



Improving Science Learning Outcomes Using Concrete Media Assisted Simulation Model

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Abstract - This study aims to: (1) determine the activities of students in teaching and learning activities using the Simulation Model Assisted with Concrete Media, (2) determine the increase in learning outcomes in science after using the Simulation Model Assisted by Concrete Media. The type of research used by the researcher is classroom action research (CAR) which tries to solve the problems faced in the current situation. The subjects in this study amounted to 26 students, 10 men and 16 women. Quantitative and qualitative data analysis techniques. The results of this study indicate that: (1) The activity of the participants became good after using the Simulation model assisted by Concrete Media, recorded in each cycle the average value of the student's activity was 2.86 in the first cycle and increased to 3.21 in the second cycle. (2) There is an increase in science learning outcomes by using a simulation model assisted by concrete media for students. This increase can be seen from the learning outcomes of students in science subjects, especially in the material of the Water Cycle Process. In the first cycle, the average score of students was 59.61 with 46% classical completeness and increased in the second cycle with an average value of 90.19 and 88% classical completeness.

Keywords: Science, Learning, Concrete, Simulation, Model.

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I. INTRODUCE

One of the most important parts in a development in a country is education, in Indonesia the regulations on education have been specifically stated in Chapter XIII of the 1945 Constitution of the Republic of Indonesia Article 31 paragraphs (1) and (2) which state that: (1) Every citizen has the right to receive teaching. (2) The government shall endeavor and organize a national teaching system, which is regulated by law". Not without reason, the state makes the education sector the most important part in a development because in terms of education the state is able to create the next generation of the nation with quality self-ability, both in terms of skills, social skills, work, and knowledge.

To improve the quality of the next generation, of course, the education system must also be of quality. The quality of education from year to year needs to be improved, especially in learning. In an effort to realize quality teaching, it should be stated that every teacher's decisions and actions in the context of learning activities will have various impacts or effects on students resulting from the use of learning strategies that form the basis of these learning activities/processes.

So far, the learning process given in class generally only presents concepts in the field of study. While students usually only function their sense of sight and sense of hearing. The introduction of these concepts does not mean that they are not needed, but what usually occurs is only understanding, without being continued in the application in a simple form, for example by drawing some examples or introductions from the surrounding environment, or by introduction from the daily experiences of students. especially in learning Natural Sciences (IPA).

Science is one of the subjects that contributes to increasing the Intellectual (IQ), Emotional (EQ) and Spiritual (SQ) abilities of children. Science learning is always related to everything that happens regarding the surrounding natural events. According to Suyitno, (in the Ministry of National Education 2002: 7), Natural Science is a subject in elementary school which is intended so that students have organized knowledge, ideas and concepts about the natural environment, which are obtained from experience through a series of scientific processes including investigation, compilation and presentation of ideas. In principle, studying science as a way

to find out and how to do or do and help students to understand and gain knowledge about the natural surroundings in more depth.

From the above theory it can be understood that science learning is a science that studies events that occur in nature by observing, experimenting, inferring, formulating theories so that students have organized knowledge, ideas and concepts about the natural environment, which are obtained from experience through a series of The scientific process includes investigation, compilation and presentation of ideas.

Science is obtained based on research using scientific steps, but how can elementary school students take these scientific steps by gradually introducing the competent scientific method. For example, students make observations, then the results of their observations are reported to their classmates as an early stage.

Science as a support for learning has its own problems which become a problematic face of education in Indonesia. Often the teacher's complaint in learning science in elementary schools apart from the use of learning models is the limitations of the media, even though we have entered a modern era where everything is sophisticated. So in this case the teacher is required to be a creative and innovative teacher, creating new and relevant media.

The success of learning activities in schools is strongly influenced by how teachers manage learning with appropriate strategies and the limited time available.

Based on the results of interviews and observations of researchers conducted on Monday, October 31, 2017 to the 5th grade homeroom teacher at SDN 1 Selat Kuala Kapuas, in science subjects, data were obtained that achieved completeness of 3 (11.5%) students. Meanwhile, there are 23 (88.5%) students out of 26 students who have not achieved completeness. This shows that student learning outcomes, especially in the water cycle process material, are still below the Minimum Completeness Criteria (KKM) of 65. By looking at this phenomenon, it raises concerns about the impact of student learning outcomes later.

One of the factors that affect the low KKM value of students is that when the learning process is in progress, students are more silent and pay less attention to the teacher's explanation.

As for one way or solution in overcoming these problems is to use a simulation model. This simulation model can develop students' creativity, because through simulation students are given the opportunity to play a direct role in the simulated activities. This learning model develops on the basis that learning is not just transferring knowledge from teachers to students, but rather how students gain knowledge and understand in their own way so that they can achieve the learning objectives that have been set.

In addition to using this model, media to strengthen and increase students' understanding in the learning process is to present concrete media. With concrete learning media, the subject matter will be more interesting when delivered and of course these conditions will create critical thinking skills of students.

Water is a natural resource that has many benefits for human needs. Water evaporates from the sea, lakes, rivers, soil and plants due to the heat of the sun. Then due to natural processes the water in the form of steam turns into rain, which then partially infiltrates the soil (infiltration), some flows over the soil surface (run off). This surface water flows into rivers, lakes, then from where it evaporates again and so on, which is called the hydrological cycle (Soemarto 1995).

The water cycle is a series of events that occur with water from when it falls to earth (rain) until it evaporates into the air and then falls back to earth which is the basic concept of global water balance and shows all things related to water (Arsyad, 1985). Based on the above opinion, it can be concluded that the water cycle process is something that occurs naturally, which includes various events to form a water hydraulic cycle.

In a teaching and learning process, the selection of learning models should be relevant to the learning objectives. Thus the selection of learning models should be related to the objectives to be achieved in processing the learning to be carried out.

According to Zaini (in Airin, 2009: 3) the learning model is a guide in the form of a program or instructional teaching strategy designed to achieve a learning goal. The guidelines cover the teacher's responsibilities in planning, implementing, and evaluating learning activities. One of the goals of using the learning model is to increase the ability of students during learning.

The simulation model is one model among the many learning models that can improve students' thinking skills well, meaning that in its implementation it will stimulate students by themselves to actively participate in every learning activity that involves themselves with the learning process using the simulation model.

Meanwhile, according to Nana Sujana (in Itay, 2011:9) the teaching model is the method used by the teacher in establishing relationships with students during teaching.

Based on the theoretical description above, it can be concluded that the learning model is a conceptual framework that describes a systematic and organized procedure for learning activities so that students can get a good learning process and become a fun learning experience so that the learning objectives made can be realized. The simulation model is one model that can increase students' interest in learning with high enthusiasm, so it cannot be denied that using a simulation model in the learning process is a good step.

Simulation learning model is a learning model whose process is to create a learning atmosphere by making conditions or circumstances like the original. For example, like a fire simulation, when the simulation takes place, the situation will be made as if it was a fire, even though the condition is not a real fire, but there will still be rescue processes like during a real fire.

According to Arsyad (2004: 3), the word media comes from the Latin *medius* which literally means middle, intermediary, or introduction. One of the characteristics of learning media is that the media contains and carries messages or information to the recipients, namely students. Messages and information carried by the media can be simple messages and can also be very complex messages.

However, the most important thing is that the media is prepared to meet the learning needs and abilities of students, and students can actively participate in the teaching and learning process. Therefore, it is necessary to design and develop an interactive teaching environment that can answer and meet individual learning needs by preparing teaching activities by preparing teaching activities with effective media to ensure learning occurs.

According to Jennah (2009: 80) states that real objects can play an important role in efforts to improve the learning process. Using real objects or living things in learning is often best, in displaying real objects about size, sound, movement, surface, body weight, smell and benefits.

Based on the above opinion, it can be concluded that concrete media is a media that can be used in a real learning for students and can also attract the attention of students to be active in participating in learning.

Concrete means real or provable. In the sense that the media of concrete objects is the same as real objects, namely real objects that can be proven. So, concrete media are learning media that come from real objects that are widely known to students and easy to obtain which can be an intermediary in conveying learning messages from student teachers.

It is clear that we know that concrete media is very influential in the teaching and learning process. Because in the field of science studies for all school levels are considered as theoretical subjects. Therefore, it is necessary to have the awareness of a teacher to think about finding a good way of learning. In order to increase the activity and understanding of students in science learning.

II. METHOD

In this study, the researcher used the Classroom Action Research (CAR) method. According to Kunandar (2010), Classroom Action Research (CAR) is a class-based research. Research can be done independently, but it would be better if it was carried out collaboratively, both with colleagues, principals, supervisors, lecturers and other parties relevant to CAR.

The role of the researcher, in this study, is one of the efforts of the teacher or practitioner in the form of various activities carried out to improve or improve the quality of learning in the classroom. The researcher as a practicing teacher in the fifth grade of SDN 1 Selat Kuala Kapuas was directly involved in planning actions, taking actions, observing, reflecting, collecting data and analyzing data.

The research subjects in this classroom action research are all fifth grade students of SDN 1 Selat consisting of 10 males and 16 females, totaling 26 students.

Qualitative data were obtained from observation sheets of teachers and students of class V SDN 1 Selat which was intended to determine the advantages and disadvantages of the learning carried out.

Qualitative data were obtained from activities to researchers and activities to students and student responses during the teaching and learning process by analyzing the learning outcomes seen in the teaching and learning process using a scientific learning approach.

Quantitative data comes from test results given at the end of each activity cycle. This is done to determine the increase in student learning outcomes in the applied approach.

III. RESULTS AND DISCUSSION

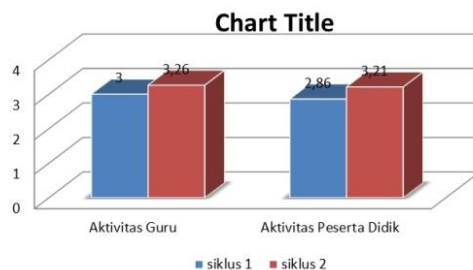
From the results of this study in the form of: 1) Observation of teacher and student activities, 2) Science learning outcomes using a simulation model assisted by concrete media.

1) Observations of teacher and student activities, teacher and student activities can be seen in the following table and figure:

Teacher and Student Activity

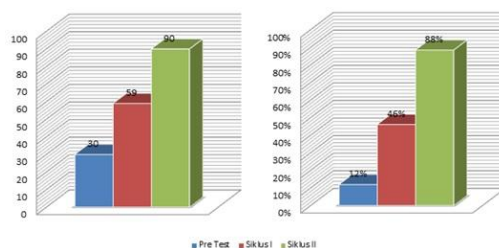
NO	Aktivitas	Skor Rata – Rata	
		Siklus 1	Siklus 2
1	Guru	3,00	3,26
2	Peserta Didik	2,86	3,21

Teacher and Student Activity Graphic



Based on the tables and graphs above, it can be seen that overall there is a good increase in teacher activity in the first cycle, which scores 3 and increases to a score of 3.26 in the second cycle, and in the student activity, a score of 2.86 increases to a score of 3.21 in cycle II.

2) Students' science learning outcomes use a simulation model assisted by concrete media.



Based on the results of the research above, the learning outcomes of students on the water cycle process material using a concrete media simulation learning model can help improve students' science learning outcomes.

This research is a classroom action research (CAR) so that in its implementation it requires the presence of researchers in the field. In this CAR, collaboration between researchers and teachers in the field of study is needed so that the whole from the beginning to the end of the research process can run well and get results that are in accordance with the objectives of the researcher.

The role of the researcher, in this study, is one of the efforts of the teacher or practitioner in the form of various activities carried out to improve or improve the quality of learning in the classroom. Researchers as practicing teachers in the field of science are directly involved in planning actions, taking actions, observing, reflecting, collecting data and analyzing data.

Plan Activity

No	Observed activity
A. Simulation Preparation	
1.	Provides various simulation topics and concepts that will be integrated in the simulation process.
2.	Explain the principle of simulation
3.	Provide a general technical overview of the simulation process
B. Simulation Execution	
1.	Assigning the cast in the simulation
2.	Obtaining feedback and evaluation of the results of observations of simulated activities
3.	Clear up the misconceptions
4.	Continuing the simulation
C. Simulation Cover	
1.	Provide a summary of events and perceptions that arise during the simulation
2.	Provide a summary of the difficulties and insights of the students
3.	Analyze process
4.	Comparing simulated activities with the real world

The data from the research cycle I showed that the learning outcomes of students increased by using a simulation model assisted by concrete media, but even though there was an increase in learning outcomes from

pre-action which only reached a value of 795 with an average of 30 and classical completeness 12% to 1550 with an average of 59 and classical completeness 46% researchers must carry out activities in cycle II to achieve the KKM value and of course achieve classical completeness 85% or beyond.

The data from the second cycle has reached completeness, both the KKM value and in terms of classical completeness, the total score in the second cycle is 2345 with an average of 90 and classical completeness which reaches 88%.

The simulation method is a fun method in the science learning process. The simulation method also stimulates students to find and develop their own science concepts that are influenced by the knowledge that students already have. Students are given the opportunity to be active, think about concepts that are in accordance with theory, think about how to demonstrate the concept, collaborate with friends, and do problem solving on real things. Simulations also require students to have high self-confidence and be creative in understanding concepts and demonstrating.

IV. CONCLUSION

Based on the results of the study, it can be concluded several things as follows:

1. The activity of students in class V at SDN 1 Selat Kuala Kapuas became good after using a simulation model assisted by Concrete Media, in each cycle of activity students were quite active in teaching and learning activities. It can be seen that the average value of student activity is 3.11 (Good) in cycle 1 and increased to 3.21 (Good) in cycle 2.
2. There is an increase in science learning outcomes by using a simulation model assisted by concrete media for fifth grade students at SDN 1 Selat Kuala Kapuas. This increase can be seen from the learning outcomes of students in science subjects, especially in the material of the Water Cycle Process. In the first cycle, the average score of students was 59 with 46% classical completeness and increased in the second cycle with an average value of 90 and 88% classical completeness.

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