EFFORTS TO IMPROVE CREATIVE THINKING ABILITY AND TROUBLESHOOTING ABILITY THROUGH MODEL SYNECTIC LEARNING IN LESSONS MATHEMATICS CLASS X SMA PGRI 2 MAKASSAR

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ABSTRACT

This study aims to improve creative thinking skills and problem solving skills through the synectic learning model in mathematics lessons for X grade students of SMA PGRI 2 Makassar. This research is classroom action research (CAR) with the research subject being class X SMA PGRI 2 Makassar in the odd semester of 2021/2022, totaling 10 students. Data retrieval was carried out using a test of the results of creative thinking in learning mathematics at the end of the cycle and observation sheets carried out every time the learning process took place. The data collected were analyzed using quantitative analysis. The results showed that the average score of students' mathematics learning creative thinking results in the first cycle was 60.60 and the standard deviation was 6, 489 then in the second cycle, the average score of students' mathematics learning creative thinking results was 77.40 with a standard deviation of 8.002. The completeness of the results of creative thinking in classical mathematics learning in the cycle is 10% and in the second cycle there is an increase of 90%. From the results of this study, it can be concluded that by applying the synectic learning model there is an increase in students' creative thinking in learning mathematics.

Keywords: Synectic learning model, creative thinking results, problem solving ability

1. Introduction

InFacing the era of globalization which is marked by the rapid development of science and technology, reliable and globally competent human resources are needed.(Yarmayani, 2016). Qualified human resources have thinking and reliable skills which include critical, systematic, creative, logical thinking who are able to work well together, and are able to solve problems in life with bright ideas.(Rahmazatullaili, & Etc., 2017)Problem solving ability is very important for every student because problem solving is a general goal of teaching mathematics which includes methods, procedures and strategies is the core and main process in the mathematics curriculum and is the main goal in learning mathematics(Ulya, 2016). Mathematics is one of the subjects that occupies an important role in education and mathematics is the science that underlies the

development of technology, because it has an important role in various disciplines and advances the power of human thought. (Tina, 2016).

In learning mathematics, of course, there is a link between problem solving and creative thinking. The relationship between creative thinking and problem solving can be seen from several definitions of creative thinking skills. According to Hwang et al(Mahmudi, 2008)defines the ability to think creatively as cognitive skills to provide solutions to a problem or make something useful or something new from the ordinary, while Krutetski views creative thinking as an approach to finding problem solutions in an easy and flexible way.With great attention to the characteristics of mathematics as a scientific discipline as outlined(Maulana, 2017)suggests that creative thinking skills that can be developed through mathematics learning activities, for

example: The ability to formulate problems into mathematical models, the ability to explore the ability to identify, the ability to clarify or evaluate math problems.According to Munandar(Arfiyani, 2018)said that the characteristics of creative thinking are fluency, flexibility, originality, elaboration, or detail that stands out, motivates from within to do something, has curiosity, wants to seek new experiences, is not easily discouraged. Fluency in creative thinking is the ability to generate many ideas and various answers, students who are fluent in creative thinking tend to provide several alternative answers. Flexibility in creative thinking is the ability to generate alternative ideas from different perspectives, flexible allows students to change approaches or ways of thinking easily. Novelty in creative thinking is the ability to produce unique new expressions and think in unusual ways.(Agustina & Noo, 2016).

According to Gordon(Aunurrahman, 2016)Synectics are designed using metaphorical activities, then provide a structure where people can free themselves to develop imagination in insight into everyday activities.According to Munandar(Harisuddin, 2019)creativity or creative thinking as the ability to see various possible solutions to a problem

2. Research Methods

This type of research is Classroom Action Research (CAR) which is carried out collaboratively with schools (principals, teachers), and researchers by increasing students' mathematical creative thinking skills through the Synectic learning model with a scientific approach. Classroom action research is one of the problem solving activities carried out in 2 cycles with the following stages: Planning, Implementation; Data Collection, and Data analysis.

The place and time of this research will be carried out at SMA PGRI 2 Makassar, which is located at JL. Vetran Selatan Lr. 241 Makassar. The research took place in the even semester of the 2020/2021 school year..

3. Results and Discussion

In carrying out this research, the researcher took several steps to prepare and implement it. The steps are planning, implementation, observation, and reflection which is divided into two cycles. The data analysis technique is quantitative to be used in categorizing the value of the results of

creative thinking in learning mathematics which is designed into 5 categories based on the KKM set at SMA PGRI 2 Makassar, which is 75 achieved by students.

Table 1 Categorization of values

No		Score	Category
1		80-100	Very high
2		66-79	Tall
3		56-65	Currently
4		40-55	Low
5		0-39	Very low

Source (Arikunto, 2015)

The criteria for success in this classroom action research is if there is an increase in mathematical creative thinking skills after the Synectic learning model is applied. Then the average student learning outcomes get 75, from an ideal score of 100 and a maximum of 85% complete which meets the minimum completeness criteria. With the following formula

The data on the results of students' creative thinking in learning mathematics were obtained from the results of the creative thinking test in learning mathematics in the first cycle at the fourth meeting. The data were analyzed descriptively from the results of creative thinking in learning mathematics for X grade students of SMA PGRI 2 Makassar. The synectic learning model with a scientific approach was applied as follow

Table 2 Frequency Distribution with Percentage Score Results of Creative Thinking Learning Mathematics for Class X Students of SMA PGRI 2 Makassar in Cycle I

No	Score	Category	Frequency	(%)
1	80-100	Very high	0	0%
2	66-79	Tall	3	30%
3	56-65	Currently	3	30%
4	40-55	Low	4	40%
5	0-39	Very low	0	0%

(Source of processed data)

Judging from the table above, the average score is in the medium category. However, if the average value of the test of creative thinking results in learning mathematics for class X students of SMA PGRI Makassar is grouped into the completeness category, it can be seen in the distribution table and the frequency of the test results of creative thinking in learning mathematics for class X students of SMA PGRI 2 Makassar as follows

Table 3 Description of the frequency and percentage of completeness of students' creative thinking in learning mathematics in Cycle I

Score	Category	Frequency	(%)
0-69	Not finished	9	90%
70-100	Complete	1	10%

(Source of processed data)

Based on the percentage of mastery learning, then in the first cycle it can be concluded that learning by applying the Synectics learning model with a scientific approach in class X SMA PGRI 2 Makassar has not been said to be successful, because it has not reached the standard of learning mastery which is classically 85% of the 10 students who must is in the complete category. Because the percentage of students' complete mathematics learning outcomes in cycle I only reached 10% or only 1 student who was in the category of complete mathematics learning outcomes, this research did not stop in cycle I but continued in cycle II.

1) Cycle II Student Learning Outcomes

Table 4 Frequency Distribution with Percentage of Creative Thinking Results ScoreStudyMathematics of Class X Students of SMA PGRI 2 Makassar in Cycle II

No	**Score**	**Category**	**Frequency**	**(%)**
1	80-100	Very high	3	30%
2	6679	Tall	7	70%
3	56-65	Currently	0	0
4	40-55	Low	0	0
5	30-39	Very low	0	0

Table 5 Frequency Distribution with Percentage of Completeness Score of Creative Thinking ResultsStudyMathematics of Class X Students of SMA PGRI 2 Makassar in Cycle II

Score	Category	Frequency	Percentage (%)
0 – 69	Not finished	1	10%
70-100	Complete	9%	90%

(Source of processed data)

If seen from Table 5 completeness of creative thinking resultsstudyIn mathematics, it can be concluded that learning mathematics through the synectic learning model with a scientific approach has been successful, because it has reached the minimum standard of completeness, which is 70% in the complete category. Because the percentage of mastery learning outcomes in cycle II reaches 90%, this value has reached the criteria for classical learning outcomes, which is 85%. This means that the research reaches cycle II.

Approach in class X SMA PGRI 2 Makassar has not been said to be successful, because it has not reached the standard of learning mastery which is classically 85% of the 10 students who must is in the complete category. Because the percentage of students' complete mathematics learning outcomes in cycle I only reached 10% or only 1 student who was in the category of complete mathematics learning outcomes, this research did not stop in cycle I but continued in cycle II.

4. Conclusions

Based on the results of research conducted at SMA PGRI 2 Makassar with a synectic learning model with a scientific approach in mathematics lessons can improve students' creative thinking outcomes in mathematics learning seen from the following things: Learning test results have increased. In the first cycle the results of creative thinking in learning mathematics with an average of 60.60% with a medium category in the second cycle the test results in learning mathematics creative thinking with an average percentage of 77.40% with good categories. Student activity in the learning. process also increased, which was marked by the enthusiastic attitude of students in participating in lessons, doing worksheets, students' interest and motivation in learning mathematics also experienced an increase, as well as a lack of students doing other activities during the learning process.

6. References

Agustina & Noor. (2016). Hubungan Hasil Belajar dan Tingkat Berpikir Kreatif Siswa dalam Pembelajaran Matematika. Jurnal Pendidikan Matematika.Vol 2(3). Hal 1-10.

Arikunto, Suharsimi. (2015). Dasar-dasar Evaluasi Pendidikan. Jakarta: Bumi Aksara.

Aunurrahman. (2016). Belajar dan Pembelajaran. Bandung: Alphabeta.

Cintia, Kristin & Anugraheni (2018). Penerapan Model Pembelajaran Discovery Learning untuk Meningkatkkan Kemampuan Berpikir Kreatif dan Hasil Belajar Siswa. Perspektif Ilmu Pendidikan. Vol 32(2). Hal 1-9.

Harisuddin Iqbal Muhammad. (2019). Secuil Esensi Berpikir Kreatif dan Motivasi Belajar Siswa. Bandung: PT. Panca Terra Firma.

Isjoni, (2012). Cooperative Learning: Mengembangkan Kemampuan Belajar Berkelompok. Bandung: Alfabeta.

Mahmudi Ali. (2008). Pemecahan Masalah dan Berpikir Kreatif. Makalah disampaikan pada Konferensi Nasional Matematik (KNM) XIV : Universitas Sriwijaya Palembang. 24-27 Juli 2008.

Maulana. (2017). Konsep Dasar Matematika dan Pengembangan Kemampuan Berpikir Kritis-Kreatif. Sumedang : Upi Sumedang Press

Rahmazatullaili, Zubainur Morina & Munzir Said (2017). Kemampuan Berpikir Kreatif dan Pemecahan Masalah Siswa Melalui Penerapan Model Project Based Learning. Beta Jurnal Tadris Matematika, Vol 10(2), Hal 166-183.

Sumartini Sri Tina. (2016). Peningkatan Kemampuan Pemecahan Masalah Matematis Siswa melalui Pembelajaran Berbasis Masalah. Jurnal Pendidikan Matematika STKIP Garut, Vol 5 (2), Hal 148-158.

Ulya Himmatul. (2016). Profil Kemampuan Pemecahan Masalah Siswa Bermotivasi Belajar Tinggi Berdasarkan Ideal Problem Solving. Jurnal Konseling Gusjigang, Vol 2(1), Hal 90-96.

Yarmayani Ayu. (2016). Analisis Kemampuan Pemecahan Masalah Matematis Siswa Kelas XI MIPA SMA Negeri 1 Kota Jambi. Jurnal Ilmiah Dikdaya, Vol 6(2), Hal 12-19.