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# The Use of Practical Tools to Enhance the Elementary School Students Creativity and Critical Thinking

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#### 1. Abstract

The aim of achieving this class action research is to know the improvement of creativity and problem-solving ability on the use of tools for students of SD class I on mathematical subjects of the main language of measurement using the Problem Based Learning model. Data collection techniques in this study use observations, interviews, tests and documentation. Data collection tools use observation sheets, interviews, tests and documentation. Based on the results of research conducted in Class I SD in the academic year 2022/2023 it can be concluded that: the application of concrete learning tools with a problem-based learning model can improve the creativity and ability to solve problems of students. This was demonstrated by an increase in the presentation in each cycle from the classic average of the I cycle 68.75% with a good category to 81.25% in the II cycle average of 75% with a good category to 87.5% in the II-cycles with an excellent category. Presentation of the impact on creativity and problem-solving ability of students showed a 12.5 percent percentage.

Keywords: creativity, Equipment of Peraga, mathematics, problem solving

#### 2. Introduction

Based on the Basic Law of 1945 on the Fourth Alenia, the aim is to reflect the life of the nation. A smart nation is a nation that is prepared to face any problems ahead or in the future. (Sujana 2019). Law No. 20 of 2003 on the national education system in article 3 stated that, national education serves to develop the ability and form the character and attitude of a people who are worthy in order to refine the life of the nation, aimed at the development of the

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potential of the students to become a believing man and fear the One God, noble morals, healthy, knowledgeable, competent, creative, independent and becoming a democratic and responsible citizen. (Tarigan 2022). According to the thought of Ki Hadjar Dewantara education aims to guide all the hills in the children, so that they can safety and happiness as high as possible. And the children of the righteous, and the worshippers of the wicked, Curriculum development in Indonesia has undergone a lot of changes from the curriculum 1952 to the currículum 2013 and is being improved to be better with the new curriculums that are being implemented, this is fundamental for the achievement of national educational goals. The curriculum is periodically developed in accordance with the development of science, technology, information and needs of the time. In the liberty curriculum there is a profile of Pancasila students consisting of six dimensions: believing, fearful of the Almighty God, and worthy, royong, global, independent, creative and critical thinking. This reflects the character of the students in Indonesia. In the 21st century teaching emphasizes meaningful and focused learners (Student Center). Learning 21st century students are equipped with four skills or usually called 4C which is critical thingking or critical thinking, communication or communication, collaboration or collaboration, creativity or creativity one of the implementation of the independent curriculum. (Inavati 2022).

Mathematics is a universal science. Mathematics subjects in elementary school in addition to equipping the basis of mathematics to follow secondary education that can grow the development of computational skills that can be used in everyday life as well as form logical, critical, careful, and disciplinary attitudes. Mathematical learning is related to logic and problem solving. (Tunnazriah 2022). The process of problem solving is very important to be learned by the student, because this is the basic ability of the student. In learning mathematics students are required to be able to solve problems in order to help students to improve critical thinking

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skills. Learning should be able to develop problem-solving skills while enhancing the creative thinking ability of the student. (Septian 2018). Creativity is the set of abilities and characteristics that lead to creative thinking. The ability to think creatively is the ability of the individual to improve in generating new ideas, new possibilities, and new discoveries based on the originality of the process. (Lestari 2019). Learning mathematics using tools can attract the attention of students and can stimulate the curiosity of students. The tools or media are recognized by all levels of Education and experts because the tools or the media are very important in learning. In understanding the concepts of abstract mathematics, students need tools such as concrete objects (real objects) as intermediaries or visualizations. The use of the problem-based learning model supports in improving the creativity and problem-solving ability of students. Problem Based Learning is a learning activity that focuses on problem-solving. Work with the group to find solutions to real problems. The problem is used to associate the desire of learners to analyze, initiate, create the material of the student. PBL also prepares students to think critically, analytically to find and use appropriate learning resources.

Based on the results of observations on the learning process of the I SD class, it was obtained that creativias and the ability to solve problems of the students are still less. It proves there are several aspects of creativity and problem-solving ability with a total of 27 pupils. Creativity of students with observation gained 17 less students and problem-solving ability of 15 less students. In the learning process, teachers take advantage of the facilities and technologies available in the classroom such as the use of the Internet, video according to the learning material. Teachers also use the question answer method in learning this is also not maximized in increasing creativity and problem-solving ability.

#### 3. Methods

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#### 3.1 Participants and context

This study was conducted in Class I SD in the full semester of the academic year 2022/2023. This research procedure PTK (Class Action Research) is carried out in 2 cycles. A cycle consists of four stages of activity: the first stage of planning, the second stage of implementation and the third stage of observation of the four phases of reflection. The subjects of this study were students of the I SD class consisting of 13 women and 14 men.

#### 3.2 Material

The object of this research is the entire process of learning mathematics with the use of tools with the learning model PBL (Problem Based Learning) as an effort to improve the creativity and ability to solve problems of students in class I SD.

#### 3.3 Data Collection and analysis

Data collection techniques according to sugiyono (2016) are extremely important in a study. The purpose of research is to collect data or obtain data. The data collection techniques used in this research are observations, interviews, tests and documentation, the instruments used to collect data in this study, among others, observation sheets, questions of tests and documents. The data obtained in this study is the creativity and problem solving of students of Class I at each cycle. The results obtained in this study are the use of concrete tools with the PBL (Problem Based Learning) model as an effort to enhance creativity and problem-solving ability.

#### **3.4 Ethical Considerations**

The data obtained from the observation of creativity and problem-solving ability in the percentage of the classical accuracy of the learning results obtainable then is further

ISSN: 3025-020X interpreted into criteria very good, good, sufficient and less one. The assessment criteria are as follows:

Table of 1. The Peninsula criteria

Percenta	ge % criteria
81 - 100	Goods
66 - 80	Good
56 – 65	Cups
41 – 55	Lessly
0 - 40	Less tha

(The source : Putri C.E, 2022)

## 3.5 Limitations to the Study

The Success indicator is shown when the classical presentation value has reached a good category of 65% to 80% and the class average reaches  $\geq$ 75%.

## 4 Results and Discussion

On April 11, 2023 the researchers made a confirmation to the head of the school, class teacher and pamong teacher related to the implementation of the research to be done in the SD. The research will be conducted in two cycles and each cycle consists of two meetings, evaluation activities are carried out at the second meeting in each of its cycles to know the results of creativity and problem-solving ability of the students of Class I SD. Evaluation activities for students are activities in groups by solving problems and involving the creativity of students. On May 11, 2023, researchers undertook pre-action to learn

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more about the creativity and problem-solving abilities of students in mathematical subjects. Based on the preliminary data obtained results of evaluation of pre-action material measurement class I SD as follows:



Picture of 1. Diagram of Learning Results of Players Didik Pra Action

Cycle I will take place on May 16, 2023 the first meeting and on May 19, 2023 a second meeting. Meetings on cycle 1 discuss weight measurements with non-standard units. Learning activities are carried out using the PBL (Problem Based Learning) model and simple scale tools. The data obtained in this cycle is data on creativity and problem-solving abilities. Here are the results of the observation of creativity and problem-solving ability of students in cycle I.

Table 2 Results of Observation of creativity and problem-solving ability cycle I

Aspect	Number of Scores	Average	Category of Penelope
Creatyvity	297	68, 75%	good
Problem Solving	324	75%	good

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The results of Creativittas and problem solving on pre-action and cycle I in mathematical learning using concrete tools with the problem-based learning model experience creativity and problem-solving. The following tables increase the average outcome of pre-action and cycle I on the creativity and problem solving ability of students.



Pictured 2. Diagram of increased creativity and problem solving

Cycle II will take place on May 25, 2023 for the first meeting and on May 29, 2023, for the second meeting. Cycle II is a continuation of cycle I. Monitoring and Problem Solving of Students of Cycle II.

Aspect	Number of Scores	Average	Category of Penelope
Creatiyvity	351	81,25%	Goods
Probem Solving	378	87,5%	Goods

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The comparison between the creativity of students in cycle I and cycle II can be seen in the following table:

Aspect	cycle	Number of Scores	Average	Increased
Creatiyvity	Ι	297	68,75%	12,5%
	II	351	81, 25%	
Problem	Ι	324	75%	12,5%
Solving	II	378	87,5%	

Table 4 Comparison of cycle I and cycle II creativity

## **The Speech**

Before being given action or pre-action creativity and the ability of the students, i.e. pre action on creativity showed 37,03% and pre-act on problem-solving ability 44,44%. The results obtained in this 2nd cycle were an increase in the creativity and problem-solving ability of students from cycle I to cycle II by 12.5%. Increased creativity with the classic average I cycle of 68.75% with good categories to 81.25% in the II cycle with excellent categories. The increase also occurred in problem solving with a classic I-cycle average of 75% with a good category to 87.5% in the II-cycles with an excellent category. Therefore, referring to the results obtained by the activities of the 2nd cycle on the creativity and ability to solve problems of students using concrete tools and using the PBL (Problem Based Learning) model has reached the criteria of success that have been determined. It can be said that the research has been successful.

ISSN: 3025-020X Increased creativity and problem-solving ability using concrete tools with the following problem-based learning model step-by-step on the Problem-Based Learning Model:

- a. The player's focus on problems
- b. Organize an event for the dawn.
- c. Guiding the individual/group experience
- d. Developing and presenting work.
- e. Analyze and evaluate problem-solving processes

Thus, the use of concrete learning tools with the Problem Based Learning model can enhance the creativity and problem-solving ability of students of I SD class. It is supported by Glazer (in Nafiah, 2014) that with the Problem Based Learning model students gain experience in dealing with these problems that are realistic and emphasize on the use of collaborative communication and sub-resources available to formulate ie and develop reasoning skills. Tools that support the explanation of mathematical concepts. Tools should be made as good as possible, interesting to observe, and encourage students to be targeted, so the motivation to learn is expected to increase.tools are expected to boost the imagination in increasing the attractiveness of the creativity of the learners. by Suwardi 2014. The creativity and problem solving of students increases in understanding issues and solving them well. The use of learning tools with the Problem Based Learning model applied to mathematical subjects of measurement materials can improve creativity and problemsolving ability related to the characteristics of the student faced with the problem to think creatively and can solve problems can help the student interested in learning.

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#### 5 Conclusion

Based on the results of research conducted in Class I SD, it can be concluded that: The use of learning tools with the Problem Based Learning model can enhance creativity and creativity in solving problems of learners. This is demonstrated by the presence of an increased presentation of creativity and problem-solving ability of the students classically versus mathematical subjects of measurement material with presentation creativity, the classical average of cycle I 68.75% with good categories to 81.25% in cycle II with excellent categories. The increase also occurred in problem solving with a classic I-cycle average of 75% with a good category to 87.5% in the II-cycles with an excellent category. Presentation of the impact on creativity and problem-solving ability of students showed a 12.5 percent percentage.

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