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EFFECT OF BRAIN BASED LEARNING MODEL TO ABILITY OF CONCEPTS AND CREATIVE THINKING SKILLS FOR STUDENTS BASE ON ABILITY OF SCIENCE FOR STUDENT OF DEPARTMENT ELEMENTARY SCHOOL OF EDUCATION

I Gusti Ayu Tri Agustiana[1)], Rudiana Agustini[2)], Muslimin Ibrahim[3)]

[1)] *Elementary School Education of Department Universitas Pendidikan Ganesha Bali Indonesia*
[2)] Chemistry Education of Department, State University of Surabaya
[3)] Biology Education of Department, State University of Surabaya
Jl. Udayana No.12 Singaraja Bali

Email : igustiayutriagustiana@yahoo.co.id

Abstract

This research aimed to examine (1) the difference mastery of concepts and creative thinking skills of students among the students who follow based learning model of the brain with the students following the model of cooperative learning, (2) the effect of the interaction between learning model with the ability science (field of study chosen in high school (SMA / SMK) toward mastery of concepts and creative thinking skills of students, (3) the difference mastery of concepts and creative thinking skills of students among the students who follow based learning model of the brain with the students following the model of cooperative learning, the student has the ability science, (4) the difference mastery of concepts and creative thinking skills among students who follow the model of the brain based learning with students following the model of cooperative This research is a quasi-experimental research (Quasi Experimental) using The Posttest Only Control Group Design. The population is all semester students III PGSD Ganesha University of Education in the 2015/2016 year course Basic Concepts of science concept parth 2.. Determination of the sample with simple random sampling tehcnic. Data mastery of concepts and creative thinking skills of students measured by the instrument mastery of concepts and creative thinking skills, collected data on the ability of science to distinguish input from students and non IPA IPA (the chosen field of study in SMA / SMK). Data were analyzed by Multivariate Analyze of Variance (MANOVA).

The results showed that: (1) There are differences in the mastery of concepts students creative thinking skills among students who follow the model of the brain based learning with students who attend cooperative learning model (F = 45.279, p = 0.001 <0.05), (2) there are significant interaction between learning model with the ability IPA (the chosen field of study in SMA / SMK) toward mastery of concepts and creative thinking skills of students (F = 14.428, p = 0.001 <0.05), (3) There are differences in the mastery of concepts and creative thinking skills Among the students who follow the model of the brain based learning with students following the model of cooperative learning, the student has the ability IPA (F = 24.186, p = 0.001 <0.05), (4) there are differences in the mastery of concepts and creative thinking skills among students following the model of the brain based learning with students following the model of cooperative learning, the student has the ability to non IPA (F = 29.57, p = 0.001> 0.05)

Keywords : Brain-Based learning model, mastery of concepts, creative thinking skills, ability science

1. Introduction

Recently, information of technology is growing very fast. The rate of development of the then influential to various fields. One of the co-evolve and change is education (Caine & Caine, 2013). The rapid pace of information causes a variety of problems emerged in the world of education.

Now, the main problem of education today is to build rationality, and aspects of it, is far more important than learning

achievement (achievement) as measured by achievement test scores are just more emphasis on memorization of knowledge (Brooks & Brooks, 1993). Think rationality is increasingly urgent conducted on students in Indonesia. It is based on be some data on education in Indonesia is still relatively low compared with the ASEAN countries. According to the Education For All (EFA) Global Monitoring Report (2011): The Hidden Crisis, Armed Conflict and Education issued by UNESCO shows that Indonesia Education Development Index is 0.934 which rank 69 of 127 countries. The position is far behind from Brunei Darussalam who is ranked 34 and Japan ranks first in the world.

That is, education in Indonesia in the category of crisis. This condition indicates weakness in many aspects, especially in science literacy. International PISA study results show that the average score of students' scientific literacy Indonesia is at position 60 of 65 countries with a score of 383 for the achievement of the 2009 study (OECD, 2013: 217). These results illustrate that Indonesia is still in the category of students have limited scientific knowledge. This limitation handcuff way of thinking students so that they do not have the scientific reasoning ability (OECD, 2013: 231). Low scientific reasoning could bear on creative thinking skills that are not, and do not provide adequate social status in building social networks in the community (Ospanova et al., 2014: 1545). Therefore, science education from the basic level to the college level needs to be addressed, namely through improvements in the aspect of pedagogy for teacher of science

The role of science teachers at both the elementary and secondary school level is essential for building the scientific reasoning. Talking about the teacher, then inevitably have to involve the role of universities that produce teachers. It is therefore very interesting study orientation point known at the provider level teachers, in particular providers of elementary school science teacher. The study on the ability to equip student teachers to think creatively in constructing science learning is crucial. For the student teachers, creative thinking must be built carefully for an educational institution at the university. Various attempts have been made by the government to improve the quality of science education, namely: (1) the development of learning models the ability of science, (2) development of instructional media capabilities of science, (3) upgrading for the educators, (4) the provision of infrastructure that support learning the ability of science, and (5) training (Ida, 2008). Consortium International (2010), reported that in the field of science abilities, Indonesia was ranked 32 out of 36 countries. These facts, show that the quality of the learning ability of science needs to be improved, because the learning ability of science plays an important role in improving the quality of human resources (Sismanto, 2007). Learning ability of science concerned with how to find out about a systematic nature, so that the ability of science not only mastery of knowledge in the form of a collection of facts, concepts, or principles alone but is a process of discovery. Educational purposes ability of science in education at primary school level is to develop basic knowledge and skills that are useful to themselves and learners in everyday life, as well as the provision of continuing education to a higher level. In addition, through the ability of science education are expected to develop the attitudes, moral values, and a set of life skills in order to prepare good citizens and capable society.Based on the description, the mastery of concepts in the learning ability of science intended as the ability to (1) explain the concepts, principles and procedures, (2) identify and select the concepts, principles, and procedures, (3) applying the concepts, principles and procedures. The third dimension of mastery of the concepts in this study is the basic thinking skills (basic thinking skills) in a ladder ability to think (Krulik & Rudnick, 1995). Mastery of concepts is the basic thinking skills that are fundamental to the achievement of critical thinking skills.

Critical thinking skills, is one of the creative thinking ability in developing the capacity of reason argument and decision making (Thomas, 1993). Creative thinking skills, as well as influential model of teaching and learning science abilities of learners. Therefore in it concerns the analysis in making a good decision in light duty and heavy duty (Suzan et al, 2013). Developing creativity students prospective teachers, the professors considered problematic if they can not teach them to make the process of creativity and creative thinking, as well as professors can not develop their own creative thinking skills (Normn, 2013). Therefore, future teachers' professional problems, which is the result of a college education does not become a serious obstacle in the development of creative thinking skills (Roza Iztileuovna et al., 2013).

Education student teachers Primary School Preferred is the content pedagogical objective, as well as the role and function of culture colleges that educate on aspects of humanist become professional specialists that are important in the future, which have appeared since the crisis whether caused by man, as well as by natural disasters (Ospanova BA et al., 2013). Therefore, planting the concept that students have the skills to think Kratif in the face of crisis, particularly in the field of science is very important, because learning never contextual and meaningful, because the ability of science concepts imported from foreign cultures. These corridors develop creative thinking skills become very important. In addition, the recruitment of students of Elementary School Teacher In Ganesha University of Education a come from various departments in secondary schools (SMA) and vocational schools (SMK), language, science Social (IPS) and Science, this condition is very difficult learning process capability science. These conditions once does not make creative and innovative learning. Student background affect student creative thinking (Suzan et. Al., 2013). In regard this function of brain learning model base learning (BBL) pull is applied, because the BBL models provide a holistic approach and meaningful learning process for students and lecturers (Caine and G.Caine, 1995). With BBL, in addition to meaningful learning, also build science process skills become more urgent, so it can simultaneously between student background science and non-science. It is based on using the BBL is a learning system of education that promotes the advancement of the brain and to follow the mechanisms of the human brain works, such as when the retrieve, process, and interpret the information that has been absorbed, as well as how the brain works in retaining the message or information obtained.

Therefore, it is necessary to study deeper to influence learning model Brain Base Learning to mastery of concepts and skills to think creatively in terms of the background of the ability of science students Teacher Education school (PGSD) Ganesha University of education Ganesha, particularly in the field of science is very important. The objectives are (1) to analyze the differences between groups of student mastery of concepts which use a model brain based learning and student groups using cooperative learning model. (2) Analyzing the difference mastery of concepts among the group of students who have the ability (background ability of science and non ability of science). (3) To analyze the interactive effects between learning model (brain-based learning and cooperative) and ability (background ability of science and non capabilities science) on student mastery of concepts. (4) Analyzing creative thinking skills difference between the groups of students who use the model brain based learning and student groups using cooperative learning model. (5) creative thinking skills to analyze the differences between groups of students who have the ability (background ability of science and non-science). (6) To analyze the interactive effects between learning model (brain-based learning and cooperative) and ability (background ability of science and non-science) to the creative thinking skills of students. This paper can provide positive benefits in the development of science for students learning abilities of school Teacher Education (PGSD) Ganesha Education University ,. In particular the benefits that can be gained from this study are as follows: Model BBL learning in science learning can familiarize students Elementary School Teacher Education (PGSD) University education Ganesha, to learn to be independent and have creative thinking skills.

2.Methods

Research design

This study considered quasi experimental. This study used a non-equivalent design post only control group design and measurement techniques using two factors in the 2x2 versions Campbell & Stanley, 1996). non-equivalent post test only control group design which is a quasi experimental design (quasi). The study design is presented in Figure 1.

Class	Treatment	Post
Experiment	X_1	O_1
Control	X_2	O_2

Campbell & Stanley, 1996:13) Figure 1. Design of Research

Description: X_1 = *brain based learning model* ; X_2 = cooperatif learning model

O = stated observation end (post-test), where the index of odd declared final observation in the experimental group and the index even declared final observations in the control group.

Figure 1, states that the applied learning model has two dimensions, namely models and cooperative learning model. At each treatment was also investigated its interaction with the capability of Science. ability consists of students who have a background in science and students who have a background in non Science. The design of this study using a 2x2 factorial experiment in the data analysis. Factorial design provides the opportunity to determine the effects of main and interactive effects of treatment variables.

Population and Sampling

The population in this study were all students of the second semester of the Department PGSD Singaraja Ganesha University of Education academic year 2015/2016. Students of the second semester consists of 6 classes as many as 205 students. Sixth grade distributed into classes that are academically equivalent. The sample consisted of two classes taken by random sampling technique. Number of respondents 73 students divided into two classes, namely class Brain Based Learning model learning and cooperative learning classes

Variable of Research

The independent variables consist two non-metric variables as treatment and one metric variables as covariates. Both variables such treatment include, (1) model of brain-based learning (MBBL) and cooperative learning model (MPK). One other independent variables as covariates is the ability of Science, consisting of background current students of SMA / SMK with a choice of subject areas of Science and non-science. In this study distinguished background in science and non science possessed by the students, because researchers suspect that a student who has been taught by the science that is not taught science will affect the mastery of concepts and creative thinking skills of students. The dependent variable in this research is the mastery of concepts and skill of creative thinking

Treatment of Research

This study uses a six-cell. Treatment in all cells require the same time, sequence, and a portion of the same material. The difference is the learning model and learning scenarios. In connection with the treatment, this study conducted a few stages as follows.

1. Develop and design a learning device that consists of a syllabus, SAP, Textbook and Student Worksheet (MFIs) on the subject of plant relationships that support learning models both on MBBL and MPK

2. Determine the difference background in science and non science students who have chosen to be Samel research

3. Applying the model of brain-based learning (MBBL) in the experimental class, while the applied control class Cooperative learning model (MPK).

4. Evaluation of mastery of concepts and skills of creative berikir students in the experimental class and control class.

Methods of Data Collection and Instruments Research

In this study the concept of student mastery of the data collected by tests of mastery concepts, creative thinking skills and the data collected with creative thinking skills tests

Test of Mastery Concept

Tests understanding of the concept serves to capture the misconceptions of students and students' understanding of concepts, principles and procedures before and after learning science (Santyasa, 2003). Concept mastery tests administered once named as post-test. Criteria for assessment tests understanding of the concept of using assessment rubrics as they are developed from Santyasa (2003) which diikthisarkan in Table 1.

Tests of Creative Thinking Skills

Creative thinking skills test is used to determine the ability of students to solve scientific problems creative thinking skills tests administered once that as a post test. Criteria for assessment tests problem solving skills using assessment rubrics in Table .2

Table 1 1 Rubric Assessment Concept

Score	Criteria
4	Answering correctly, the reason right, accompanied by the appointment of principles, formulas or calculations
3	Answering correctly, the reason right
2	Answering correctly without any reason or excuse
1	Answering but misconceptions / incorrect
0	No answer

Tabel 3.2 Assesment of Creative Thinking Skills rubrics

Dimensions of Problems	Number problem	Score	Characteristic
Fluency	**1**	3	• Answers are produced in two different ways with the given description and drawings • Answer based discourse and the existing theory • Formulated in a discussion that trace the language properly.
		2	• Answer generated one way to given an explanation and images • Answer based discourse and the existing theory • Formulated in a discussion that trace the language properly.
		1	• Answer generated one way with no explanation given and images • Formulated in a discussion that is less trace in a language that is not good
		0	• No answer or a wrong answer
Flexibility	**2,4**	3	• Answer produced two variations accompanied by explanations • Answer based discourse and the existing theory • Formulated in a discussion that trace the language properly.
		2	• response produced two variations are not accompanied by explanations • Answer based discourse and the existing theory • Formulated in a discussion that trace the language properly.
		1	• Answer generated a variation be accompanied by an explanation • Formulated in a discussion that is less trace in a language that is not good
		0	• No answer or a wrong answer
Elaboration	**5,6**	3	• Answer the resulting detail and accompanied by detailed logical explanation • Answer based discourse and the existing theory • Formulated in a discussion that trace the language properly.
		2	• Answer the resulting detail and detail but with explanation • Answer based discourse and the existing theory • Formulated in a discussion that trace the language properly.
		1	• Answer the resulting detail and detail without explanation • Formulated in a discussion that is less trace in a language that is not good
		0	• No answer or a wrong answer •

Dimensions of Problems	Number problem	Score	Characteristic
Originality	**3**	3	• Answer who produced the original with the given description and drawings • Answer based discourse and the existing theory • Formulated in a discussion that trace the language properly.
		2	• Answer who produced the original without being given an explanation and images • Answer based discourse and the existing theory • Formulated in a discussion that trace the language properly.
		1	• Answer generated is not original and in accordance with the existing theory • Formulated in a discussion that is less trace in a language that is not good
		0	• No answer or a wrong answer

Methods of Data Analysis

For purposes of comparability between the models of brain-based learning and cooperative learning in science kemamuan students used multivariate analysis of covariance (MANCOVA) 2 × 2 factorial (Santyasa, 2006). To test the hypothesis of the study will be used multivariate analysis of covariance factorial 2 × 2 with SPSS Statistics 17.0. Null hypothesis testing is done with a significance level of 5% (α = 0.05). The hypothesis to be tested in this study were as many as six are as follows

1. There are differences between the groups of student mastery of concepts that use brain-based learning models (BBL) and a group of students using cooperative learning model

2. There are differences between the groups of student mastery of concepts that use brain-based learning models (BBL) and a group of students using cooperative learning model (MPK). $H_0(1)$: $[\mu_{A1}Y_1]=[\mu_{A2}Y_1]$, vs $H_A(1):[\mu_{A1}Y_1]\neq[\mu_{A2}Y_1]$

3. There are differences between groups mastery of concepts students who have the ability of science and non-science. $H_0(2)$: $[\mu_{B1}Y_1]=[\mu_{B2}Y_1]=[\mu_{B3}Y_1]$, vs $H_A(2):[\mu_{B1}Y_1]\neq[\mu_{B2}Y_1]\neq[\mu_{B3}Y_1]$

4. There are interactive effects between the model (brain-based learning and cooperative) and the ability of science (background science and non-science) on student mastery of concepts H_0 (3): $\mu_A x\mu_B=0$, vs H_A (3): $\mu_A x\mu_B\neq 0$

5. There are differences in creative thinking skills among the group of students who use brain-based learning models (MBBL) and a group of students using cooperative learning model (MPK). H_0 (1) : $[\mu_{A1}Y_2]=[\mu_{A2}Y_2]$, vs $H_A(1):[\mu_{A1}Y_2]\neq[\mu_{A2}Y_2]$

6. There are differences in creative thinking skills among the group of students who have the ability kemamuan science and non-science. $H_0(2)[\mu_{B1}Y_2]=[\mu_{B2}Y_2]=[\mu_{B3}Y_2]$, vs $H_A(2):[\mu_{B1}Y_2]\neq[\mu_{B2}Y_2]\neq[\mu_{B3}Y_2]$

7. There are interactive effects between the model (brain-based learning and cooperative) and the ability of science (background science and non-science) to the creative thinking skills of students. H_0 (3): $\mu_A x\mu_B=0$, vs H_A (3): $\mu_A x\mu_B\neq 0$

To test the three hypotheses F test through multivariate analysis of covariance (MANCOVA) 2 × 2 factorial. Multivariate test or tests conducted among subjects tehadap figures statistical significance of the F value Pillai's Trace, Wilks 'lambda, Hotelling' Trace, Roy's Largest Root. Figures significance of less than 0.05 means that H0 is rejected, which means that there are differences in the dependent variables between groups, according to

sources. As a follow-up tests of significance MANCOVA are average values between groups using the Least Significant diference (LSD) was used formula Montgomery (Montgomery in Santyasa, 2004).

$$LSD = t_{\alpha/2,N-a}\sqrt{\frac{2MS\varepsilon}{n}}$$

With α = significant level, N = total sample , a = total group, n = total sample in group
The criteria used is reject H0 if the absolute value> LSD which means that there are differences in the average value of the dependent variables between groups. Given the calculation of the multivariate analysis of covariance (MANCOVA) is fairly complex and require considerable time, then in its analysis used SPSS Statistics 17.0. All hypothesis testing performed at a significance level of 5%

3. Discussion of Results

Research data presented in this section are (1) the data mastery of concepts and creative thinking skills of students among the students who follow based learning model of the brain with the students following the model of cooperative learning, (2) the data mastery of concepts students who attend based learning model brain students who follow the model of cooperative learning students who have interest in non-science capabilities, and (3) the data creative thinking skills among students who follow the model of the brain based learning with students following the model of cooperative learning in students who have the ability science . In the description of the results of this study, the analysis revealed the frequency and percentage of research data in each group learning model. In a sequence of data analysis results are presented in tables and histograms depicted in graphical form. Then proceed with the grouping of the distribution of scores based on the assessment criteria for determining the benchmark reference for the group of students classified as very high, high, enough, less and very less. Results of the analysis of the frequency distribution of scores mastery Research data presented in this section are (1) the data mastery of concepts and skills and creative thinking of students between students who attend based learning model of the brain with the students following the model of cooperative learning, (2) the data mastery of concepts and creative thinking skills of students among the students who follow based learning model of the brain with the students following the model of cooperative learning on students who have the ability of science and non-science, and (3) the data creative thinking skills among students who attend based learning model of the brain with students modeled cooperative learning in students who have the ability of science and non science. In the description of the results of this study, the analysis revealed the frequency and percentage of research data in each group learning model. In a sequence of data analysis results are presented in tables and histograms depicted in graphical form. Then proceed with the grouping of the distribution of scores based on the assessment criteria benchmark reference (PAP). Results of the analysis of the frequency distribution of scores mastery of concepts and skills of creative thinking on each unit of analysis is shown in Table 3 and Table 4 below.

Table 3 The frequency of distribution scores on the mastery of concepts students to learn in brain-based models and cooperative learning model.

	Model Learning					
	Model Based Learning			Model Kooperatif		
No	Interval	Frequency	Percent	Interval	Frequency	Percent
1	64-68	5	13.5	47-52	2	5
2	69-73	4	10.8	53-58	3	8
3	74-78	10	27	59-64	5	14
4	79-83	3	8	65-70	10	27
5	84-88	4	11	71-76	5	14
6	89-93	5	14	77-82	8	22
7	94-99	6	16	83-90	4	11
	Total	37	100.0	Total	37	100.0

Table 4 The frequency of distribution score of creative thinking skills of students who studied with brain-based models and model of cooperative learning

Analysis of the data used in the study is the first factor ANOVA factorial 2 (row) is a learning model, which consists of the brain-based models and cooperative learning. The second factor (column) is the ability of science, which can be divided into the ability of science and non-science capability. Before the multivariate analysis (MANOVA) is displayed, first tested the assumptions of the data mastery of concepts and creative thinking skills of students. Test results showed the assumption that the data were normally distributed, the variance between homogeneous groups and did not happen multi colinearity. Therefore, the analysis requirements are met, then MANOVA can be continued Testing the hypothesis of the study conducted by the multivariate analysis (MANOVA), which aims to

investigate the influence of independent variables on the dependent variable together. In this study used is MANOVA MANOVA two lines that are used to investigate the effect of the interaction between science learning model and the ability of students to mastery of concepts and creative thinking skills of students. Furthermore, if known no interaction then continued with LSD test to determine the interaction effects (simple effect) which one is better, through the Post Hoc in Manova. 2x2 factorial MANOVA using SPSS 17.0 for Windows. 2x2 factorial MANOVA results. Multivariate analysis of the data mastery of concepts and creative thinking skills of students among the students who follow the model of the brain based learning with students who attend the cooperative learning model gives the figure of significance = 0.001 at F Wilks' Lambda = 45.279. The significance of the figure is less than 0.05. This means that the null hypothesis (H0) is rejected or H1 accepted that conclusion there are differences in the mastery of concepts and creative thinking skills of students among the students who follow the model of the brain based learning with students following the model of cooperative learning. On average mastery of concepts students who attend based model of the brain is 80.95 while for students who follow the cooperative learning, the average mastery of concepts is 70.32. Average of creative thinking skills of students who attend based model of the brain is 63.84 while for students who follow the cooperative learning, an average of creative thinking skills was 73.84. Multivariate results on the effect of the interaction between learning model with the ability of science students' mastery of concepts and creative thinking skills of students, resulting in significant numbers on the F value = 0.001 Wilk's Lambda = 14.428. The significance of the figure is less than 0.05, which means that the null hypothesis (H0) is rejected or working hypothesis (H1) is received, so the conclusion there is an interaction effect between teaching model with the ability of science students' mastery of concepts and creative thinking skills of students. The third research hypothesis states that there are differences in the mastery of concepts and creative thinking skills of students among the students who follow the model of the brain based learning with students following the model of cooperative learning, the student has the ability of science.

Based on the results of the multivariate analysis of the data mastery of concepts and creative thinking skills of students among the students who follow the model of the brain based learning with students who attend the cooperative learning model gives the figure of significance = 0.001 at F Wilk's Lambda = 24.186. The significance of the figure is less than 0.05. This means that the null hypothesis (H0) is rejected or working hypothesis (H1) is accepted that conclusion there are differences in the mastery of concepts and creative thinking skills of students among the students who follow based learning model of the brain with the students following the model of cooperative learning, the student has the ability science , On average mastery of concepts students who attend based model of the brain is 88.00 while for students who follow the cooperative learning, the average mastery of concepts is 74.77. Average of creative thinking skills that follow based model of the brain is 78.76 while for students who follow the teaching of creative thinking skills, the average was 68.54. The fourth research hypothesis states that there are differences in the mastery of concepts and creative thinking skills of students among the students who follow the model of the brain based learning with students following the model of cooperative learning, the students who have the ability to non-science. Based on the results of the multivariate analysis of the data mastery of concepts and creative thinking skills of students among the students who follow based learning model of the brain with the students following the model of cooperative learning, the students who have the ability to non-science gives the figure of significance = 0.001 at F Wilks' Lambda = 29 57. The significance of the figure is less than 0.05. This means that the null hypothesis (H0) is rejected or H1 accepted that conclusion there are differences in students creative thinking skills among students who follow the model of the brain based learning with students following the model of cooperative learning, the students who have the ability to non IPA. The average mastery of concepts that follow based model of the brain is 71.69 while for students who follow the cooperative learning, the average mastery of concepts is 59.82. Average of creative thinking skills that follow based model of the brain is 67.38 while for students who follow the cooperative learning, an average of creative thinking skills was 52.73.

The analysis showed that: there are differences in the mastery of concepts students creative thinking skills among students who follow the model of the brain based learning with students who attend cooperative learning model ($F = 45.279$, $p = 0.001 < 0.05$). This difference indicates BBL models are better able to improve the mastery of concepts and creative thinking skills. This can be explained because the model of brain-based learning is an instructional model that is aligned with the workings of the brain that is designed by nature to learn through the learning situation is challenging, fun, and active and meaningful for students. Learning in the classroom that uses brain-based learning models attempt to optimize the work of both hemispheres of the brain that is the left brain and right brain because the brain is a parallel processor that can perform several activities at the same time. This is consistent with the opinion of Jensen (2011: 25) states that the events did occur in one hemisphere of the brain can affect development in other parts of the cerebral hemispheres apart at the same time. Therefore, the application of brain-based learning models seek to create optimal learning activities include the strength of both hemispheres. The concept of learning that stimulate the brain, and assumes that the brain is the processor parallel and have a wave, and every brain cells (neurons) serves as station relay, receiving and processing / processing the signal to another cell (neorotransmiter) findings are in line with the findings of Weiss (2000 : 28). Background origin student school were the presence of interactions between instructional model with the ability of science (the chosen field of study in SMA / SMK) toward mastery of concepts and creative thinking skills of students ($F = 14.428$, $p = 0.001 < 0.05$). This condition can be explained that the origin and background of previous experiences affect the understanding of the concept. Work. This condition is in accordance with Scaffolding Theory, ie if the technique to change the appropriate level of creativity assisted learners' performance, it will obtain optimal learning results (Joyce et al., 2009: 16, Santrock, 2007). Previous experience will provide the creativity different, the condition is in line with theories have zone proximal development (ZPD), if learners are given zone developments nearby via elaboration with peers, the learners will enhance the learning experience for the better theory of ZPD and Bruner (Santrock, 2007: 63) ,Result of observations that there are differences in the mastery of concepts and creative thinking skills of students among the students who follow the model of the brain based learning with students following the model of cooperative learning, the student has the ability of science. This reinforces the condition that the background has a mastery of science concepts and skills are higher. This can be explained that students who come from backgrounds science learning empowered greater in aspect alignment with the help of the utilization approach scientifically through observation, questioning, analysis, and conclude approach scientific aims to facilitate students remember the content material because the brain has the ability to correcting visuals have been observed and help the students to continue to give attention to the content provided by the lecturer. The media utilization will optimize the work of the right brain in the learning process. Learning to use a model of brain-based learning can improve student engagement. The learning process undertaken able to involve students actively follow the stages of learning. One was at the stage of pre-exposure, the learning process of science, carried out taking into account students' prior knowledge. Based on the knowledge, students become active and attempt to explore various knowledge has ever experienced, and is associated with the content being studied so that the learning experienced by students become meaningful. This is in line with the opinion of Jensen (2011: 82) states that the brain is always trying to find meaning in learning. In addition, students are also involved actively to use the given media, giving an example to the front of the class, and is actively involved in the group. Students are also asked to arrange themselves the results of discussions that have been conducted and presented to the class. Through such involvement, more students have the opportunity to use the knowledge that has been owned. Differences mastery of concepts and creative thinking skills among students who follow the model of the brain based learning with students following the model of cooperative learning, the students who have the ability to non science. It is due to that the Brain-Based Learning Model-aided visual media seeks to create a learning situation is challenging, fun, and active and meaningful for students so that the primary learning system includes the

emotional, social, cognitive, physical, and reflective thrive. Classroom activities that can train students emotion will help students focus reason and logic so that the logic will help students find the goal to be achieved, and the emotional side will give you patience and perseverance for students to do something, including in terms of learning. Through the implementation of this model, emotional nurture of the students will greatly help students discover a passion for learning and therefore contributes to the learning outcomes obtained. In addition, the application of the Brain-Based Learning aided visual media focused on social learning system. Social learning system can be realized through cooperation of individuals within the group so that such activity may give positive feedback and indirectly develop students into a better direction. This finding is consistent with several studies that have been conducted by Adiastuty et al (2012) which shows that the application of the model Brain-Based Learning can effectively improve the problem solving ability of students with an average higher when compared with students who follow the model of expository. Learning is enhanced by challenge and inhibited by threat therefore every brain is unique (Connell, 1995) This finding, confirms that students in terms of developing mental PGSD through a process of creative thinking to formulate the problem can not be done because it is not accustomed to using meta cognitive ability (Agustiana, 2015). Therefore treatment to degenerate class is not optimal in promoting the concept of science and creative thinking skills, because it has not established scientific thinking (Campbell, 2015). Use of time, facilities and strategies capable to understand a problem congruent with the system performance of the brain learners are not familiar with the condition of generated classes (Campbell, 2015).Excess of brain-based learning is creating a challenging learning environment thinking skills of students, creating a fun learning environment, creating a situation of active learning and meaningful for students (active learning).

4.Conclusion

Based on the analysis and discussion as it has been described in the previous section, it can be concluded :

1. There are differences in the mastery of concepts students creative thinking skills among students who follow the model of the brain based learning with students who attend cooperative learning model ($F = 45.279$, $p = 0.001 < 0.05$),
2. There is an interaction effect between the learning model ability IPA (the chosen field of study in SMA / SMK) toward mastery of concepts and creative thinking skills of students ($F = 14.428$, $p = 0.001 < 0.05$),
3. There are differences in the mastery of concepts and creative thinking skills among students who follow the model brain-based learning with the students following the model of cooperative learning, the student has the ability IPA ($F = 24.186$, $p = 0.001 < 0.05$), (4) there are differences in the mastery of concepts and creative thinking skills among students who attend the brain-based learning model with students who attend cooperative learning model, the student has the ability to non IPA ($F = 29.57$, $p = 0.001 > 0.05$)

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