*

e-ISSN: 2528-102X
p-ISSN: 2541-4321

Matematika Inovatif, *1*(2), 239–248. https://doi.org/DOI 10.22460/jpmi.v1i3.239-248

Effendi, K. N., & Farlina, E. (2017). Kemampuan Berpikir Kreatif Siswa SMP kelas VII dalam Penyelesaian Masalah Statistika. *Jurnal Analisa*, *3*(2), 130–137. https://doi.org/10.15575/ja.v3i2.2013

Faturohman, I., & Afriansyah, E. A. (2020). Peningkatan Kemampuan Berpikir Kreatif Matematis Siswa melalui Creative Problem Solving. *Mosharafa: Jurnal Pendidikan Matematika*, *9*(1), 107–118. https://doi.org/10.31980/mosharafa.v9i1.562

Ginting, E. B., Purwanto, S. E., & Faradillah, A. (2019). Pengaruh Model Pembelajaran Creative Problem Solving (CPS) terhadap Kemampuan Berpikir Kreatif Matematis Siswa. *Jurnal Gammath*, *4*(1), 1–8.

Hasibuan, E. K., Rambe, N. A., & Saleh, S. (2021). Penerapan Model Pembelajaran Discovery Learning Untuk Meningkatkan Motivasi Belajar Dan Hasil Belajar Matematika Siswa Kelas Viii Mts. *AXIOM : Jurnal Pendidikan Dan Matematika*, *10*(1), 61. https://doi.org/10.30821/axiom.v10i1.8532

Huda, U. (2014). *PENINGKATAN KEMAMPUAN BERPIKIR KREATIF MATEMATIS DAN HABIT OF THINKING INTERDEPENDENTLY (HTI) SISWA MELALUI PENDEKATAN OPEN-ENDED DENGAN SETTING KOOPERATIF*. Universitas Pendidikan Indonesia.

Leksani, S. A., Syaodih, E., & Ilyas. (2018). Meningkatkan Kemampuan Berpikir Kreatif Menggunakan Model Pembelajaran Discovery Learning. *Jurnal Pendidikan Dan Pembelajaran Ekonomi Akuntansi*, *4*(1), 16–23.

Lestari, E. K., & Yudhanegara, R. M. (2018). *Penelitian Pendidikan Matematika* (III). PT Refika Aditama.

Martaningsih, T. (2023). *Hasil cek_naskah 13*.

Munandar, U. (2014). *pengembangan kreativitas anak berbakat* (III). PT Rineka Cipta.

Novianti, C., Sadipun, B., & Balan, J. M. (2020). Pengaruh Motivasi Belajar Terhadap Hasil Belajar Matematika Peserta Didik. *Science, and Physics Education Journal (SPEJ)*, *3*(2), 57–75. https://doi.org/10.31539/spej.v3i2.992

purwaningrum. (2016). Pengembangan Kemampuan. *PENGEMBANGAN KEMAMPUAN BERPIKIR KREATIF MATEMATIS MELALUI DISCOVERY LEARNING*, *1*(1), 102–114.

Relitasari, P., Suyitno, A., & Suyitno, H. (2018). Efektivitas Model Discovery Learning Berbantuan Ice Breaking untuk Meningkatkan Kemampuan Berpikir Kreatif Matematis Materi Geometri. *Prisma, Prosiding Seminar Nasional Matematika*, *1*, 269–278.

Rohim, F., Susanto, H., & Ellianawati. (2012). Penerapan Model Discovery Terbimbing Pada Pembelajaran Fisika Untuk Meningkatkan Kemampuan Berpikir Kreatif. *Unnes Physics Education Journal*, *1*(1), 2.

e-ISSN: 2528-102X
p-ISSN: 2541-4321

Rudyanto, H. E. (2016). Model Discovery Learning Dengan Pendekatan Saintifik Bermuatan Karakter Untuk Meningkatkan Kemampuan Berpikir Kreatif. *Premiere Educandum : Jurnal Pendidikan Dasar Dan Pembelajaran*, *4*(01), 41–48. https://doi.org/10.25273/pe.v4i01.305

Santi, I., Maimunah, M., & Roza, Y. (2020). Analisis Kemampuan Berpikir Kreatif Matematis Siswa Smk Pada Materi Barisan Dan Deret Di Kota Pekanbaru. *Jurnal Derivat: Jurnal Matematika Dan Pendidikan Matematika*, *6*(2), 95–106. https://doi.org/10.31316/j.derivat.v6i2.500

Silver, E. A. (1997). Fostering creativity through instruction rich in mathematical problem solving and problem posing. *Zentralblatt Für Didaktik Der Mathematik*, *29*(3), 75–80. https://doi.org/10.1007/s11858-997-0003-x

Surur, M., Oktavia, S. T., Prodi, D., Ekonomi, P., Prodi, M., & Ekonomi, P. (2019). Pengaruh Model Pembelajaran Discovery Learning. *Jurnal Pendidikan Edutama*, *6*(1), 11–18.

Tumurun, W. (2022). Pengaruh Model Pembelajaran Discovery Learning Terhadap Keterampilan BERPIKIR KREATIF SISWA PADA MATERI SIFAT-SIFAT CAHAYA. *Jurnal Pendidikan Indonesia : Teori, Penelitian, Dan Inovasi*, *2*(5), 101–110. https://doi.org/10.59818/jpi.v2i5.340

Yuliawati, N., & Panjaitan, R. L. (2017). Pengaruh Discovery Learning Terhadap Kemampuan Berpikir Kreatif Siswa Sekolah Dasar. *Jurnal Pena Ilmiah*, *2*(1), 221–230.