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The use of Brain Based Learning Model in classroom

Lia Sari Rahmatin[1], Slamet suyanto[2]

[1]Graduate Students of Biology Education, Yogyakarta State University, Yogyakarta, Indonesia
[2]Biology Education Department, Yogyakarta State University, Yogyakarta, Indonesia

E-mail: Liasrahmatin@gmail.com

Abstract. This study examined the effects of the brain based learning model to the student's achievement on biology class. Its held on the second grade students of SMP Negeri 7 Mataram. Using the pre-test and post-test group design, two class were divided into two groups. The brain based learning model were apply to the experimental class and other group was instructed conventionally. Each group were compete to acquire the increase of the learning's achievement (cognitive domain). The evidence of this study based on t-test score ($t_{count} > t_{table}$: $3,29 > 1,99$), showed the different between the two groups. It can be concluded that the brain based learning model can significantly affect the student's achievement on learning biology for the second grade students of SMP Negeri 7 Mataram.

Keywords: Brain based learning, learning achievement.

1. Introduction

Government Regulation Number 19 of 2005, mandates that learning should be carried out interactively, inspiratively, fun, challenging, motivating students to actively participate, as well as providing sufficient space for initiative, creativity, and independence according to their talents, interests and physical development, and also the psychological learners. This shows that teaching designed by the teacher must be oriented to the activities of students [1].

Based on the aforementioned constitution, it is expected that the education system in Indonesia can proceed as expected to achieve the goals of education, that are to educate the life of the nation and develop a whole human being, those who believe and are devoted to God Almighty and have noble character, have knowledge and skills, physical and spiritual health, a strong and independent personality and a sense of community and national responsibility [2].

The achievement of national education goals is inseparable from the process of teaching and learning activities that take place in schools. Learning has two important aspects, that are aspects of learning outcomes which is a changes in students behavior and aspects of the learning process which is a number of intellectual, emotional, and physical experiences in students. The learning process is a very important aspect to provide learning experiences for students so that meaningful learning can be achieved [3].

The general trend that is present in our school classroom is the occurrence of traditional learning which is relatively only functioning of the small brain, where the learning process that occurs is teacher-centered by making students as objects of learning with their main activities to memorize learning material, do assignments from the teacher, receive punishment if make a mistake, and get less respect for their work. This tendency will certainly make students depressed in learning or it can be said that students learn what their teacher wants to learn, not what they want to learn. Students are not accustomed to developing their thinking potential so that students become lazy to think independently [4].

Biology is a subject that is included in the natural science family. Science is related to how to systematically find out (inquiry) about nature. Biology learning in secondary schools is expected to be a vehicle for students to learn about themselves and the natural surroundings, as well as prospects for further development in daily life. therefore, biology learning emphasizes on giving direct experience to develop competencies so that students can explore and understand the nature and surroundings scientifically. Biology learning is directed to find out and doing so that it can help students to gain a deeper understanding of themselves and the nature and surroundings [5].

Based on these matters, it is expected that science learning is carried out not only the process of transferring knowledge from teachers to students but making learning more meaningful by making students physically and mentally active in learning, so that the learning that occurs is not overly teacher-oriented (teacher-centered) but on students (student-centered).

Based on the results of observations and interviews with teachers of natural science (IPA) in SMP Negeri 7 Mataram, showed that the science learning that was carried out still emphasized teacher-centered learning with the most method commonly used by teacher is the conventional method. The teacher is rarely used the variated model learning. When learning activity come off with the conventional method, students seen to be less active and lack of attention to the ongoing lessons. This can be seen from some students who play and chat with their peers, draw in a notebook, and same are seen sleepy. This is certainly caused by learning that is considered less attractive to students. If this learning situation continues to be maintained, it will adversely affect the learning outcomes of the students. Therefore, teacher's creativity is needed in developing and implementing various learning models or learning methods that are varied so that students are more interested in learning science. A person will learn with all his abilities if he likes what he learns and he will feel happy to be involved in it [4]. Therefore, the use of models and learning methods that are interesting and fun for students will make students happy to be involved in the learning so that learning becomes more meaningful.

There is an alternative that can be offered to solve this problem is the implementation of a brain based learning model. Brain Based Learning is a learning according to the way the brain is naturally designed to learn [6]. Brain-based learning offers a concept to create learning oriented towards an efforts to empower the brain's potential of students [4]. This model is very suitable to attract the attention of students in learning. In its implementation, brain-based learning offers three main strategies in science learning: 1) creating a learning environment that challenges students' thinking abilities; 2) creating a pleasant learning environment; 3) and create an active and meaningful learning situation for students, so that the expected learning outcomes of students will increase by using a brain-based learning model [6].

Based on the above background, a research was conducted on: "The use of brain based learning model in classroom".

2. Research Method

This research uses quasi experiment with quantitative approach. The data collected was the student's learning achievement on cognitive domain during class. This research was held at SMP Negeri 7 Mataram. The population of this research was all class of eight grade students in SMP Negeri 7 mataram. The subjects of this research was the second grade students of SMP Negeri 7 Mataram in the academic year of 2016/2017. The sample was determined using purposive sampling which according to certain consideration of the homeroom teacher. 2 selected classes are taught by the same teacher and have the same number of students. Then, the 2 classes are drawn using simple random Sampling technique to determine the class to be treated as a control group and an experimental group. based on the draw results, it is revealed that the VIII.7 class is treated as a control group and the VIII.1 class is treated as an experimental group. The research design used in this study is: Pretest and Post-test Group Design, where in this design, observations were made 2 times: before the experiment and after the experiment [8].

3. Result and Discussion

The learning outcomes data obtained in this study are the Pre-test and Post-test scores of the experimental group students (class VIII.1) and the control group (class VIII.7). The pre-test result for the control class obtain 64 as the highest score and 32 as the lowest and the average score is 49.11, whereas the experimental class obtain 72 as the highest pre-test score and 28 as the lowest and the average score is 50.04.

After the treatment, the experimental class which used Brain Based Learning model obtain the highest score is 92, the lowest score is 40 the average score is 73.87, while in the control class which is treatmented by the conventional method obtain the highest score is 80, the lowest score is 44, so the average score is 65.11.
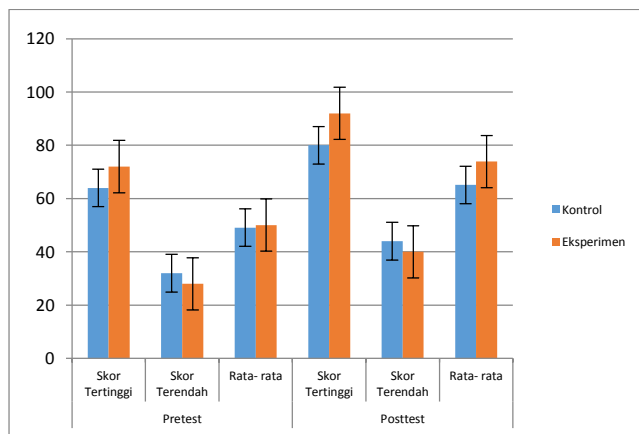

Figure 1. The Pre-test and Post-test result

Based on the pre-test score of the control class and experimental class, it shows that: the experimental group and the control group was on the similar level of competency. The average of the pre-test score in both classes told that both classes were in the low category of competency. This could be occur because the students are given the test about the material which has never been delivered in the class, so that the pre-test can be used as the standard to know the students' early competency before affected by the treatment. The different cases after the treatment in both classes is there was an increase of cognitive learning outcomes in both classes. However, the average of post-test score of the experimental class increase more significantly than the control class. so that it can be said that the use of brain-based learning models is effective to improve the students cognitive learning outcomes on Biology.

Based on the comparison of the learning outcomes between the experimental class and the control class to the value of the Minimum Completeness Criteria (KKM) in SMP 7 Mataram, it show that the percentage of students who passed the KKM after treatmented in the experimental class is 72.3%. While in the control class,there are 25,5 % of students who pass the postest. So it can be said that the experimental class pass percentage is higher than the control class.

Table 1. Prosentase of student's learning outcome

Group	Test	The number of students	Minimum mastery criteria (KKM) 70		Students passed the test (%)
			Lulus	Belum Lulus	
Eksperimen	Pretest	47 students	1 students	46 students	2,1 %
	Posttest		34 students	13 students	72,3 %
control	Pretest	47 students	0 students	47 students	0 %
	Posttest		12 students	35 students	25,5 %

The test used to see the effect of brain-based learning model on student learning outcomes is using the t-test. Before testing the hypothesis, firstly conduct a hypothesis prerequisite test consisting of normality test and homogeneity test. From the hypothesis prerequisite test, it was found that the population was normally distributed and homogeneous.

Table 2. The result of hypotetic testing

Group	t_{count}	t_{table}	conclusion
Eksperimen	3,29	1,99	H_a accepted
control			

Based on the data analysis that has been done, the results of hypothesis testing indicate that the t_{count} is 3.29 while the t_{table} value at a significant level of 5% is 1.99. because of the value of $t_{count} > t_{table}$ then the H0 is rejected and Ha is accepted. So, it can be stated that: the brain-based learning model take effect on students' learning outcomes in Biology. The results of this research are in line with several studies that have been conducted related to brain based learning models which declare that the used of brain based learning models can have a significant influence on students' cognitive learning outcomes [9]; [10]; [11]; [12].

This can be occur because learning which using a brain-based learning model can create a new different atmosphere on class when compared to learning with using the conventional method which given to the control class. There are three main strategies developed in the implementation of Brain Based Learning i.e: creating a learning environment that challenges students' thinking skills, creating a pleasant learning environment, and creating an active and meaningful learning environment for students [6]. these strategies that the teacher tries to apply in the experimental class. Giving questions in the form of LKPD, reflection sheets, and questions and answers offered to the students triggers a learning environment that challenges students' thinking skills. Accompanying learning activities with instrumental music, and doing muscle stretching is done to create a pleasant learning for students, so that students love the course of learning and are happy to be involved in it. A person will learn with all his abilities if he likes what he learns and he will feel happy to be involved in it [4]. Through observing activities and group discussions, students are required to build their knowledge through an active learning process that is carried out independently so that active and meaningful learning situations can be created. Dissimilar to the case with the conventional method applied to the control class, learning seems monotonous and students tend to be more passive because they only listen to the explanation given by the teacher. Some students become bored and are not interested in following the course of

learning. Students tend to be objects of learning so that students are not able to generate all the potential they have optimally so that the results of the learning outcomes are less.

The syntax of learning offered by Brain based learning learning models can trigger students to optimize properly the potential of their brain in learning process. There are 7 stages of Brain based learning, i.e: the pre exposure stage, preparation stage, initiation and acquisition stage, elaboration stage, incubation and memory encoding stage, verification stage and confidence check stage, and the celebration and integration stages [6]. One of the points that is done in the pre-exsposure stage is displaying concept maps related to the material being taught. This is important as a point of view for students to provide an overview of what will be learned in the learning process. In the preparation stage, the teacher gives apperception that is very important for students to recall the material that has been learned before. At the incubation and memory encoding stage, the students are asked to stretch the muscles, in addition students are also asked to re-explore their gained knowledge and rewritten it to the reflection sheet that have been provided while teacher playing the instrumental music. These stages are expected to optimize the brain potential of students in learning. Thus, the learning outcomes of students can increase.

4. Conclusion

Based on the results and discussion of the study, it can be concluded that t-count $>$ t-table (3.29$>$ 1.99) thus Ho is rejected and Ha is accepted which means that: the model of brain-based learning has an effect on the student's biology learning achievement in eight grade students at SMP 7 Mataram in the academic year of 2016/2017.

Acknowledgment

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