

Application of a Scientific Approach to Improve Students' Creativity in Recycling Waste

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ABSTRACT

Cognitively competent children are not only able to think critically but also creatively. Student thinking abilities influence students' ability to solve problems in learning. This study describes students' creativity in recycling waste in subjects' students. The research was conducted at an Elementary school in Pangkep Regency with 15 students. The type of research used is classroom action research (CAR), with the flow of activities, namely: planning, implementation, observation, and reflection in each cycle. The data analysis process is carried out by steps 1) processing observation data, documentation, and interviews, 2) reducing data, 3) categorizing, and 4) making conclusions. Therefore, the school as a formal educational institution systematically plans various environments, namely an educational environment that provides facilities and opportunities for students to carry out various learning activities. It can be concluded that using a scientific approach can increase students' creativity in recycling waste.

Keywords: *Elementary School; Students' Creativity; Educational Environment; Scientific Approach*

1. INTRODUCTION

According to Winkel, learning is a set of actions designed to support the student's learning process by taking into account extreme events that play a role in a series of internal events that occur in students' experiences [1]. Cognitively competent children can think critically and creatively [2]. Creative thinking is the ability to think in new and unusual ways and find unique solutions to the problems at hand. Thus, intelligence is not the same as creativity, and we need to recognize that children will show more excellent activity in certain domains than others.

Elementary school children aged 7 to 12 years to obtain productive, creative, innovative, and effective human resources require visual communication, more precisely in artistic expression, and their physical and psychological development. The field of fine arts is a medium of communication or artistic expression that appeals to elementary school children. Art education in elementary schools aims, among other things, to provide students with various competencies both in the field of creation and appreciation [3], [4].

Based on the observations that researchers at elementary school, can be proven from work displayed in class is the result of imitating the work of the previous class, thus making student creativity not develop. The other problem is that the teacher only carries out a natural learning process where the teacher does not use an approach based on the lesson plan, the teacher's low

creativity in teaching students about various kinds of art. This was evidenced when conducting observations when the teacher brought subjects only to teach students to draw, sing, and make imitation works of art from the previous fourth grade.

Its use must also go through sorting, collecting, processing, and distributing. The author chooses inorganic waste that can be reused as learning media in the classroom. In addition, the author hopes that this effort can be helpful for the surrounding environment to minimize waste or garbage around the environment.

In this study, the use of waste materials is a reuse or recycle business, an activity to reuse used goods without or by processing materials for the same or different purposes from the original/original purpose. Waste recycling steps begin with sorting, collecting, then processing. Garbage is unwanted residual material after the end of a process, and waste is an artificial concept and a consequence of human activities where waste has a different and subjective meaning. For certain circles, it can be an asset. Through this opinion, the author is increasingly moved to try the waste material to be used as learning material, the results of which will be a matter of pride for the students themselves.

Teachers must remember that there is no most appropriate learning model for all situations and conditions in the learning process. Therefore, in choosing a suitable learning model, one must pay attention to the condition of the students, the nature of the teaching

materials, the available media facilities, and the condition of the teacher himself. Providing exciting learning can be done in the classroom and outside the classroom in the open nature or by utilizing goods and objects in the surrounding environment as a means of learning. With learning held outside the classroom and using a variety of objects that can be used in the surrounding environment, it allows students to think much more creatively where they can think freely and can imagine whatever they feel and what they will create [5].

A student who gets attention will feel an urge from within them to continue to produce good things. With this, students will tend to be more active in carrying out activities that are carried out together. Exchange of ideas between students can also occur in making crafts together, which will trigger students to make better crafts if they see the results made by their friends are much better [6]. Student creativity can arise in this case. Students will continue to think about what they can do to make it look even better.

The support provided by the school will allow every plan to be carried out correctly to generate student creativity. After making crafts together, the school must prove that many people can accept and appreciate what they make. Schools can display the work that students around the school environment have done. By showing the work made by students themselves, students will feel happy and motivated to produce more creative and better works [7].

Based on the description above, the researcher concludes that using a scientific approach is suitable for learning to increase student creativity. It is necessary to research creativity using a scientific approach for this review.

2. METHOD

The research method is the method used by researchers in collecting research data. The method used in this research is classroom action research. The name contains three words, namely:

Research: shows an activity of observing an object by using certain methodological methods and rules to obtain data or information that is useful in improving the quality of something that interests and is important to researchers.

Action: refers to an object of activity that is intentionally carried out with a specific purpose. In the research, it takes the form of a series of activity cycles for students.

Class: in this case it is not tied to the notion of a classroom, but in a more specific sense, namely a group of students who at the same time receive the same lesson from the same teacher.

The research was conducted on fourth-grade students at an elementary school consisting of 15 students. The focus of this research is to observe the application of the scientific approach to the learning process take place and see the creativity and activity of students in following the process of learning in making a work of art. The type of research used is classroom action research (CAR), with the flow of activities, namely: planning, implementation, observation, and reflection in each cycle.

Classroom action research is research that someone who works for what is doing carries out without changing the implementation system. An approach used in the research is a qualitative approach that is described descriptively. This study describes students' creativity in recycling waste for fourth-grade elementary school students through a scientific approach. The sampling technique used is purposeful sampling by looking at students' academic abilities or odd semester report cards [8], [9]. Creswell [10], In purposeful sampling, the researcher deliberately chose individuals and places to understand phenomena by the standards used in choosing includes much information.

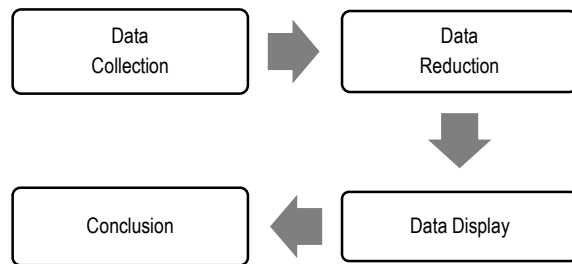


Figure 1. Data analysis process

The research was conducted in several stages, starting with checking all research documentation, then making observations during the learning process, followed by an interview. Observations are made to know students' creativity during the learning process. Documentation is used to measure student ability. The interview technique is done to strengthen the results obtained from the observation of the creative students. The results of the interviews were used as material for data analysis. The data analysis process is carried out by steps 1) processing observation data, documentation, and interviews, 2) reducing data, 3) categorizing, and 4) making conclusions.

3. RESULTS AND DISCUSSION

The research was conducted in elementary schools at Pangkep Regency, Indonesia. The data obtained in the study include the results of observations of creative thinking skills during the learning process, the results of creatively written tests, and the results of interviews with research subjects. Referring to the indicators proposed by Munandar [11], students are assessed through indicators 1) imaginative, 2) feeling challenged, 3) daring to take risks, and 4) respect. The observations obtained were then

categorized into several categories. The categories used are very high, high, medium, low, and deficient creative thinking skills.

Table 2a shows the results in cycle 1 in the first meeting. Twelve respondents showed good results, and

then the remaining three respondents obtained good results. Furthermore (Figure 2b), for the results in cycle 1 in the second meeting, 11 respondents showed good results, then the remaining four respondents obtained good results. From the results, it is evident that there is an increase in results after the second meeting.

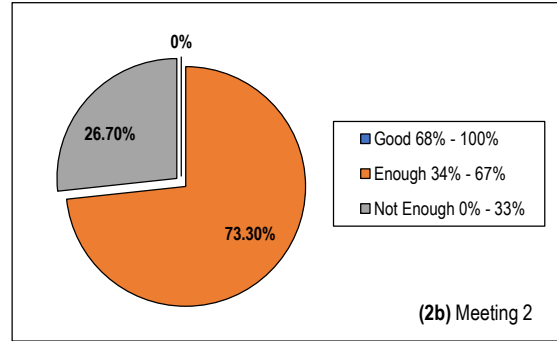
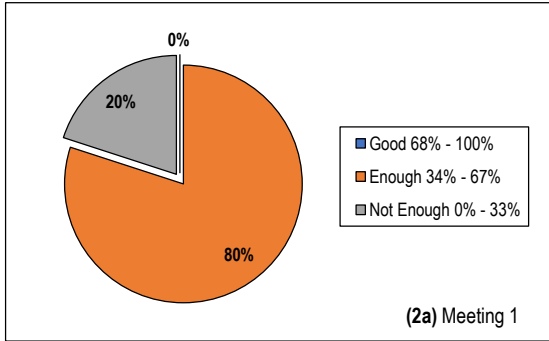


Figure 2. Percentage of students based on observation of student creativity for cycle I.

Based on the table of observations of creative thinking skills, students in the less category consist of three students with a percentage of 20% (Figure 2a). The results of the observation of creative thinking skills, students in the less category consist of 4 students with a percentage of 26.7%, and students in the excellent category amounted to 11 people with a percentage of 73.3% (Figure 2b).

The frequency of completeness is achieved by students in the category incomplete as many as eight students with a percentage of 53.33%, while in the complete category, there are seven students with a percentage of 46.67%. Based on the percentage of completeness of the student learning outcomes, it can be concluded that the mastery of learning in the first cycle has not reached the standard of completeness on the success indicator because classically, it has not reached 80% of students who score according to the completeness scores standard (65%).

Table 1. Completeness Score (CS) on Student Creativity Results in Cycle I

Categories	Scale	Percent (%)	CS
Not Complete	0% – 64%	53.33%	65%
Complete	65% – 100%	46.67%	

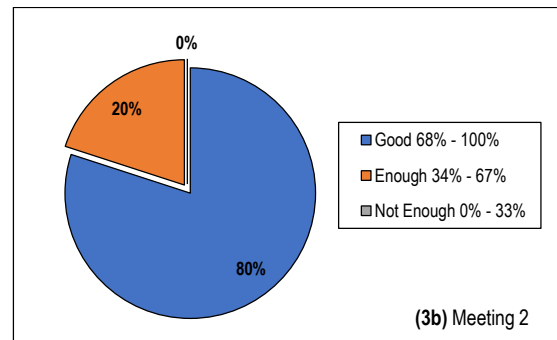
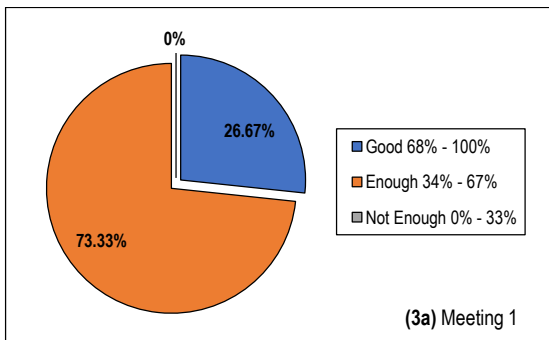


Figure 2. Percentage of students based on observation of student creativity for cycle II.

Based on the table above, the results of the observation of creative thinking skills, students the excellent category consist of 4 students with a percentage of 26.67%. Based on the table above, the results of the observation of creative thinking skills, students in the excellent category consist of 12 students with a percentage of 80% and students in the excellent category are three people with a percentage of 20%.

Table 2. Completeness Score (CS) on Student Creativity Results in Cycle II

Categories	Scale	Percent (%)	CS
Not Complete	0% – 64%	20.00%	80%
Complete	65% – 100%	80.00%	

The frequency of completeness is achieved by students in the no category completed as many as three students with a percentage of 20%, while in the complete

category, there are 12 students with a percentage of 80%. Based on the percentage of completion results student learning, it can be concluded that student learning completeness at Cycle II has been achieved classically because the number of students whose learning outcomes complete has reached the standard of completeness of learning outcomes that is 80%.

Directly involving students and students in learning and freeing them to express opinions without having to be afraid of the teacher will create a more conducive learning atmosphere and create more creative students. The frightening impression of the teacher as a teacher will also disappear, students will be happier with the learning being taught.

The use of practical methods makes it easier for students to understand the learning being taught, because students are directly involved and understand each process one by one. Like making some crafts, each student will find it easier to work on them if they are practiced directly. Direct learning or practice will create cohesiveness, understanding of the material, mutual care for fellow friends, and can bring out the creativity that exists in each student.

The teaching system that is carried out also greatly determines the formation of the character of each student. Where often the teaching system carried out by teachers is still often wrong, teachers tend to speak loudly in front of students, teachers are less familiar, less humorous, the impression of teaching is always serious, teachers are less smiling to students. These things will cause students to be afraid to communicate with the teacher, the results of the learning carried out will tend to be more passive because students only accept what is given by the teacher without any communication made by students, the teacher will assume students have understood what the teacher is teaching.

If continuously in every learning is done like this, it will not produce students who can be competent and compete globally. There needs to be changes in teaching carried out in schools. For example, directly involving students and students in learning activities, where there is no scary impression given by the teacher, and using a two-way teaching system, where this two-way teaching system has a question-and-answer interaction or gives opinions made by teachers and students, will produce more active and creative students.

4. CONCLUSION

Using a scientific approach can increase students' creativity in recycling waste in class. This can be proven from the first cycle at the first meeting, which was in the excellent category, then continued to the second cycle at the first meeting. It was still in the excellent category, but the value had increased. At the second meeting, it was included in the excellent category.

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