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Improving the Students Concept Through *Brain Based Learning* Model for Fifth Grade Students of Elementary School

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Abstract

This study aims to improve the mastery of students' concepts in fifth grade students through the *Brain Based Learning* model. The location of the study was Sumberejo 04 State Elementary School, Ambulu Subdistrict, Jember Regency, with a research population of fifth grade students totaling 30 students. This study uses Classroom Action Research (PTK). The study was conducted in 2 cycles, by carrying out several stages, namely the planning, implementation and observation stages, as well as the reflection stage. Data collection techniques using tests in the form of written tests and non-tests in the form of observations, namely observation of teacher activities and student activities. The results showed an increase from cycle I to cycle II. For teacher activities in the first cycle, the percentage shows 75%, and in the second cycle increases to 92.85%. The activity of students in the first cycle is a percentage of 70%. And in cycle II, student activity increases, to 85%. While the increase in mastery of student concepts can be seen from the results of student evaluations from 75.91% in the first cycle to 88.95% in cycle II.

Keywords: concepts, models, Brain Based Learning

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Introduction

Good learning will not materialize if someone has not mastered the concept of something well, this is as expressed by Gagne (in Ibrahim, 2012: 9) that understanding concepts is an ability that allows someone to do something. This can be interpreted that without mastering certain concepts, people cannot do much and the possibility of survival will be disrupted. Kasdi (2017: 4) defines the concept as an ability of the mind to form a new abstract image based on data or concrete facts so that humans can compile or make a picture or prepare it. Each concept according to Arends (2013: 22) has five important elements, namely names, definitions, attributes (specific characteristics / essential characteristics), examples, and values. From several definitions above, the notion of concepts is a collection of stimuli (ideas, facts, abstracts, images, etc.) that have the same characteristics (attributes). So, one can distinguish between examples of concepts from one another through observing essential features or attributes of each concept.

When students are learning, students will try to form a concept about what is learned. Practicing mastery of concepts is important for realizing good learning. To measure the ability of students to master the concept, the mastery indicators of the concepts listed in the learning device are needed. In formulating these indicators, Bloom's taxonomy of cognitive aspects can be used. Kemp (1994: 80) explains Bloom's taxonomy divided into C1 (Memory), C2 (Understanding), C3 (Application), C4 (Analysis), C5 (Synthesis), and C6 (Evaluation).

One of the factors that causes a person not to understand the concept is because the mastery of one's concept is incomplete, simple, and different. Therefore it requires a learning model that is centered on students, so that students can find information from a particular concept so that the information obtained by students becomes more complete, complex and similar to the concept attributes as they should. Many definitions of the learning model are delivered by several experts. One understanding of the learning model is that expressed by Joyce (1992: 4), the learning model is an arrangement that is used as a guide to designing classroom learning or the stage of determining learning design in various media sources. Understanding the learning model according to Supriyono (2013: 45), the learning model is the right form as a process of changing sequences that allows one to do according to that model. From some of these definitions, it can be concluded that the learning model means a teaching plan that shows certain "learning patterns". The pattern in question is the presence of activities carried out by teachers, students and teaching materials that are able to create student learning, also systematically arranged about a series of learning events.

Based on the results of the learning observations conducted on February 13, 2019 at Sumberejo 04 State Elementary School there were several problems and obstacles in learning, including: (1) when the learning process took place, students were absorbed in playing alone, lacking enthusiasm, and quickly feeling bored; (2) students still cannot master the concepts conveyed in learning. Seen in the learning outcomes of students who still do not meet the Minimum Completion Criteria (KKM) and if there are discussion activities or group work, only some students pay attention and are responsible for doing group assignments, so that there are students who are active and not active in learning activities; (3) the teacher does not invite direct interaction with students, so students only pay attention to the explanation from the teacher; (4) learning resources used by teachers only from the theme book.

Paying attention to the problems faced, the lack of accuracy in the selection of learning models is the cause of this research. One of the learning models used as a solution to the problems above is the *Brain Based Learning* model. *Brain Based Learning* is the involvement of strategies that are based on principles derived from an understanding of the brain (Jensen, 2008). The purpose of Brain Based Learning is to change the form of learning from the previously memorized to meaningful learning. The characteristics of the Brain Based Learning model according to Caine and Caine are the involvement of students in a complex interactive experience, which is real. Students are prepared to always be ready to learn through active process experience. (Suyono & Hariyanto, 2015: 14)

The *Brain Based Learning* model can be a solution to learning problems supported by research conducted by Akyurek (2013) in *Mevlana International Journal of Education (MIJE) Vol. 3 No.1* which concludes that students who get learning based on *Brain Based Learning* on material Science

has better learning outcomes than those who don't use it. *Brain Based Learning* Model can also increase the effectiveness of learning according to the research of Niswani and Asdar (2016) in *Journal of Mathematical Power Volume 4 Number 3*. Then research conducted by Awalola (2011) on the *Cypriot Journal of Educational Siences Vol.2 No.2* concludes learning based on *Brain Based Learning* is very influential on student learning outcomes because learning becomes more contextual. This is because in learning *Brain Based Learning* students can connect subject matter with their real life. Therefore, from the problems presented above, researchers will conduct research with the title *"Improving Student Mastery Concepts through Brain Based Learning Model for Fifth Grade Elementary School Students."*

Methods

This study uses a type of Classroom Action Research (CAR). The location of the study was at Sumberejo 04 Elementary School in Ambulu District, Jember Regency. The research subjects in this study were fifth grade teachers and fifth grade students of Sumberejo 04 State Elementary School with 30 students. The number of male students is 17 students and the number of female students is 13 students. This research was carried out in a collaborative form between researchers and classroom teachers. The study design used the Kemmis & Taggart PTK model (in Arikunto, 2013: 130-131). Kemmis & Taggart explain that it forms a cycle. The stages in question are several stages in classroom action research which are planning, action and observation, then reflection. The following is a chart that describes the Kemmis and Taggart cycles:

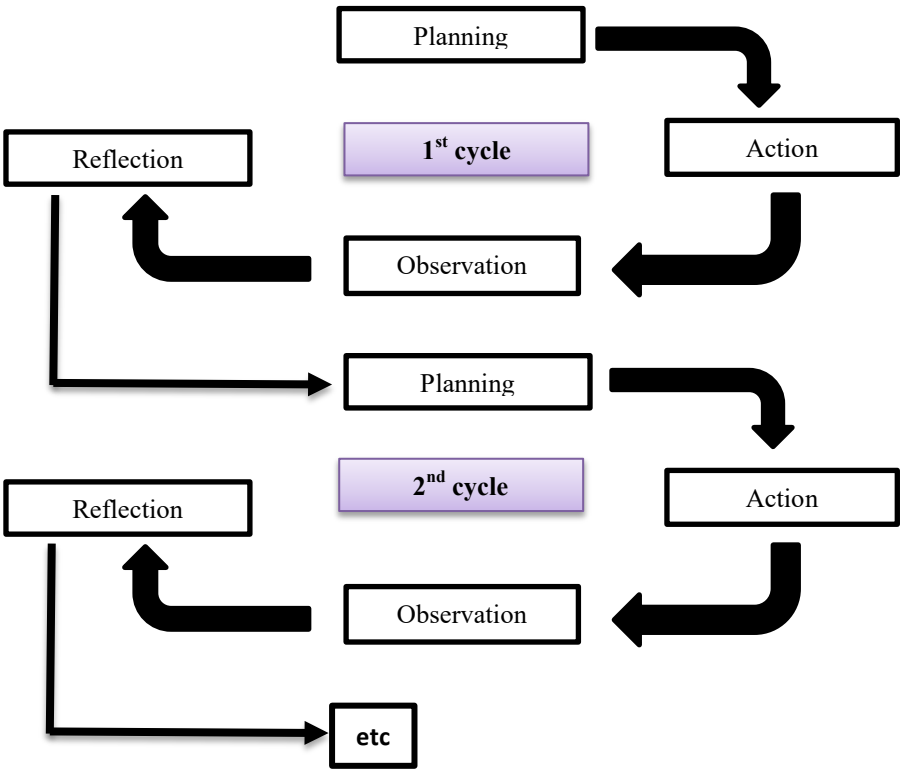

Figure 1. Classroom Action Research Cycle (Arikunto, 2013: 130)

The data collection techniques and tools used in this study were tests, namely using a written test. Data collection techniques in the form of tests are arranged to analyze the increase in mastery of student concepts and given at the end of learning. The data collection tool uses an evaluation sheet. The questions on the evaluation sheet are adjusted to the learning indicators provided by the teacher. The non-data collection technique used is observation of student activities and teacher activities in learning.

Results

In this section, the results and discussion of class action research will be presented by researchers with the title *"Improving Student Mastery Concepts through Brain Based Learning Model for Fifth Grade Elementary School Students."*, student activities, and increased mastery of student concepts.

The following is the observation result from the implementation of learning by applying the *Brain Based Learning* model:

1. Teacher activities

Table 1. Data on Observation of Teacher Activities in Cycle I-Cycle II

No.	Teacher Activities	Cycle I	Cycle II
1.	**Pre Presentation** Giving opening greetings and pray	3	3,5
2.	**Preparation** Delivering learning objectives and apperception	2,5	3,5
3.	**Initiation and Acquisition** Presenting problems to be discussed in groups	3	3,5
4.	**Elaboration** Guiding students to group	2,5	3,5
5.	**Incubation and Inserting Memory** Asking students to reread the material that has been discussed	3,5	4
6.	**Confirmation Verification and Checking** Asking students to solve questions related to the material.	3	4
7.	**Celebration and Integration** Giving awards to groups and individuals	3,5	4
TOTAL		21	26
PERCENTAGE (%)		75	92,85

Teacher activities have an important role in improving the quality of learning. Data from the observation of teacher activities from cycle I to cycle II has increased. This increase in teacher activity has an impact on the success of learning. By learning from the first cycle, in the second cycle the teacher becomes more master of the class and learning. For more details on the increase in teacher activity, it will be displayed in the following diagram:

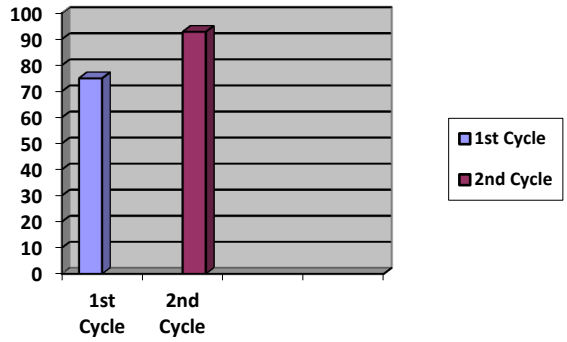

Figure 2. Percentage of Teacher Activity in Cycle I-Cycle II

2. Student Activities

Table 2. Data Observation of Student Activities in Cycle I-Cycle II

No.	Student Activities	Cycle I	Cycle II
1.	Praying before starting learning	3	4
2.	Listening to the explanation / direction from the teacher at the beginning of the lesson	2,5	3
3.	Group discussion	2,5	3
4.	Making a summary of learning material	3	3,5
5.	Working on evaluations	3	3,5
TOTAL		14	17
PERCENTAGE (%)		70	85

As with teacher activities, student activities from cycle I to cycle II also increased. In the first cycle, the activity did not meet the indicators of the success of the study, so improvements were made to achieve the intended indicators, and learning could also be effective. The following diagram shows an increase in student activity from cycle I to cycle II:

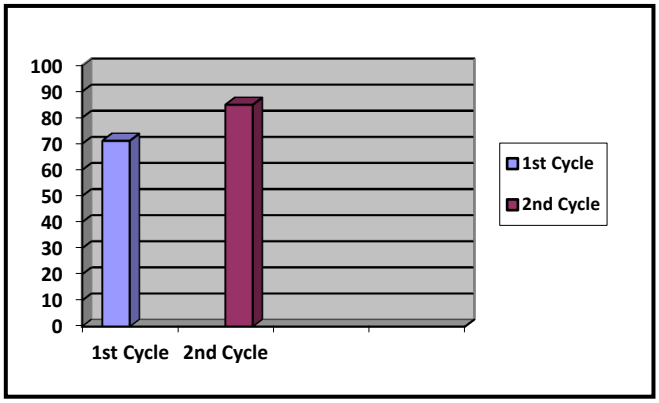

Figure 3. Percentage of Student Activity in Cycle I-Cycle II

3. Mastery of the Concept

Table 3. Results of Mastery of the Concept of Students in Cycle I-Cycle II

Cycle	
I	II
75,91 %	88,95 %

From table 3, from cycle I to cycle II the results of mastering the concepts of students by applying the *Brain Based Learning* model can increase. In the first cycle, it has not met the success indicator, which is more than or equal to 80%, so that improvements are needed for the next cycle. The following will show a diagram of improving student learning outcomes:

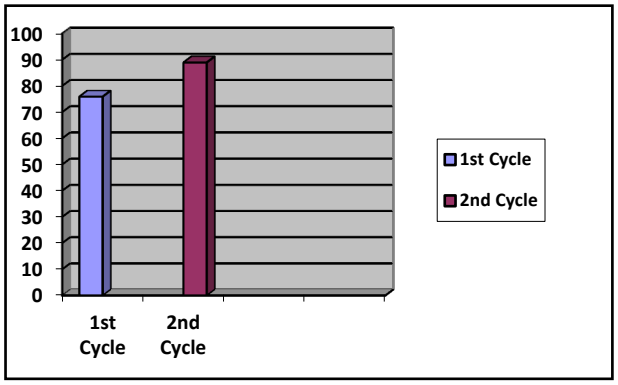

Figure 4. Percentage of Mastery of Student Concepts in Cycle I-Cycle II

Discussion

Increasing teacher activity provides an important role for improving the quality of learning. The ability of teachers to package learning affects the success of learning. In a learning system, teachers can act as planners (planers) or learning designers, as implementers and / or perhaps both (Sanjaya, 2008: 15). As a planer, teachers are required to understand correctly about the components in preparing learning plans and designs. Whereas as implementers, teachers are required to become learning managers. Thus, the effectiveness of the learning process is the responsibility of the teacher. By applying the *Brain Based Learning* model in learning, there are seven main steps that must be done by the teacher, namely the pre-exposure stage, preparation, initiation and acquisition, elaboration, incubation and insertion of memory, verification and checking of beliefs, and celebrations and integration (Jensen, 2008 : 484).

In the first cycle, at the pre-exposure stage, which is to pray first and condition students before the start of learning, the teacher has shown a fairly good activity. Teachers can condition their students to be ready to learn. At the preparation stage, namely conveying the learning objectives and conducting apperception related to learning material, the teacher still cannot convey clearly. Apperception given by the teacher has not referred to the learning material. The next stage is initiation and acquisition. At this stage the teacher is good enough. The teacher is good at presenting problems that must be discussed by students and their groups. The next stage is elaboration. At this stage, the teacher is still unable to guide students in groups. The classroom atmosphere is not conducive. In the incubation stage and inserting the memory, the teacher asks students to summarize learning and is asked to study it again already well according to the results of observations, as well as at the stage of verification and checking of beliefs, as well as celebrations and integration.

In the next cycle, in this case is cycle II, the teacher shows his teaching performance is better than cycle I. The shortage of teachers in the first cycle is improved to be done in cycle II, such as activities when the teacher performs apperception. In the first cycle, the teacher still lacks the students' initial knowledge so that they get a score of 2.5. Then in cycle II, the teacher is more interactive to invite students to express their opinions about the material before the material is taught. In addition, the

increase was also seen in the elaboration stage. First in the first cycle, the teacher still cannot condition his students in groups, so the class becomes not conducive, but in the second cycle the teacher is good at conditioning students in groups. These improvements are also shown at each stage in the application of the *Brain Based Learning* model. Therefore, from the percentage of cycle I to cycle II, teacher activity has increased from 75% to 92.85%.

The success of the application of the *Brain Based Learning* model is also shown in increasing student activity. Like teachers, other factors that can affect the success of learning are students. Each student has their own uniqueness, one of which is intelligence differences. Individual differences in the intellectual field need teachers to know and understand, especially in relation to student grouping and giving guidance to students (Djamarah, 2000: 58). Through the *Brain Based Learning* model students are invited to improve their brain abilities in the thinking process so that meaningful learning will be produced (Suyono & Hariyanto, 2015: 13)

From the results of observations, the activities of students in learning by applying the *Brain Based Learning* model are still not conducive when the teacher provides explanations at the beginning of learning and in group discussions the students are less conducive. Student activity is still low when students observe teacher explanations, provide responses to questions given by the teacher at the beginning of learning, and have not been able to discuss well with the group, so that in the first cycle these activities have not been implemented properly.

From the shortcomings in cycle I, improvements were made in cycle II. In cycle II, the implementation of learning is better than cycle I. Students' activities that are classified as very good are seen when students pray before starting learning. Student activity also increases when students make summaries and work on evaluations. The activity of students in the first cycle was still lacking, experienced an increase in cycle II, namely when listening to explanations from the teacher and discussing groups. With the increasing activities of students in the second cycle, making learning with the *Brain Based Learning* model more meaningful. This is in line with the research conducted by Serap Tufekci and Melek Demirel (2009), in the Journal of *Procedia Social and Behavioral Sciences 1* (2009), 1782-1791 which concluded that *brain based learning* is effective for the application of meaningful learning. Therefore, in cycle II student activity is better than cycle I, which reaches a percentage of 85%.

As explained above, this study aims to improve the mastery of students' concepts through the *Brain Based Learning* model. Mastery of the concepts intended in this study are cognitive abilities as covered in Bloom's taxonomy, namely C1 (Memory), C2 (Understanding), C3 (Application), C4 (Analysis), C5 (Synthesis), and C6 (Evaluation). Mastery of students' concepts was assessed through 10 test questions. Furthermore, Anderson and Krathwohl (2001) state that conceptual knowledge includes knowledge of categories, classifications, and relationships between two or more categories or classifications. Mastery of concepts is one aspect of what is called *disciplinary knowledge*, namely how to think of a phenomenon in a scientific discipline. After learning is done using *Brain Based Learning* models and carried out observations in cycle I, mastery of students' concepts has not reached the specified success indicators. Then, errors that are known from the reflection stage are corrected for the next cycle. In the second cycle, learning using the *Brain Based Learning* model experienced an increase compared to the first cycle, which was 75.91% to 88.95%.

Conclusion

Providing the right learning model can improve mastery of someone's concept that is incomplete, still simple, and different. Therefore, a learning model is needed so that students can find information from a particular concept so that the information obtained by students becomes more complete, complex and similar to the concept attributes as they should. From the observation of the research process, the *Brain Based Learning* model can improve students' mastery of concepts and the effectiveness of the learning process. The effectiveness of learning increases seen from the increase in teacher activity and student activities during the learning process by applying the *Brain Based Learning* model to fifth grade students of Elementary School. This is indicated by the increase in the percentage of teacher activity obtained from cycle I to cycle II. The increase also occurred in the mastery of students 'concepts with an increase in the percentage of mastery of students' concepts in a classical manner from cycle I to cycle II. By mastering a concept, one will be able to understand the meaning of learning both ideas,

abstracts, and logical ideas from facts or experiences experienced so that learning can be meaningful and can be useful to solve problems in everyday life

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