ANALYSIS OF JIGSAW LEARNING MODEL APPLICATIONS TO THE CONCEPTION OF BIOLOGY EDUCATION STUDENT

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ABSTRACT

This study aims to analyze the application of jigsaw learning model to the conception of Biology Education students about plant ecology. This research was conducted in FKIP Unilak in the 6th semester of the academic year 2016/2017. The application of jigsaw learning model is given to Biology Education students who take the ecology of plant subjects. The data collection technique is done by giving the concept test of ecological of plant, in the form of multiple choice written test equipped with the scale of confidence to answer test in the form of Certainty of Response Index. The test is done twice on the pretest and posttest. The data analyzed derived from multiple choice test results using Certainty of Response Index. The results of data analysis can identify conceptions that occur in students who are grouped on the konwledge of correct concept, lucky guessing, misconception, and lack of knowledge on the course of plant ecology. The result of the research found that the basic biology conception of Unilak FKIP biology students has misconception. The basic conception of biology consists of the concept of the ecology concept of subconscope subfields of terrestrial biomes of students with misconceptions of 48.75%. This is derived from 240 conception events that occurred in 16 students of Biology Education Unilak FKIP.

Keywords: certainty of response index; conception; jigsaw; plant ecology.

INTRODUCTION

Biology as one of science learning has four goals that teach facts Biology, develop ability, teach skills and encourage a real attitude (Rustamanet al, 2003). The purpose of teaching is that students understand the concepts of biology and are able to solve the problems faced in accordance with the objectives of learning. For that required a proper learning process for prospective biology teacher students to achieve that goal.

The researcher's experience as a lecturer of Plant Ecology finds the students' difficulties in understanding and analyzing the ecological concepts of plants which require collaboration in the learning process to achieve the learning

objectives, due to the background of the students with the various abilities of science in the previous education level. One of the model of learning that matches the condition of the students in Biology education program is Jigsaw type cooperative learning model.

The success of the biology learning process can be measured / evaluated using various evaluation techniques. Evaluation techniques or conception identification tools have been developed by education evaluation experts. One of the techniques of misconception identification is the Certainty of Response Index (CRI) technique. This technique is concerned with the identification of conceptions in learners. This technique was developed by Hasan Saleem Bagoyoko (Tayubi, 2006). The level of biology teacher candidate's belief in the mastery of the concept of biology is necessary for his confidence in transferring knowledge to students. Certainty of Response Index (CRI) is a technique of measuring the level of confidence of prospective biology teachers toward the basic concepts of biology. Based on the above background then the problem in this research is "How is the application of Jigsaw learning model to the conception of Plant Ecology in Biology Education students?"

METHODOLOGY

This research was conducted in March to April 2017. The research place is in Biology Education program Faculty of Teacher Training and Education University of Lancang Kuning, Pekanbaru, Riau. The research population is Biology Education students Faculty of Teacher Training and Education University of Lancang Kuning. The population of the study were students who contracted the ecology course of plants that are listed in semester 6. Sample determination by simple random sampling technique.

This research use desciptive qualitative approach. Collected data were analyzed and interpreted, then described to describe the conditions occurring in the subject of the study. In this study also involves the process of forwarding jigsaw learning model then performed recording, analysis, and interpretation that occurred.

To identify conceptions that occur in biology education students then used certainty of response index method (CRI). Further steps of processing and analysis of research data as follows:

1. On each student answer sheet, the choice of each number answers combined with the level of confidence in the answer that is CRI scale proposed by the students.
2. Assessment of test result of learning for student answer given score 1 if answer correct and 0 (zero) if student answer wrong.
3. Determining CRI scales for students for each question of student answers according to the following criteria of conception:
    a. Konwledge of correct concept: if the test answers true to the level of confidence or CRI the student selects 3.4 or 5, in the sense of a CRI score> 2.5.

b. Lucky guessing: if the answer to the objective test is true to the level of confidence or CRI the student chooses 0, 1, or 2, in the sense of CRI score <2.5.
c. Misconception: if the wrong objective test answers with a confidence level or CRI the student chooses 3,4 or 5, in the sense of a CRI score> 2.5.
d. Lack of knowledge: if the answer to the objective test is wrong with the confidence level or CRI the student chooses 0, 1, or 2, in the sense of CRI score <2.5.

4. Determination of the average conception of all CRI students' answers, so that identification of the conception of students who have understood Plant Ecology, students who do not understand Plant Ecology, and students who have misconception of Plant Ecology.
5. Determination of student misconception level is determined based on the result of both test (pretest and posttest). Students experiencing misconceptions on pretest or posttest are classified as misconceptions, and students who have misconceptions in both tests are also classified as misconceptions.
6. The pattern of misconception that has been found will be analyzed to find out the quantity of student misconception pattern on the ecological concept of subconsep plant of terrestrial biome. The researcher will classify the most misconcepted subconses of the number of students who have misconception on a particular number of questions, since each question number reveals the mastery of the topic on the concept.
7. The data are then analyzed by descriptive discussion.

Table 1 Misconception pattern based on student conception

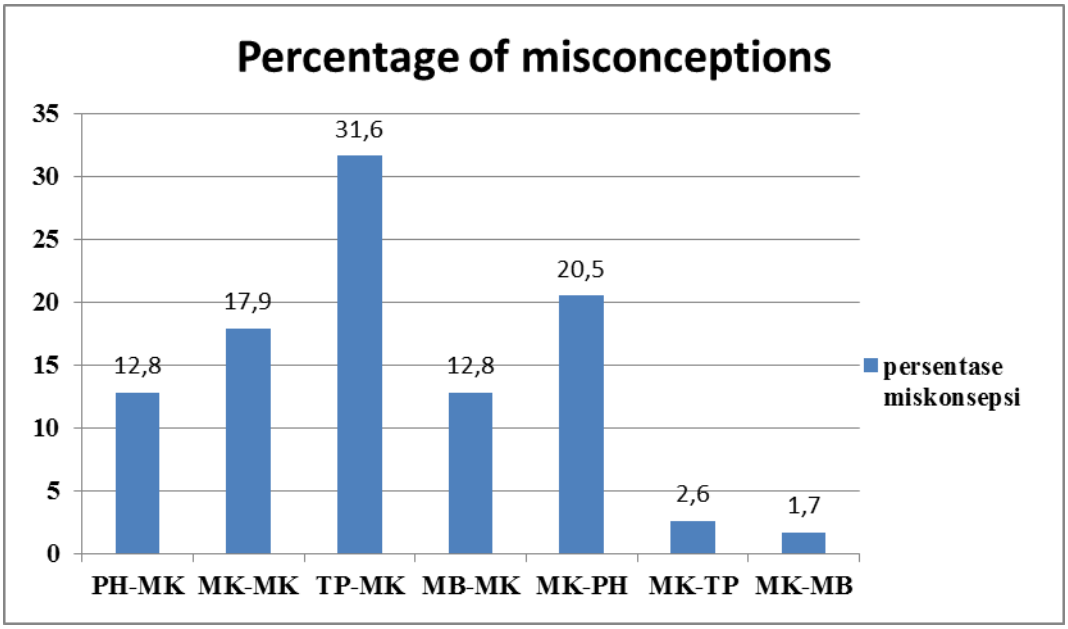
NO	STUDENT CONCEPTION PATTERNS		PATTERN MISCONCEPTION
	PRETEST	POSTTEST	
1	PH	MK	PH-MK
2	TP	MK	TP-MK
3	MK	MK	MK-MK
4	MB	MK	MB-MK
5	MK	TP	MK-TP
6	MK	MB	MK-MB
7	MK	PH	MK-PH

Information:
PH : Knowledge of correct concept
TP : Lack of knowledge
MK : Misconception
MB : Lucky guessing

RESULT AND DISCUSSION

From result of data analysis by using certainty of response index (CRI) to test given to student got data of student conception. The plant ecological concept measured consists of subconstions of terrestrial biomes. This is based on a limited duration of implementation of measurement. Concerning the concept of terrestrial biome as much as 15 numbers of questions answered by 16 students. Then the number of student conceptions of the test result is 240 events obtained from the multiplication of the number of students with the number of questions (15 numbers). The conception consists of categories of knowledge of correct concept (PH), lack of knowledge (TP), lucky guessing (MB), or misconception (MK).

Student conceptions are analyzed based on the Certainty of Response Index (CRI) of student answers from each topic represented by the question number. Students' answers to each topic are categorized knowledge of correct concept (PH), lack of knowledge (TP), misconception (MK), and lucky guessing (MB). Based on the result of CRI analysis, the students' misconception toward the ecology concept of the sub paddy terrestrial biodiescence concept is 48.75%. The level of misconception on the students is obtained from the analysis of the number of students on the 15 numbers given. The number of students experiencing misconceptions on each number of questions is 117 misconceptions of 240 conception events. Thus, the students' misconception level toward the concept of plant ecology concept in terrestrial biome subconses is 48.75%. Below is presented a bar chart of the percentage of student misconceptions on the concept (terrestrial biome).



Picture 1 Percentage of misconception

The result of data analysis showed that the misconception rate in students with TP-MK pattern is 48.75%, meaning that students have not understood the concept and become misconception after learning by applying jigsaw learning model. Pattern MK-PH of 20.5%, meaning that students who have initial knowledge misconception of the ecological concept of subconsep terrestrial biome can master the concept well with jigsaw model learning.

In the analysis of the pattern of misconceptions PH-MK, meaning that students initially understand the concept and become a misconception of 12.8%. Pattern MK-MK which means students maintain misconceptions after learning jigsaw of 17.9%. Based on the results of research can be seen that the basic conception of biology on biology education students Unilak FKIP has misconception. The basic conception of biology consists of the concept of ecology concept of subconscope subfield of terrestrial biomes of students with misconceptions of 48.75%. This is derived from 240 conception events that occurred in 16 students of biology education Unilak FKIP.

Many things can cause misconceptions to students. According to Suparno (2013), the outline of the causes of misconceptions may consist of five groups, namely students, teachers, textbooks, context and learning methods. From the results of this study illustrates the application of learning methods through the model jigsaw generate misconception in students. In addition, the cause of misconception and not understand the concept of students comes from students with the background of previous education level, as well as intuition that students do when the implementation of the test the ability test concept.

The misconceptions that happened to students at the beginning of the meeting were derived from their initial knowledge on the previous level and retained despite learning. This reinforces the opinion of Alter and Nelson (2002); Suparno (2013), that before formal learning begins students have brought the concepts of early knowledge that sometimes bring misconceptions. Early knowledge (prior knowledge) obtained can be obtained from the students from the previous level of learning and from the environment.

Misconceptions that occur in students are due to students following intuition alone without having an objective thinking base from particular learning sources. The fundamental problem of misconception is assumed to be related to scientific epistemology so that students tend to make their intuitions to solve problems without thinking objectively and rationally (Suparno, 2013).

In general, students experiencing misconceptions will maintain the misconception in learning (Lin, 2004), so misconceptions are persistent (Tamir, 2011). This opinion allows for the formation of different misconception patterns in each student. Students with different preconceptions experiencing lessons from different teachers can produce different patterns of misconception as well (Tresnawati, 2012). The biggest misconception pattern is found TP-MK pattern gives information most likely misconception happened after learning process. The application of the Jigsaw model applies cooperative learning. Cooperative learning model using the method of discussion and knowledge transfer of peers / fellow students. According

Suparno (2013) that the cause of misconception can come from student learning environment.

Many things can cause the emergence of misconceptions on students, one of which is the way of teaching teachers and knowledge about the subject matter (Suparno 2013). Teachers should have an instructional responsibility to assist in checking all positions taken on certain controversial issues. When expressing their own opinions, knowing that the classroom is not a means of cultivating their personal opinions and beliefs (Linckona, 2012).

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