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The Effect of Cooperative Model Type of Decision Making Assisted Poster on Creative Thinking Ability on Biology Material

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Abstract: This study aims to determine the effect of the poster-assisted Decision Making cooperative learning model on the creative thinking skills of students in class X Madrasah. This research is a type of quantitative research with a quasi-experimental design. The sample of this research is the students of class X IPA Madrasah Aliyah which consists of class X IPA 1 totaling 30 students as the experimental class and X IPA 2 totaling 30 students as the control class. The instrument in this research is in the form of a test in the form of essay questions with 1 item with indicators of creative thinking Fluency, Flexibility, Originality and elaboration. Analysis of creative thinking ability data using test formulas also with the help of Microsoft Excel 2010 Software. The prerequisite test proved to be normally distributed and homogeneous. The result of the test calculation is that it is worth 2.21076 and is worth 1.6973 so that it shows that it is accepted. The conclusions in this study explain that there is an effect of the poster-assisted Decision Making type cooperative learning model on biology material on the creative thinking skills of class X Madrasah students.

Keywords: Cooperative Learning, Poster-Assisted Decision Making Learning, Students' Creative Thinking Ability

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INTRODUCTION

Indonesia needs a generation of intelligent and creative people to be able to compete in the world and become *agents of change*. The development of creative thinking needs to be improved in advancing Indonesia and creative ideas/ideas can create new works, both in terms of theory and the products produced, this is also one of the goals of national education. National education has been regulated in laws and ministerial regulations, be it general education or religious education. Both educations have been regulated in the national education system law (Darlis, 2017). In the National Education System Law Number 20 of 2003, article 3 states that national education functions to develop capabilities and shape the character and civilization of a dignified nation in the context of educating the nation's life, and aims at developing the potential of students to become human beings who believe and fear God Almighty. One, having noble character, healthy, knowledgeable, capable, creative, independent, and being a democratic and responsible citizen (Samrin, 2015).

Education is an *inherent* life, education has colored the long road of human life from beginning to end. Education is also a true guardian and a human need. VR Taneja, quoting *Property Lodge*, that *life is education is life*. It means that talking about humans will always coincide with education, and vice versa (Yusuf, 2018). Education is stated to directly encourage changes in one's abilities. The importance of education is to directly encourage changes in the quality of cognitive, affective, psychomotor abilities (Rahmat, 2014). In essence, human history cannot be separated from education. This is explained in Surah Al-Baqarah verse 31 (Al-Quran dan Terjemahan, 2019):

Meaning: "He taught Adam the names (objects) entirely, then He showed them to the angels, saying, "Mention to Me the names of these (objects) if you are right!". (Surat al-Baqarah: 31).

(And He taught Adam names) meaning the names of objects (all of them) by putting into his heart knowledge about them (then He presented them) meaning the things that turned out to be not only objects. dead, but also intelligent beings, (to the angels, then Allah said "Tell Me) mention (their names) namely the names of those things (if you are right.") that no one knows better than you among the creatures that I created or that you are the one who is more entitled to be the caliph. As 'answer the conditions' indicated by the previous sentence.

Allah also says in the Qur'an which hints at us to carry out learning activities, giving orders also to learn from childhood, namely from ignorance. This is explained in Surah Al-A'laq verses 1-5:

Meaning: "Read by (mentioning) the name of your Lord who created!, He created man from a clot of blood, Read! Your Lord is the Most Gracious, who teaches (humans) with a pen, He teaches people what they do not know." (Surat al-Alaq: 1-5).

God taught man through the pen which resulted in writings. Then God also teaches humans both through revelation (to the Prophet), dreams, ladunni knowledge, and knowledge with the efforts of humans themselves, that Allah is the One Who Teaches from what humans do not know. And educational transformation is needed to improve the quality of education in any subject, such as Biology, from learning by rote to learning to think., verses: 17-20, which reads:

Meaning: "Have they not looked at the camel, how it was created? How is the sky lifted up? How are mountains built? How is the earth spread out?" (Surat al-Ghasiyah: 17-20).

In these four verses of Surah al-Ghasiyah, Allah invites us to think from the most inseparable part of the daily life of Arab society at that time, Camel. Then this verse of the Qur'an also invites us to 'read', living and contemplate natural phenomena. These four verses talk about the phenomenon of camels, the sky, mountains and the plains of the earth. From this verse we are invited to think creatively about how the camel creation process, the process of the sky being raised, mountains being upheld and the earth being spread out so that we know the wonders of God's creation.

In the learning process at school, students in general are still not stimulated to improve creative thinking skills as evidenced by the KKM scores of some students are still low. The ability to think creatively is needed so that the competence of our human resources is not inferior to other nations.

Creative thinking is thinking that must be done by students, creative thinking contains fluent new ideas or ideas, the idea in question is how to solve problems appropriately. Creative thinking almost always fulfills the flexibility component, because flexibility is the opposite of rigidity of thinking. Flexibility is an aspect of creativity that is clearly relevant to solving biological problems or in this case solving problems that require creative thinking (Susiningrum, 2018).

Creative thinking is a thinking process that has the characteristics of fluency, flexibility, originality and detailing or elaboration (Filasaime, 2008). Fluency is the ability to issue ideas or ideas clearly correct as much as possible. Flexibility is the ability to bring out many diverse and non-monotonous ideas or ideas by looking at it from various points of view. Originality is the ability to bring out ideas or ideas that are unique and unusual, for example those from those in a book or different from the opinions of others. Elaboration is the ability to explain the factors that influence and add details to the idea or ideas so that they are more valuable,

suggesting creative thinking is defined as a mental activity that a person uses to develop new ideas or ideas fluently (*fluency*) and flexible. Meanwhile, Evans added another component of creative thinking, namely *problem sensitivity*, which is the ability to recognize the existence of a problem or ignore facts that are not appropriate (*misleading fact*), and originality, namely the ability to construct ideas in an unconventional manner. Starkoida Fisher also added another component, elaboration, namely adding ideas to make them clearer. From the various views above, in principle, all opinions are in line. In essence, the characteristics or components of creative thinking include sensitivity, fluency, flexibility, elaboration, and originality.

In the initial observation, the researcher conducted interviews with Madrasah Biology teachers and explained that the learning process used was more conventional. In conventional learning methods, students listen more to the teacher's explanation in front of the class and carry out assignments if the teacher gives practice questions to students. Which are often used in conventional learning include the lecture method, question and answer method, discussion method, assignment method. The conventional method is also a learning method that focuses on the teacher (*teacher centered*). It is necessary to apply learning that emphasizes constructivism that can be done using cooperative learning, the *Decision Making* which is one of the cooperative learning models can give students an active learning experience and can construct their understanding independently in groups.

To assist the learning process of students which contains materials or teaching materials that have been designed or compiled to be delivered to students with specific objectives in accordance with the teaching materials being taught, it will be more effective and efficient if the learning process is delivered with learning media. Learning media must pay attention to students both in terms of physical (sensory functioning) to use the learning media, and the media must also pay attention to the types of student learning styles. One of the learning media that can be used is posters. Because the learning process is a communication process between students and teachers, the poster here serves as a *channel/media* for the communication process.

Poster is as a visual combination of a strong design, with color, and a message with the intention of attracting the attention of passers-by but long enough to grasp the idea of the poster's content in their memory. The poster media encourages a response (response) from the audience and it would be better if it is used as a discussion medium. With the poster media, it can make it easier for teachers to convey biology material and make it easier for students to develop their creative thinking skills from the posters (Dityatulloh & Santoso, 2018).

Seeing that research on the application of the *Decision Making* with the help of posters on biological material on students' creative thinking skills is still a little found, researchers are interested in doing this research with the aim of increasing knowledge, creativity in solving a problem and developing new ideas and concepts against (Zubaidah et al., 2017). Through new learning models, students do not feel bored when following the learning process. The increasingly rapid progress of the era of educators must develop students' creative thinking skills and students can be active and creative. This will be a provision for Indonesia in the future that can advance Indonesia and can make Indonesia proud in the world with the existence of generations of nation's children who have positive thoughts and creative thinking.

Understanding science subject matter is one way to prepare the younger generation to live in a modern society (Suryaningsih, 2019). A growing proportion of problems and situations encountered in everyday life, including in professional contexts, require some level of science, especially Biology such as in agriculture, health, food making, and other fields that are indispensable in life. Thus, it is important to have an understanding of the extent to which learners are sufficiently prepared to apply Biology Science in solving problems. Based on this, learning science, including biology, is to train students' thinking skills, one of which is higher-order or creative thinking and from Yani Suryanningsi's research there is an increase in higher-order thinking skills for students in class XI IPA Madrasah Aliyah PUI Muaja, Indonesia through the application of a cooperative model of *decision making* (Suryaningsih, 2019).

Decision Making learning model allows students to be more responsive to receiving messages from other students and to be more active and creative. Learning model *Decision Making* uses a small group approach so that students can work together in choosing the best alternative in solving problems (Capraro & Cococcioni, 2015). In its application, students are required to express their opinions and knowledge, besides that students are trained to be able to share and teach each other to their friends, they can also learn from their friends and can increase the creativity of students.

METHOD

This research was conducted in August 2021 for one month. This research is a type of quantitative research with a quasi-experimental design. Sampling technique used the nonrand homized control group pretest posttest design (Sugiyono, 2016; Sumantri, 2015). The design pretest-posttest control group design as in **Table 1**.

Table 1. Pretest-posttest control group design

Group (Class)	Pretest	Treatment	Posttest
E	MP ₁	X1	P ₂
K	MP ₁	X2	P ₂

Notes:

E = Experimental class

K = Control class

X1 = Experimental treatment using learning model *Decision Making*

X2 = Treatment in the control class using conventional learning.

P₁ = Creative thinking ability test *Pretest*P₂ = *Posttest*M = *Matching*

The sample of this study were students of class X IPA Madrasah Aliyah consisting of class X IPA 1 totaling 30 students as the experimental class and X IPA 2 totaling 30 students as control class. The instrument for collecting data is in the form of a test in the form of essay questions with indicators of creative thinking Fluency, Flexibility, Originality and elaboration (Fatimah & Alfath, 2019). Analysis of creative thinking ability data using the "t-test" test formula also with the help of Microsoft Excel 2010 software (Nuryadi, 2017). Before conducting the research, the validity and reliability tests were first carried out by a competent panel, moderator or expert judgment. This research procedure consists of 4 stages with details of activities as follows: (1) Planning: Reviewing Core Competency Standards, Basic Competencies and assessment systems, preparing a learning implementation plan that will be used in class; (2) Action Implementation: applying a Decision Making poster-assisted; (3) Observation: observing and recording the course of the learning process Application of the Decision Making on Biology Materials on the Creative Thinking Ability of Class X Students of Madrasah Aliyah Al-Mukhlisin Batu Bara, Indonesia; (4) Evaluation: the results of observations are analyzed and an evaluation is carried out on the learning process of biology, especially the material of environmental change.

FINDING AND DISCUSSION

Finding

Through Decision Making students are able to find new things from a problem studied in biological material, for example students can think that waste is not just thrown away, but waste can be also used by making souvenirs/biological models as interesting and creative as possible. Students' creative thinking abilities can be increased by the implementation of the Decision Making because students' curiosity is higher by trying to make product designs

resulting from students' creative ideas. Data recapitulation result ability thinking creative as in **Table 2**.

Table 2. Data recapitulation result ability thinking creative

	E (X IPA 1)		K (X IPA 2)	
	Pre Test	Post Test	Pre Test	Post Test
N (Number of Students)	30 people		30 people	
Average	75	81.5	56.5	65.5

The average income from the pretest for the experiment (X IPA 1) is 75 also the posttest 81.5 and for the control (Average pretest of 56.25 with 65.25). From the results of the calculation of the average creative thinking ability that has been obtained, there is a better addition if it is observed based on the difference pretest and posttest for the experiment and control.

Based on the results of data analysis, the comparison between students' creative thinking abilities between the experimental class and the control class is based on creative thinking indicators as shown in **Table 3**.

Table 3. Analysis of creative thinking ability

Creative Thinking Indicator	Experiment Class (X IPA 1)		Control Class (X IPA 2)	
	Pretest	Posttest	Pretest	Posttest
Fluent thinking	82	85	66	71
Flexible thinking	79	83	65	72
Original thinking	75	85	53	64
Elaborative thinking	64	73	41	54
Total	300	326	225	261

The results of the posttest for each aspect (indicator) of creative thinking ability in the experimental class (X IPA 1) were more than the pretest, namely 326 for the posttest and 300 for pretest. Meanwhile, the posttest for each aspect of creative thinking ability (indicators) in the control class (X IPA 1) were also higher than the pretest, namely 261 for the posttest and 225 for pretest. When viewed from the results of the calculation of the experimental class indicator analysis and creative thinking ability control, it shows that the total value of the experimental class is higher than the control class.

Normality Test

Table 4 and **Table 5** show the results of the normalization test for students' creative thinking abilities in the experimental class and the control class.

Table 4. Creative thinking ability normality test experiment

Experiment Class	L_{count}	L_{table}	Index	Interpretation
<i>Pretest</i>	0.06616667	0,161	$L_h < L_t$	Normal distribution
<i>Posttest</i>	0.0999	0.161	$L_h < L_t$	Normal distribution

Results the calculation of the experimental class normality test shows that the data has a normal distribution get the pretest with L_{count} is 0.06616667 and L_{table} 0.161, then obtained the posttest value of 0.0999 and L_{table} 1.61. So, it can be concluded that $L_{count} < L_{table}$, then H_0 accepted and the data follows a normal distribution.

Table 5. Normality test of creative thinking ability of control class

Control Class	L_{count}	L_{table}	Index	Interpretation
<i>Pretest</i>	-0.0035	0,161	$L_h < L_t$	Normal distribution
<i>Posttest</i>	-0.0013	0.161	$L_h < L_t$	Normal distribution

The results of the normality test calculation for the experimental class show that the data is normally distributed has been in get the pretest with L_{count} is -0.0035 and L_{table} , then obtained the posttest value of -0.0611 0.161 and L_{table} 1.61. So it can be concluded that $L_{count} < L_{table}$, then H_0 accepted and the data follows a normal distribution.

Homogeneity Test

Table 6 shows the results of the homogeneity test of students' creative thinking abilities in the control class and the experimental class.

Table 6. Homogeneity test result of creative thinking ability

Type of Test	F_{count}	F_{table}	Index	Interpretation
<i>Posttest</i> experiment class and control class	0.5206	1.757	$F_{count} < F_{table}$	Homogeneous

The results of the homogeneity test calculation results for the control and experimental classes have been obtained F_{count} has a value of 0.5206 and F_{table} 1.757. So, it can be concluded that $F_{count} < F_{table}$ then H_0 is accepted and shows homogeneous data, so it is stated that the two classes come from homogeneous populations.

Hypothesis Testing

Table 7. Result of t-test of experiment class and control class

Type of Test	t_{count}	t_{table}	Index	Interpretation
<i>Posttest</i> experiment class and control class	2.21076	1.6973	$t_{count} > t_{table}$	H_a accepted

Table 7 shows the results of the experimental class and control class hypothesis testing. The results of the t_{test} experimental class and control class t_{count} is 2.21076 and t_{table} is 1.6973 so it shows $t_{\text{count}} > t_{\text{table}}$. From the previous decision (if $34_{N2} > MH_{N2}$) then accept H_0 . Proof of this hypothesis is that there is a significant effect in the use of Decision Making on biology material on the creative thinking abilities of class X Madrasah students.

Discussion

The results of the validity test of the essay questions were declared valid. Meanwhile, the reliability test of this study used the moderator technique and the panel technique. The moderator technique is to analyze by discussing where there is one person as a deterrent. With this technique, each item is discussed jointly by material experts.

In the normality test, the data are normally distributed both in the experimental and control classes. For homogeneity shows homogeneous data. So it is stated that the two classes come from a homogeneous population. Then from testing the results of this research hypothesis, it is known that the critical thinking results of students in the experimental class are higher than the control class. Proving the hypothesis means that there is an effect of learning in the experimental class on students' critical thinking skills.

Every student is involved in the act of making decisions or Decision Making.-based biology learning activities (Siribunnam et al., 2014). Decision Making require students to make decisions in response to the solved learning problems (Nurtamara et al., 2019). The steps for implementing Decision Making, educators inform the purpose and formulation of the problem, classically display posters/problem cases that are in accordance with the subject matter, make questions so that students can identify problems with pictures, in groups students can identify problems and make alternative solutions, individually (Mousoulides et al., 2008). Groups or individual students express their reasons for choosing the alternative, in groups or individually students are asked to find the cause of the problem, in groups/individually students propose actions to prevent the problem from occurring (Widiasih et al., 2018). Decision making is a form of thinking and the result of an action is called a decision. Decision Making can build students' creative thinking skills because decisions are the result of solving a problem that must be faced firmly and considered as a result or output of the cognitive processes that lead to the choice of a course of action (Lestari et al., 2018; Wu et al., 2014).

CONCLUSION

In the analysis of students' creative thinking ability indicators, the experimental class was higher than the control class and the average result was better when observed based on the difference pretest and posttest for the experiment and control. Cooperative learning Decision Making on biology material on the creative thinking abilities of tenth grade Madrasah students.

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