# Thinking Creative Through the Mordiscvein Learning Model In Science Course Content in Elementary Schools

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**ABSTRACT**
Thinking is a mental activity carried out by a person as a reaction or a developing issue or phenomenon. Creative thinking is a thinking process that is able to provide different ideas or ideas which can then become new knowledge and answers needed. Thinking creatively is like an oar in a boat, namely as an introduction to passing learning problems with students as controllers of the paddle in which direction students reach the desired goal or answer. Students' creative thinking is very important in all teaching and learning processes, especially in science content. One model that can be used in science learning to foster students' creative thinking is the use of the Mordiscvein learning model. Through this Mordiscvein learning model, it is hoped that each student can channel all the potential within students to carry out creative activities in groups. Every new student who enters the learning process, in their minds is always accompanied by curiosity.

**Keywords: Creative Thinking, Mordiscvein, Science**

## INTRODUCTION

Education is not merely a means of preparing for life in the future, but for the life of today's children who are experiencing development towards the level of maturity. Education is a learning process that is obtained by every human being (student) to be able to make humans (students) understand, understand, and be more mature and able to make humans (students) more critical in thinking. Thinking is a mental activity carried out by a person as a reaction or a developing issue or phenomenon. Thinking is a mental activity carried out by a person as a reaction or a developing issue or phenomenon. This thought process occurs in the human brain and mind as individuals who work both passively, actively, and massively (Nurjana & Cahyana, 2021) Elementary Schools have experienced a phase of change in learning from time to time which is influenced by the times and technological changes that continue to develop . Because of that the model, the creativity of teachers and qualified teachers play a major role in this transformation (Heinz, 2017).

Creative thinking is a thinking process that is able to provide different ideas or ideas which can then become new knowledge and answers needed. Thinking creatively is like an oar in a boat, namely as an introduction to passing learning problems with students as controllers of the paddle in which direction students reach the desired goal or answer. Creative thinking is simply a skill or ability or individual competency regarding how he is able to create, manipulate, differentiate something that

brings benefits to life (Agustina, 2019). In fostering creative thinking in students, the role of a teacher is needed to guide students in the learning process at school.

Aspects of creative thinking to assess the ability to think creatively use the references made, while the ability to think creatively is formulated as an ability that reflects the following aspects (Armandita, 2018) :

a) Think fluently or fluently which causes a person to be able to spark many ideas, answers, solve problems or questions.
b) Flexible thinking or flexibility that causes a person to be able to produce varied ideas, answers or questions.
c) Original thinking which causes a person to be able to produce new and unique expressions or be able to find unusual combinations of ordinary elements.
d) Elaborating skills that cause a person to be able to enrich and develop an idea.

The teacher's role is very important in helping trigger students' creative thinking skills, both with learning media, the methods used, the questions given to students and assignments from the teacher which require students to solve them by thinking creatively. In this case the learning used by the teacher must be able to stimulate students' creative thinking skills and help express student ideas and communicate scientifically (Mulyadi et al, 2016). Students' creative thinking is very important in all teaching and learning processes, especially in science content. Where in studying science requires the cultivation of very extraordinary concepts by teachers so that there are no misconceptions about science.

Natural Science is not just a collection of abstract concepts but material that is contextual and textualized through writing to meet cognitive, affective, personal integrative and social integrative needs (Burakgazi, 2016). The presence of an adequate model and integrating resources at school and outside of school can better serve the needs of various students and can help students solve various problems in learning science (Burakgazi et al, 2016).

Science learning should emphasize student activities more dominantly than teachers, because science has a domain to help all students find their own knowledge through inquiry activities as a reform in learning (Pringle et al, 2015). Therefore perspectives such as these should be highlighted in science teacher education and professional development programs and discussed in relation to the transformation of educational practice (Sjöström, 2018). Science learning is one of the subjects that provides various knowledge about the natural surroundings and their contents. This means that science studies all objects that exist in nature, events, and phenomena that appear in nature. For this reason, science learning is very important to learn starting from the elementary school level to tertiary institutions. PISA states that an understanding of the concept of science is very important for individuals to achieve their goals, PISA (Rahmah et al, 2017).

Based on data acquisition, at this time students' creative thinking skills, especially in science subjects, were less prominent in students because schools, in this case, teachers were not so able to facilitate students to be able to think creatively. Teachers only provide direct knowledge to students without giving opportunities to students to actively participate in learning. Because of this, students' creative thinking skills become less honed. Students' creative thinking skills need to be improved by providing facilities and opportunities for students to develop their creativity. Creative thinking skills that will be developed in learning include aspects of fluent thinking, flexible thinking, original thinking, elaborative thinking. The development of students' thinking skills is very necessary because there are still students who have low thinking skills. Classroom learning is carried out with the aim that students have good attitudes and skills, both creativity and the ability to propose concepts and make them understand problems, especially those related to the material taught by the teacher.

One model that can be used in science learning to foster students' creative thinking is the use of the Mordiscvein learning model. Where this model is a learning model that teaches students how to learn cooperatively in groups. Cooperative and collaborative activities include discussions starting with opening surprise activities, ice breaking, formulating experimental steps, publishing data, determining facts through raising hands and conclusions (Saleh et al, 2022). Each group member supports and helps each other in solving problems or finding solutions to questions given by the teacher. The Mordiscvein learning model is a learning designed so that students can determine the concepts to be studied by

themselves, although still with the teacher's guidance. Because elementary school students have not been able to find concepts truly independently like adults (Saleh et al, 2022).

Through this Mordiscvein learning model, it is hoped that each student can channel all the potential within students to carry out creative activities in groups. Every new student who enters the learning process, in their minds is always accompanied by curiosity. At this stage the teacher is expected to stimulate students to do what is called group learning skills that students have, for example by giving students the opportunity to ask (questioning), investigate (inquiry), search (searching), applying (manipulating) and testing (experimenting) to the stage of concluding (conclude).

## METHOD

This research is a class action research. This research was conducted in the form of a cycle consisting of four stages, namely the preparation stage (planning), the implementation stage, monitoring and evaluation (observation), and the analysis and reflection stage. Data collection techniques through observation, tests and documentation. Data analysis techniques in this study are qualitative and quantitative.

**a) Teacher Activity Data**

This data consists of 4 descriptors, namely Score 1 Poor, Score 2 Fair, Score 3 Good, Score 4 Very Good. Rukajat (2018: 28) The results of teacher observations are calculated by the formula:

$$NA = \frac{\text{jumlah skor yang diperoleh}}{\text{jumlah skor keseluruhan}} \times 100\%$$

The results of data processing are then converted into qualitative categories as follows :

Table 3.2 conversion of teacher activity data processing

| No. | RentangPresentase | Kategori |
|---|---|---|
| 1 | 87-100 | Sangat Baik |
| 2 | 75-84 | Baik |
| 3 | 65-74 | Cukup |
| 4 | <64 | Kurang |

**b) Student Activity**

This data consists of 4 descriptors, namely Score 1 Poor, Score 2 Fair, Score 3 Good, Score 4 Very Good. Rukajat, (2018: 28)

$$NA = \frac{\text{jumlah skor yang diperoleh}}{\text{jumlah skor keseluruhan}} \times 100\%$$

The results of data processing are then converted into qualitative categories as follows :

Table 3.3 Conversion of student activity data processing

| No. | RentangPresentase | Kategori |
|---|---|---|
| 1 | 87-100 | Sangat Baik |
| 2 | 75-84 | Baik |
| 3 | 65-74 | Cukup |
| 4 | <64 | Kurang |

**c) Student Creative Thinking Activities**

This data consists of 4 descriptors, namely Score 1 Poor, Score 2 Fair, Score 3 Good, Score 4 Very Good. Khalidah, (2016: 66) :

$$\frac{Jumlah\ Skor\ Yang\ Diperoleh}{Jumlah\ Maksimal\ Indikator\ x\ Banyak\ Siswa}\ X\ 100\%$$

The results of data processing are then converted into qualitative categories as follows:

Table 3.4 Conversion of students' creative thinking data processing

| Presentase | Kategori |
|---|---|
| **81%-100%** | Sangat Kreatif |
| **61%-80%** | Kreatif |
| **41%-60%** | Cukup Kreatif |
| **21%-40%** | Kurang Kreatif |
| **0%-20%** | Tidak Kreatif |

**RESULTS AND DISCUSSION**

**RESULTS**

Activity of students' ability to think creatively using instruments in the form of observation sheets of students' activities in creative thinking. The indicators of student activity that were observed and assessed in the learning process of the first cycle of the first meeting consisted of 4 indicators.

Table 4.5 Student Ability Activity Observation Sheet in Creative Thinking Cycle 1 Meeting 1

| **Klasifikasi Aspek** | **Jumlah Aspek** | **Presentase** |
|---|---|---|
| **Berpikir Lancar** | 42 | 46,67% |
| **Berpikir Luwes** | 32 | 35,5% |
| **Berpikir Orisinil** | 38 | 42,2% |
| **Berpikir Rinci/Elaborasi** | 31 | 34,4 % |

Table 4.6 Student Activity Observation Sheets in Creative Thinking Cycle 1 Meeting 2

| Klasifikasi Aspek | Jumlah Aspek | Presentase |
|---|---|---|
| Berpikir Lancar | 60 | 66,67% |
| Berpikir Luwes | 48 | 53,3% |
| Berpikir Orisinil | 47 | 52,2% |
| Berpikir Rinci | 46 | 51,1% |

Based on the results of observations that have been made, it can be seen that the student's Current Thinking indicator reaches 66.67%, the Flexible Thinking indicator reaches 53.3%, the Original Thinking indicator reaches 52.2%, and the Detailed Thinking indicator reaches 51.1%. The following table shows the percentage of students' creative thinking indicators in cycle I.

Table 4.7

| **No** | **Indikator yang diamati** | **Persentase (%)** | **Kategori** |
|---|---|---|---|
| 1 | Berpikir Lancar | 66,67 | Kreatif |
| 2 | Berpikir Luwes | 53,3 | Cukup Kreatif |
| 3 | Berpikir Orisinil | 52,2 | Cukup Kreatif |
| 4 | Berpikir Rinci | 51,1 | Cukup Kreatif |

Percentage of each Student's Creative Thinking Indicator in Cycle I

Students' creative thinking ability is 11 students or 61.1% who are classified as creative. While 7 students or 38.9% are classified as still lacking or quite creative. From the results of observations made by the observer, it is known that the learning process for science content related to material about the effect of heat on changes in temperature and the shape of objects using the Mordiscvein learning model in cycle I learning cannot be said to be successful.

Table 4.12 Student Ability Activity Observation Sheet in Creative Thinking Cycle 2 Meeting 1

| Klasifikasi Aspek | Jumlah Aspek | Presentase |
|---|---|---|
| Berpikir Lancar | 72 | 80% |
| Berpikir Luwes | 69 | 76,67% |
| Berpikir Orisinil | 65 | 72,2% |
| Berpikir Rinci | 64 | 71,1% |

Table 4.13 Student Ability Activity Observation Sheet in Fluent Thinking Cycle II meeting 2

| Klasifikasi Aspek | Jumlah Aspek | Presentase |
|---|---|---|
| Berpikir Lancar | 81 | 90% |
| Berpikir Luwes | 77 | 85,56% |
| Berpikir Orisinil | 78 | 86,67% |
| Berpikir Rinci | 77 | 85,56% |

Table 4.14. Percentage of each Student's Creative Thinking Indicator in Cycle II

| No | Indikator yang diamati | Persentase (%) | Kategori |
|---|---|---|---|
| 1 | Berpikir Lancar | 90 | Sangat Kreatif |
| 2 | Berpikir Luwes | 85,56 | Sangat Kreatif |
| 3 | Berpikir Orisinil | 86,67 | Sangat Kreatif |
| 4 | Berpikir Rinci | 85,56 | Sangat Kreatif |

Based on the results of observations that have been made, several aspects of students' creative thinking from cycle I to cycle II have increased. The indicator of fluent thinking in cycle I was originally 66.67% increased to 90%. The indicator of flexible thinking in the first cycle was 53.3%, increasing to 85.56% in the second cycle. The original thinking indicator which was originally in the first cycle was 52.2% to 86.67% in the second cycle. The detailed thinking indicator was originally 51.1% in cycle I, increasing to 85.56% in cycle II.

The following table shows the percentage of indicators for students' creative thinking in Cycle I and Cycle II.

Table 4.15 Percentage of each Student's Creative Thinking Indicator in Cycle I and Cycle II

| Indikator | Siklus I (%) | Siklus II (%) |
|---|---|---|
| Berpikir Lancar | 66,67 | 90 |
| Berpikir Luwes | 53,3 | 85,56 |
| Berpikir Orisinil | 52,2 | 86,67 |
| Berpikir Rinci | 51,1 | 85,56 |

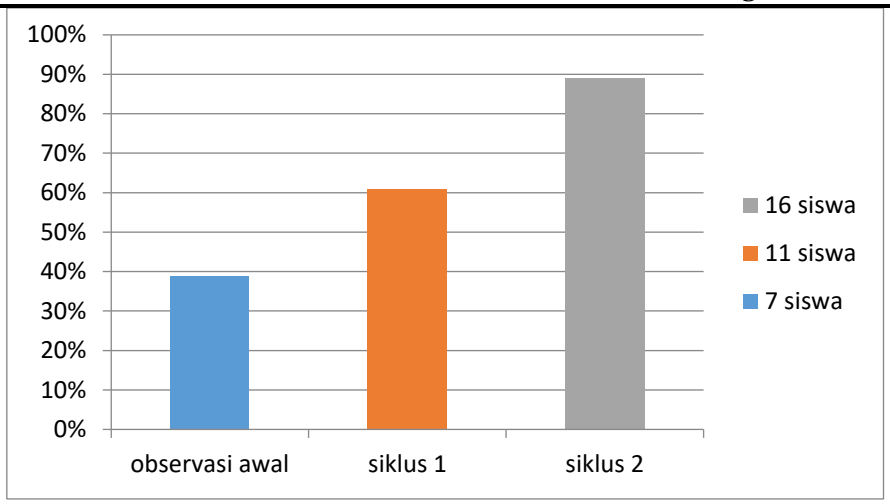


Figure 4.1 Graph of Students' Creative Thinking Achievements in Initial Observations, Cycle I, and Cycle II

**DISCUSSION**

Observation of the Creative Thinking activities of cycle I students from the 4 indicators observed in learning, the Fluent Thinking indicator reached 57.78%, the Flexible Thinking indicator reached 52.2%, the Original Thinking indicator was 53.3% and the Detailed Thinking indicator obtained reached 47, 78%. Looking at the results of each of these indicators it can be said that students have begun to be able to provide correct answers accompanied by explanations of the questions posed by the teacher, then to provide various answers about the results of experiments that have been carried out with different points of view with the correct answers have started to improve or there has been an increase, then some students are able to provide answers according to their own thinking when determining facts through the research hand and in the detailed thinking section there are already students who are able to answer questions in detail and the answers are correct. Then for cycle 2, researchers obtained data on students being able to think fluently reaching 90%, thinking flexibly reaching 85.56%, thinking original 86.67%, and thinking detailed reaching 85.56%. Seeing the results of each indicator of creative thinking, it can be said that students are able to provide answers or ideas correctly to the questions posed, are able to produce answers that vary from different perspectives, can provide answers according to their own thinking, and can detail an idea/answer so that more clearly.

In the learning process which is an indicator of students' creative thinking abilities, namely: 1) Fluent Thinking (giving correct answers or ideas to the questions asked) which supports students to be able to think smoothly, namely during data publication activities where students will publish or convey the results of experiments what they got. But students who convey it will be appointed by another group. therefore all students must be able to provide answers or ideas correctly about the results of the experiments they have done. 2) Flexible Thinking (Producing various answers with different points of view), in the Rise Hand activity where students are asked to determine whether or not a statement will be read by the teacher. So students will have different opinions, some answer facts and some answer no facts. 3) Original Thinking (Giving answers according to their own thinking) which can support students to think original, namely in the Opening Surprice activity where students will identify keywords, which then each student will provide answers according to their own thoughts about these keywords and read out the results of the identification of the problem in Ice Breaking activities and 4) Detailed Thinking (detailing an idea/answer so that it is clearer) in the activities of formulating experimental steps and when students carry out experiments which are then followed by data publication activities where all students must understand from the beginning to the results stage experiment.

Based on data on students' creative thinking abilities in the initial conditions, learning cycle I and learning cycle II can be concluded, that using the Mordiscvein learning model improves students' creative thinking abilities on the material effect of heat on changes in temperature and the shape of objects in everyday life.

In line with the research that the researchers have done, there are the results of previous research. The research was conducted by (Saleh et al, 2022) where in the Mordiscvein learning model (opening surprise, ice breaking, and formulating experimental steps through relay, data publication, finding facts through research hands, stringing keywords into conclusions) quality in science learning for mastery students' concepts in science content in elementary schools. This development research has produced a Mordiscvein learning model with the following syntax opening surprise, ice breaking, formulating experimental steps, publishing data, finding facts through research hands, stringing keywords into conclusions according to (Saleh, 2022). The Mordiscvein learning model is categorized as a practical learning model for all stages of the Mordiscvein learning model that can be implemented. The Mordiscvein learning model is categorized as an effective learning model.

**CONCLUSION**

Based on the results of the research and discussion that have been described by the researchers, that using the Mordiscvein learning model can improve students' creative thinking, especially in science content. In addition, through the use of the mordiscvein cooperative learning model, it can increase students' creative thinking in science lesson content in accordance with the research results obtained through the PTK stages of cycle 1 and cycle 2. In cycle 1, the implementation of learning achieved an average percentage of 61.1%. Meanwhile, in the implementation of cycle 2 learning, it achieved an average percentage of 88.9%.

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