USING OF CONTEXTUAL TEACHING AND LEARNING MODELS TO IMPROVE STUDENTS NATURAL SCIENCE LEARNING OUTCOMES

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ABSTRACT

This research is a *Classroom Action Research* which aims to determine is efforts to improve learning outcomes through the model of *Contextual Teaching Learning* students 5B grade in science subjects at Public Elementary School Siliwangi. *The grand tour* initial showed that only 35.71% or 15 students scored above the Minimum Completeness Criteria with a total of 42 students. The average science score in class 5B is 60.95. *This Classroom Action Research* uses the Kemmis and McTaggart model which consists of planning, implementing, observing and reflecting with success indicators of 80.00% of students have achieved learning outcomes with a Minimum Completeness Criteria (MCC) score of 65 and teacher and student activeness reaching 85.00%. The results showed that from 3 aspects studied, namely: student learning outcomes obtained 54.76% learning completeness in the first cycle and 76.42% in the second cycle 84.37% student activity in the first cycle and 87.50% in the second cycle. Teacher activeness was 83.34% in the first cycle and 89.58% in the second cycle the increase in the percentage of the results of the primary cycle aspects of student learning outcomes was 19.05%, 22.00% student and activeness13% teacher activeness. Meanwhile, in the first cycle and the second cycle, the increase in the aspects of learning outcomes was 28.00%, student activity 3.00%, and teacher activity 6.00%.

Keywords: Learning Outcomes, Science *Natural, Contextual Teaching Learning***.**

1. INTRODUCTION

Education is an activity that is carried out deliberately to change a person's attitude. School, as a formal institution is a means to achieve this goal. Students can learn various things from school. Schools should provide quality graduates with quality. A teacher plays an essential role in providing knowledge and insight to students (Aliyyah, 2018). Students have different

ways of absorbing the experience and knowledge conveyed by the teacher. A person's ability to understand and absorb lessons is, of course, varying degrees. Some are fast, medium, and some are very slow. Therefore, they often have to take different ways to be able to understand information about the same lesson. Students in learning, of course, are also influenced by mood, if the spirit is happy, the learning process will be fun and vice versa, if the atmosphere is gloomy, the learning process is not fun. The school certainly has a target so that student learning outcomes are good. One of the indicators the achievement of learning objectives can be seen by looking at the level of student learning achievement. Learning outcomes are often used as a measure to find out how much someone understands the material that has been taught.

This was experienced by grade 5B at the Siliwangi Public Elementary School. Based on the observations, only about 35.71% or 15 students scored above the MCC with 42 students in Natural Sciences subjects. The low science score in grade 5B at Public Elementary School Siliwangi is because, during the learning process, the teacher only uses an expository learning model which makes it saturated. The learning process is that the teacher conducts learning by reading, writing on the blackboard, showing pictures and asking students to copy them into notebooks. Students seem less interested and do not understand what the teacher explains. So far, in the science learning process, teachers have not used an exciting and fun learning model.

The *Contextual Teaching and Learning* (CTL) model is a learning model that is directly related to the environment. Learning using the model CTL helps teachers relate subject content to real-world situations and motivates students to make connections between knowledge and its application in their lives. Students are often unable to make connections between what they learn and how that knowledge will be applied. Contextual learning (Komalasari, 2013) states that when students get new knowledge, then the instruction is processed and understood by them, which is gained from their own experiences, it can be said as learning. One of the theoretical foundations of modern education, including CTL, is a constructivist learning theory. Slavin (Trianto, 2009) states that Vygotsky's approach is the basis for constructivist ideas. One of the fundamental principles derived from his argument is an emphasis on the social nature of learning. He argued that students learn through relationships with adults or more capable peers.

Based on this theory, cooperative learning is developed, in which students more easily find and understand difficult concepts they discuss these problems with their friends. This is in line with Blanchard's (Trianto, 2009) idea that the CTL learning model encourages students to learn from peers and learn together. Knowledge grows through experience. Understanding grows more profound and more durable when tested with new skills.

Piaget (Komalasari, 2013) said that humans have knowledge structures in their brains, each of which contains various meaningful information. The experience same for several people will be interpreted differently by each individual and stored in a different place. Each new exposure is linked to sites (structures of knowledge) in the human brain. Science contains knowledge about the natural surroundings, both living things and phenomena that exist in this world. In the science subject, there are themes regarding the ecosystem. This ecosystem theme

discusses the components of the ecosystem and the living things in it. Learning science with the ecosystem theme using the CTL learning model will make it easier for students to remember and understand learning material because this model is related to the real-life of students.

Moreover, the media used is the environment. Students can relate learning material to everyday life. By learning while observing the situation, students can discover new things that they find in the background.

1.1 Classroom Action Research

Classroom Action Research (CAR) is systematic inquiry with the goal of informing practice in a particular situation. CAR is a way for instructors to discover what works best in their own classroom situation, thus allowing informed decisions about teaching (Mettetal & University--south,1998; Khasinah, 2013; Buaraphan, 2016). Classroom Action Research (CAR) as research that is reflective of taking specific actions to improve learning practices in the classroom professionally (Sukarni, 2015; Aliyyah, 2016).

1.2 Kemmis and McTaggart's The Classroom Action Research Model

The model developed by Stephen Kemmis and Robbin McTaggart (Taniredja, Irma Pujiati, 2015; Taniredja, T., Pujiati, I., 2012) is a development of Kurt Lewin's model, so it is almost similar to Kurt Lewin's model. Kemmis and McTaggart make one component of *acting* and *observing*. Kemmis and McTaggart's model are essentially a set or strands with one collection consisting of 4 parts, namely planning, actining, observing and reflecting, the four of which constitute one cycle. Kemmis and McTaggart's model can be described as follows:

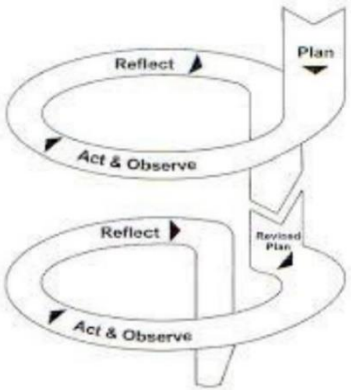

Figure 1 Classroom Action Research Cycle Kemmis & McTaggart Model
(Aliyyah, RR, Rasmitadila, Rachmadtullah, R., Mulyadi, D., & Ikhwan, 2019)**.**

Action research can be viewed as a spiral cycle of planning preparation, action, observation, and reflection which may then be followed by the next spiral cycle (Sukajati, 2008).

Researchers already have a set of action plans (which are based on experience) so that they can immediately start the action stage in its implementation. Some researchers already have

a collection of data, so they start their first activity with reflection activities. Generally, researchers start from the initial phase reflection to conduct a preliminary study as a basis for formulating research problems. Then followed by planning, action, observation, and thought, which can be described as follows:

1.2.1 Initial

Reflection is intended as an exploratory activity used to gather information about situations relevant to the research theme. The researcher and his team made preliminary observations to identify and find out the real job. Based on the results of the initial reflection, it can be focused on the problem, which is then formulated into a research problem. Based on the formulation of the problem, research objectives can be determined. When carrying out the initial reflection, at least prospective researchers have reviewed the theories relevant to the issues to be studied. Therefore, after the formulation of the problem has been carried out, then it is necessary to formulate a framework conceptual of the research.

1.2.2 Compilation of plans

The planning is based on the results of the initial reflection assessment. In detail, preparation includes actions that will be taken to improve, enhance or change the desired behaviour and attitudes as a solution to problems. It should be realized that this planning is flexible in the sense that it can vary according to the real conditions that exist.

c. Implementation of Actions and Observations

Implementation of actions concerning what the researcher does as an effort to improve, increase or change carried out guided by the plan action. The types of actions taken in the CAR should always be based on theoretical and empirical considerations so that the results obtained are in the form of increased performance and optimal program results. Observation activities in the CAR can be paralleled with collection activities, informal data research. In this activity, the researcher observes the results or impact of the actions carried out or imposed on students. The term observation is used because the data is collected through observation techniques.

1.2.3 Reflection

Reflection is an activity of analysis, synthesis and interpretation of all information obtained during action activities. In this activity, the researcher examines, sees, and considers the results or impacts of the action. Every data collected needs to be studied about one another and its relation to existing and relevant theories or research results. Reflection Deep can be drawn firm and sharp conclusions. Reflection is an essential part of CAR, namely, to understand the processes and outcomes that occur, namely in the form of changes as a result of the actions taken. This classroom action research used a classroom action research method using the model of Kemmis and Mc Taggart. This is because this model can find solutions to existing problems. This model is also by the level of the ability researcher's and conditions in the field.

1.3 Learning Outcomes

Learning outcomes as the process of creating a relationship between something (knowledge) that is already understood and something (experience) that is new (Tabany, 2014). Learning outcomes are the culmination of a process that has been carried out in learning. The conclusion will always be accompanied by a follow- up (Anitah, 2017). Learning outcomes must show a change in behaviour or the acquisition of new response from students that are permanent, functional, positive and aware. The form of behaviour change must be comprehensive in a comprehensive manner so that it shows a change in behaviour. Learning outcomes are changes in all attitudes not only in one aspect but in whole. Therefore, the teacher must observe so that this attitude can be achieved wholly and entirely by students. The realization of learning outcomes will always be related to the evaluation of learning outcomes that can effectively assess learning processes and outcomes (Daryanto, 2013; Aliyyah, RR., Puteri, Finka., Kurniawati, 2017). Based on the definition according to the experts above, it can be concluded that learning outcomes are the abilities after students carry out an active process of building knowledge, both new and understanding culture that they already have which do not only concern cognitive aspects, but attitude and psychomotor aspects as well. Needs to be seen.

1.4 Contextual Learning Model

Contextual learning or CTL is a learning concept that helps teachers connect the material they teach with world situations real-experienced by students where education encourages students to connect their knowledge with its application in their daily lives (Tabany, 2014). Involving seven primary component learning, of contextual, namely, constructivism, ask *(Questioning),* inquiry, community learningmodelling and authentic assessment. Blanchard (Al Tabany, 2014) states that contextualize learning that occurs in healthy interactions with real experiences. Contextual learning occurs when students apply and experience what is being taught based on world problems real related to their roles and responsibilities as members family, citizens, students and the workforce (Trianto, 2009). CTL emphasizes higher-order thinking, cross-disciplinary knowledge transfer, as well as the collection, processing and inference of information and data from various perspectives and sources (Tabany, 2014).

Based on the definitions according to some of the experts above, it can be concluded that the CTL learning model is a learning model wherein its activities the teacher connects material with real situations that emphasize level thinking higher-that occurs in healthy interactions with real experiences. Contextual learning argues that naturally, the mind seeks the meaning of context according to the real conditions of one's environment and that can occur through the search for reasonable and useful interactions. The integration of subject matter with students' real-life in contextual learning will produce a foundation of in-depth knowledge where students understand the problem and how to solve it. Students can use their insights to answer new and never faced challenges and have more responsibility for their learning as their experiences and ideas increase.

Students will work hard to achieve learning goals; they use previous experiences and insights to gain new insights. Also, six critical elements of CTL have been identified (Tabany, 2014) as follows:

a. Meaningful learning: understanding, relevance and personal appreciation of students that they have an interest in the material that must be studied. Education is considered relevant to their lives
b. Application of knowledge: the ability to observe what is learned is applied in other settings and functions at present and the future
c. Higher-level thinking: students are trained to use critical thinking creative in collecting data, understanding phenomena or solving a problem
d. Curriculum developed based on standards: teaching content relates to a range and variety of local, state, national, association and industry standards
e. Responsive to culture: teachers must understand and respect values, beliefs and the habits of students, fellow teachers and the communities in which they carry out teaching and learning activities. Different types of individual and cultures group influence learning
f. Authentic assessment: the use of different kinds of valid learning strategies reflects the actual learning outcomes expected of students. These strategies can include assessments or student projects and activities, use of portfolios, rubrics, checklists and observation guides as well as allowing students actively participate in assessing their learning and using them to improve their writing skills.

CTL approach has seven main components, namely constructivism*),* inquiry*),* asking *learning* community, modelling, reflection *authentic assessment.* A class is said to use the CTL approach if it applies the seven principles in its learning. The Ministry of National Education states that CTL can be involved in any curriculum, any field of study and in any class (Trianto, 2009).

Piaget said that how a person gets good thinking generally relates to the process of finding finds a balance between what he knows on the one hand with what he perceives as a new phenomenon as experiences and problems. When a person in his current state can handle a unique situation, his balance will not be disturbed. If not, he must make adjustments to the environment (Komalasari, 2013).

1.5 Characteristics of Respondents

Class 5B students have various characteristics in understanding material learning. Some understand by writing, some understand by seeing, others understand by putting something into practice (a type of force kinesthetic). The CTL learning model is considered valid and efficient to be carried out in science subjects on the ecosystem theme with various student characteristics. Science contains knowledge about the natural surroundings, both living things and phenomena that exist in this world. In the science subject, there are themes regarding the ecosystem. This ecosystem theme discusses the components of the ecosystem and the living things in it. Learning

science with the ecosystem theme using the CTL learning model will make it easier for students to remember and understand learning material because this model is related to the real-life of students.

Moreover, the media used is the environment. Students can relate learning material to everyday life. By learning while observing the situation, students can discover new things that they find in the background.

Piaget is the basis that grade 5B students are included in the concrete operational stage (7-11 years / 12 years), the main characteristic of development at this stage is that children have started to use clear and logical rules and are marked by *reversibility and* eternity. Children already can think logically but only with concrete objects (Komalasari, 2013).

2. METHODS

This study used the *Classroom Action Research* model of Kemmis and McTaggart. Kemmis and McTaggart's model is essentially a set or strands with one collection consisting of 4 components, namely planning, action, observation and reflection, the four of which constitute one cycle.

2.1 Procedure was based on the model of Kemmis and McTaggart.

The classroom action research procedure is pre-cycle, action planning, implementation of action and observations.

2.2 Criteria for the succession

Research is said to be successful if there is an increase in learning outcomes and activeness of students. The implementation of classroom action research conducted in class 5B Public Elementary School Siliwangi in science subjects with ecosystem material through the CTL model is said to be successful if the average value reaches 70.00 and 80.00% of 42 students or 33 students have achieved learning outcomes with a MCC score of 65. Meanwhile, student activity carried out by the observer is considered successful if the activeness of students and teachers has reached the 85% success criteria.

2.3 Data and Data Sources

Used in this study is a *post-test* which is used to measure student learning outcomes after learning using the CTL model. The test was conducted in the form of multiple-choice in the 1st cycle. An essay test will be given in the period next if the set success criteria have not been met in the previous cycle. The observation sheet is in the form of an observation sheet that includes the aspects to be observed—documents in the form of photographs during the learning process. Field notes take the form of research activities to enhance the research being carried out. Sources of data in this study were direct research and class VB Public Elementary School 42 students of Siliwangi, documentation in the form of photos of the process learning and observations.

3. RESULTS AND DISCUSSION

3.1 Results

3.1.1 Pre-Cycle

3.1.1.1 Completeness of Pre-Cycle Science Learning Outcomes

This research was carried out from the pre-cycle, then continued in cycle I and cycle II until the science learning outcomes obtained by students reached the success criteria.

Table 1 Achievement of KKM Science Learning Outcomes in Pre-Cycle

Achievement of Minimum Completeness Criteria			
Complete	Percentage (%)	Not finished	Percentage (%)
15	35,71	27	64,28%

3.1.1.2 Observation Results of Pre-Cycle Student Activeness

This classroom action research in addition to looking at aspects of student learning outcomes, this study also looked at aspects of teacher and student activeness. The observation of student activity in the pre-cycle the following

Table 2 Summary of Observations activeness Students Pre Cycle

Things that are observed	**Score**
Students actively record learning material	2
Students actively ask questions	2
Students actively submit opinions	2
Students are quiet and calm	3
Students focused on the material	2
Students do assignments according to orders	3
Students are enthusiastic about the learning material	3
Students are discussing	3
Total score	**20**
Percentage	**62,5%**

3.1.1.3 Observation Results of Pre-Cycle Teacher Activeness

This classroom action research also pays attention to aspects of teacher activeness. The results of pre-cycle teacher activeness observations are as follows:

Table 3 Recapitulation of Pre-Cycle Teacher Activity Observation Results

Types of activities being observed	Number of indicators	Total score
Early learning activities	4	12
Core activities	5	13
End activities	3	9
Total score = 34		
Percentage = 70,84%		

3.1.2 Cycle I

3.1.2.1 Completeness of Science Learning Outcomes in Cycle I

This classroom action research was continued from pre-cycle to cycle I. After the first cycle; the science learning outcomes were obtained as follows.

Table 4 Achievement of MCC Science Learning Outcomes in Cycle I

Achievement of Minimum Completeness Criteria			
Complete	Percentage (%)	Not finished	Percentage (%)
23	54,76	19	45,23

3.1.2.2 Observation Results of Student Activeness in Cycle I

Students became more active after cycle I. The results of observations of student activeness in cycle I were as follows.

Table 5 Recapitulation of Student Activeness Observation Results in Cycle I

Observed Results	Score
Students actively record learning material	3
Students actively ask questions	3
Students actively submit opinions	3
Silent students, calm down	4
Students focus on the material	3
Students do assignment according to orders	4
Students are enthusiastic about the learning material	4
Students are actively discussing	3
Total score	27
Percentage	**84,37%**
Category	**Good**

Table 5 shows the activeness of students in cycle I got a total score of 27 with a percentage of 84.37%. This is included in the first category but has not reached the success criteria for the active aspects of students, namely 85%.

3.1.2.3 Observation of Teacher Activeness in Cycle I

Observations of teacher activeness were carried out to see the extent to which the successful action was. The results of observations of teacher activeness in cycle I am as follows.

Table 6 Recapitulation of Results of Observation of Teacher Activeness in Cycle I

Types of Activities Being Observed	**Number of indicators**	**Total score**
Early learning activities	4	12
Core activities	5	18
End activities	3	10
Total score = 40		
Percentage = 83,34%		

Table 6 shows that teacher activeness in cycle I got a total score of 40 with a percentage of 83.34%. This percentage is included in the first category but has not reached the success criteria for the aspect of teacher activity, namely 85%.

3.1.3 Cycle II

3.1.3.1 Completeness of Science Learning Outcomes in Cycle II

Researchers, after doing the cycle, I still have some shortcomings and indicators of success have not been achieved. So the researchers continued the research to period II. The results of learning science in period II are as follows

Table 7 Achievement of KKM Science Learning Outcomes in Cycle II

Achievement of Minimum Completeness Criteria			
Complete	Percentage (%)	Not finished	Percentage (%)
35	83,34	7	16,67

Based on the results obtained in table 7 above, it can be seen that students who score above KKM or complete are 35 students with a percentage of 83.34%, while seven students had not completed with a rate of 16.67%.

3.1.3.2 Observation of Student Activeness in Cycle II

Observation of student activeness was carried out to see the extent to which the successful action was. In cycle I, the success criteria had not yet reached 85%, so it was continued to cycle II. After the second cycle was carried out, the results of the observation of student activeness were as follows.

Table 8 Recapitulation of Observation Results of Cycle II Students

Things observed	Score
Students actively record learning material	3
Students actively ask questions	4
Students actively submit opinions	4
Silent students, calm down	3
Students focus on the material	3
Students do assignments according to orders	4
Students are enthusiastic about the learning material	3
Students are actively discussing	4
Total score	**28**
Percentage	**87,5%**
Category	**Very good**

Activeness in cycle II Table 8 shows the activeness of students in cycle II got a total score of 28 with a percentage of 87.5% This is in an outstanding category so that the criteria success have been achieved.

3.1.3.3 Observation of Teacher Activeness in Cycle II

Observation of teacher activeness was carried out to see the extent to which the successful action was. The results of observations of teacher activeness in cycle II are as follows.

Table 9 Recapitulation of the Results of Observation of Teacher Activeness in Cycle II

Types of Activities Being Observed	Number of Indicators	Total Score
Types of activities observed	4	16
Core activities	5	18
End activities	3	9
Total score = 43		
Percentage = 89,58%		
Category= Very Good		

Table 9 shows the activeness of teachers in cycle II got a total score of 43, with a percentage of 89.58%. This percentage is included in the first category, and the criteria for success are achieved.

3.2 Discussion

3.2.1 Student Learning Outcomes Student

Learning outcomes increased after learning improvements through the model were held CTL learning. This increase can be illustrated in the following graph.

Grafik 1 Recapitulation of Student Achievement

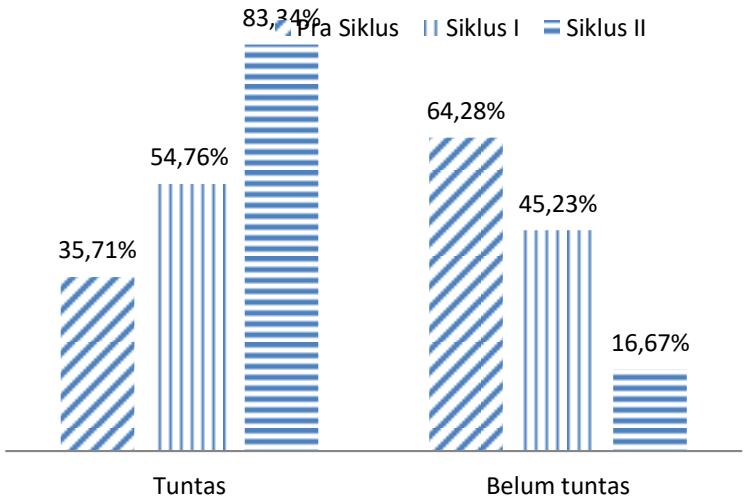

Figure 1 Recapitulation of Student Achievement

From the Figure 1, it can be seen that the number of students who completed the pre-cycle and cycle I have increased by 19.05%. Likewise, the period I and cycle II grew, the increase was 28%. Meanwhile, the number of students who have not completed has decreased, both from pre-cycle, cycle I and cycle II. The decrease was from pre-cycle and cycle I decreased by 19.05%, while from cycle I to cycle II the reduction was quite drastic, namely 28.56%.

The results of the comparison of the number of students who completed both from pre-cycle, cycle I and cycle II showed that the learning model was *CTL* effective in improving learning outcomes student because the model involved students learning activities and linking the material to students' real life. Learning materials will be clear when using media learning to attract student interest in learning so that it can be better

understood and allows students to achieve better learning goals (Aliyyah, Rusi Rusmiati and Malia, Yesi. 2016).

3.2.2 Teacher and Student

Activeness The activeness of teachers and students increases after learning improvements through held the CTL learning model is. This increase can be illustrated in the following graph.

Graph 2. Recapitulation of Teacher and Student Activity

Figure 2 Recapitulation of Teacher and Student Activity

From Figure 2, it can be seen that teacher activeness and student activeness have increased both in pre-cycle, cycle I and cycle II. In teacher activeness, the increase from pre-cycle to period. I was 13%, while the increase from cycle I to cycle II was 6%. In student activeness, the rise from pre-cycle to cycle I was quite drastic, namely 22%, while the increase from the period I to cycle II was 3%. This shows that the learning model in *CTL* addition to improving learning outcomes, this model can also increase student activity. Contextual teaching and learning is an approach learning that links the material being studied with context students daily life students daily life (Sukarni, 2015;Adri et al., 2020). Management of the classroom atmosphere done through student settings and good first class facilities (R R Aliyyah & Abdurakhman, 2016).

4. CONCLUSION

Student learning outcomes increased after learning improvements through the model were held CTL learning. The number of students who completed the pre-cycle and cycle has grown by 19.05%. Likewise, the period I and cycle II increased, the increase was 28%. Meanwhile, the number of students who have not completed has decreased, both from pre-cycle, cycle I and cycle II. The decrease was from pre-cycle and cycle I decreased by 19.05%, while from cycle I to cycle II the reduction was quite drastic, namely 28.56%. Teacher activeness and student activeness have increased both in pre-cycle, cycle I and period II. In teacher activeness, the increase from pre-cycle to cycle. I was 13%, while the increase from cycle I to cycle II was 6%. In student activeness, the rise from pre-cycle to the period I was quite drastic, namely 22%, while the increase from cycle I to cycle II was 3%. Efforts to improve learning outcomes through the CTL learning model students at grade 5B Public Elementary School Siliwangi can be said to be successful because student learning outcomes always increase in each cycle. Students also become more active in using this model.

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