Comprehension the Concept of Water Cycle through the Model Numbered Heads Together Modified by Media Audiovisual

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Abstract

This research aims to determine the effect of students' comprehension the concept of water cycle through the model Numbered Heads Together modified by audiovisual media. Based on the initial field survey, the Natural Sciences learning achievement of students in comprehension the concept of water cycle materials is still low. This is due too little students understand the material of the water cycle through media images and models used by teachers to be teacher centered. The learning model, not enough involves the interaction of students in the learning process so that most students passive during learning. Therefore, the model Numbered Heads Together modified by the audiovisual media as an alternative solution. This research used a quasi-experimental type. Data analysis techniques in this research using a T-test. Based on the research results showed that the model Numbered Heads Together modified by audiovisual media can be used as an alternative the process of increasing comprehension the concept of water cycle.

Keywords: *Comprehension Concept, Numbered Heads Together, Audiovisual media.*

I. INTRODUCTION

Natural Science is the study of nature with all contents, or simply a collection of systematically arranged knowledge about natural phenomena (Sukardjo, 2005: 1). Science education in primary schools beneficial for students to learn about themselves and environment. Science education is directed to find out and do, so they can help students gain a deeper understanding of the environment (Putra, 2013: 40). The learning process meaningful Natural Sciences is expected to improve the quality of education in Indonesia.

But in fact, based on the observation result in the fifth grade of Elementary School students in the district Gemolong still having problems in understanding the concept of learning, especially the water cycle. Observation results were carried out through observation and interviews fifth-grade teacher at several elementary schools in districts Gemolong showed that most students still do not understand the concept of water cycle well. Students less understanding the water cycle which only delivered through pictures in textbooks that were provided. In addition, the learning process of ordinary teacher using conventional learning model which tend to teachers as a learning center, while students just listen and record the material. If students just listen to verbal information from the teacher, then lead to passive students in the learning process. This is supported by data obtained from the documentation of the value of understanding the concept of water cycle is still low.

In order to improve the learning process of the students, one of the successful factors is creating an active learning process with appropriate learning models and innovation as well as the use of learning media optimally. Appropriate learning model should be accompanied by reciprocal, interactive activities between teachers and students and other students mutually so that the objective of learning can be achieved. The learning model is a pattern used as a guide in the learning in the classroom and tutorial (Suprijono, 2012: 46), thus teachers have to be creative in the learning process. One of the innovative models that can be applied by teachers in the learning process is a cooperative learning model. According Dwijiastuti (2008: 159) cooperative learning is a learning approach that focuses on the use of small groups of students to learn to work together in maximizing learning conditions to achieve the learning objectives.

Vygotsky in (Isjoni, 2011) states that the level of potential development could be channeled through cooperative learning, one of them is the type Numbered Heads Together (NHT). Iru and Arihi (2012: 59) argues that cooperative learning NHT is one type of cooperative learning that emphasizes the special structures designed to affect patterns of interaction of students and possess the aim to improve the mastery of academic levels. Shoimin (2014: 108) defines cooperative learning model Numbered Heads Together is a model of group learning that every member of the group responsible for the task group, thus, that there is no separation between the student and others in the group to give and take between one with others.

It is relevant to research conducted by Rizkiana (2012) which concluded that the implementation of cooperative learning Numbered Heads Together type and able to increase student learning achievement. This can be seen from the increasing number of students who achieve mastery of

the results of tests that will be implemented. However, to support the effectiveness of the learning process is also required the use of media in the learning process. Karti (2003: 98) state that the media is anything that can be used to deliver messages that can stimulate the mind, feelings, concerns and the willingness of students to encourage the process of learning in students.

Media which used in the model Numbered Heads Together (NHT) is the audiovisual media. Sadiman (2006: 10) reveals that audio-visual media is no longer regarded as mere tools for teachers to teach, but rather as a means of channeling messages from the messenger (teacher, author, producer, and so on) to the message recipient. Hernawan (2007:7) reveals that based on the research result, information that is conveyed through audio visual media will be more strongly memorized than through auditody or audio media only.

II. METHOD

This research was conducted in the second semester of the academic year 2015/2016 with the kind of quasi-experimental research. This research contained independent variable, that is the learning model with the dependent variable called the understanding of the concept of the water cycle. The learning models compared were cooperative learning model type Numbered Heads Together modified with audiovisual media and conventional learning model. The population in this research are all State Elementary Schools in the district Gemolong with a total of 28 schools. The samples were selected, there are two schools, namely SDN Kaloran 1 as the first experimental class with the treatment of Numbered Heads Together type cooperative model that is modified by audiovisual media and SDN Peleman 2 as the control class with the treatment of conventional learning model. The subjects were fifth-grade students of the second semester. The data collection technique is using the test. The instrument used to collect data is a test of understanding the concept of the water cycle. In test method, data of achievement test of natural science with material of water recycle. To find out its content validity by expert judgment. To find reliability, the writer uses KR-20, and different level of exercises is measured by Karl Pearson. The prerequisite test includes normality test using Lilliefors and homogeneity test using the method of Bartlett with Chi-Square test. Data analysis technique is using t-test with significance level of 0, 05.

III. RESULTS AND DISCUSSION

Data early ability aspects of Natural Sciences students' knowledge is obtained from the test results of Natural Sciences in the final exam of the first semester of the 2015/2016 academic year. The summary of data from the beginning of capabilities of Natural Sciences learning achievement of students is represented by table 1.

Table 1. Description Data of Capabilities Early

Class	N	$\bar{X}$	S
NHT modified audiovisul	25	64	12,78
Conventional leraning	21	65	14,11

Table 1 shows data early capabilities comprehension the concept of water cycle are all 25 students to a class that uses NHT type cooperative model of audiovisual and 21 students to a class that uses conventional learning model.

The result of normality and homogenized test for the preliminiary data of student's achievement are obtained from samples that derive from normally-distributed population, and the same variant population. Therefore, the balance test is carried out to identify whether the population of the two learning models; audiovisual media with Numbered Heads Together or conventional learning have the same preliminary achievement in a balanced condition.

Next, the data is obtained from the natural science test result which is analyzed and used for hypothetic test of the research. The hypothetical test using t-test. The summary of t-test analysis is represented by Table 2.

Table 2.The Summary of t-test Analysis

Sample	t_{obs}	t_{table}	Decision
Experimental and Controll class (NHT audiovisual and conventional learning model)	5,68	3,00	H_0 rejected

Table 2 shows that H_0 is rejected, it means that there are differences effect of students' comprehension the concept of water cycle through Numbered Heads Together (NHT) type cooperative model modified by audiovisual media and conventional learning. Natural Sciences learning achievement of students who are subject to the cooperative model NHT audiovisual better than the conventional learning model. It means that comprehension the concept of water cycle the students who are subject to the cooperative model NHT audiovisual better than student achievement that is subject to the conventional learning model.

The hypothesis states that audiovisual Numbered Heads Together (NHT) learning model gives better performance than the conventional learning model, that's because of the audiovisual NHT learning model. Students are given a stimulus through audiovisual media for learning more attractive and gives a deep understanding of the material's concept as well as each student is required to construct their own knowledge with their group. The hypothesis states that audiovisual NHT learning model gives better performance than the conventional learning model, that's because of the audiovisual NHT learning model.

Students are given a stimulus through audiovisual media for learning more attractive and gives a deep understanding of the material's concept as well as each student is required to construct their own knowledge with their group. In the process of class discussion, the teacher calls student numbers at random to give his opinion without being told who will represent the group. Giving this number makes the students active in learning. This is different to the conventional learning model, the teacher has a greater role in the learning activities. So students are less active in learning activities. Thus Numbered Heads Together audiovisual better than conventional learning model.

Therefore, with Numbered Heads Together modified by audiovisual media to attract the attention of students by presenting moving images as well as sounds that accompany it, help teach abstract concepts more concrete, making it easier for the students understand a concept. It is relevant to research Rozie (2013) stated that through the audiovisual media in the subject Natural Sciences materials water cycle is able to present the concept of the water cycle that occurs in nature through the video content animation so that students no longer understand the subject matter with imagination and they have an understanding of factual about the concept. According Haryoko (2009) modify the model to the audiovisual media can facilitate understanding and strengthen students' memories. Thus, learning to use cooperative learning of audiovisual Numbered Heads Together able to create active learning, innovative and create a vibrant student in learning activities, as well as provide more understanding of the matter's concept on students.

IV. CONCLUSION

Based on the results showed that there is the difference of students' comprehension the concept of water cycle through Numbered Heads Together modified by audiovisual media and conventional learning model. Audiovisual Numbered Heads Together (NHT) learning model gives better performance than the conventional learning model. Cooperative model of audiovisual Numbered Heads Together type can be used as an alternative to improve the performance of teachers in the learning process. It is expected a teacher have the creativity and innovation in developing various models of learning with the aim of achieving better learning activities and can be used to improve the performance of teachers in the learning process.

REFERENCES

[1] Dwijiastuti, M.G. Buku Ajar Inovasi Pembelajaran Surakarta. (Surakarta: UNS Press, 2008).
[2] Haryoko, S. 2009. Efektivitas Pemanfaatan Media Audiovisual sebagai Alternatif Optimalisasi Model Pembelajaran. Jurnal Edukasi@Elektro. Vol 5 (1). 1-10.
[3] Hernawan, Asep Herry. Media Pembelajaran Sekolah Dasar.(Bandung UPI Press. 2007).
[4] Iru la dan La Ode Siafun Arihi. Analisis Penerapan Pendekatan, Matode, Strategi, model-model Pembelajaran. (Yogyakarta: Multi Presindo, 2012).
[5] Isjoni. Cooperative Learning Evektifitas Pembelajaran Kelompok. (Bandung: Alfabeta, 2011).
[6] Karti, Soeharto,dkk. Tehnologi Pembelajaran (Pendekatan Sistem, Konsepsi dan Model, SAP, Evaluasi, Sumber Belajar Media). (Surabaya:Surabaya Intelectual Club, 2003).
[7] Putra, S., R. Desain Belajar Mengajar Kreatif Berbasis SAINS. (Yogyakarta: DIVA Press, 2013).
[8] Rizkiana, H. 2012. Pengaruh Pembelajaran Kooperatif Tipe Numbered Heads Together (NHT) untuk Meningkatkan Hasil Belajar Siswa dalam Materi Cahaya. Bandung: PGSD UPI.
[9] Rozie, F. 2013. Pengembangan Media Video Pembelajaran Daur Air untuk Meningkatkan Proses dan Hasil Belajar IPA Siswa SD Negeri. Jurnal Pendidikan Sains. Vol.1 (4).
[10] Sadiman, Arief. Media Pendidikan: Pengertian, Pengembangan dan Pemanfaatannya. (Jakarta: Raja Grafindo persada, 2006).
[11] Shoimin, Aris. Model Pembelajaran Inovatif dalam Kurikulum 2013. (Yogyakarta: Ar-Ruzz Media, 2014).
[12] Sukardjo, J. S., dkk. . Ilmu Kealaman Dasar. (Surakarta: UNS Press, 2005).
[13] Suprijono, Agus. Cooperative Learning Teori dan Aplikasi Paikem. (Yogyakarta : Pustaka Pelajar, 2012).