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ENHANCHING STUDENT ACHIEVEMENT AND MOTIVATION: THE DEVELOPMENT OF CHILDREN LEARNING IN SCIENCE MODEL-BASED TREE MEDIA

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ABSTRACT

This research aims to find the effect the research and development of voiced tree media based on Children Learning in Science (CLIS) model of learning achievement and learning motivation of SDN 1 and 2 Ngembel students. The research model in this research is Research and Development. The approach in this research uses models from Borg and Gall. This research combines the voiced tree media with CLIS model. Data collection techniques in this study were carried out by the literature study, observation, and the implementation of the pre-test and post-test conducted at the beginning and end of the learning process. Based on the results of research and data, it was concluded that the application of voiced tree media was based on the CLIS model influences students' learning achievement in physics, both SDN 1 Ngembel and SDN 2 Ngembel. SDN 1 Ngembel produces a value of t_{table} *of 2.160369 while* t_{count} *for -15.064, while SDN 2 is released for* t_{table} *is 2.160369 while* t_{count} *is for -14.408. The development of voiced tree media based on CLIS model also influences students' learning motivation with the results of mean data from observations of learning when learning the process at SDN 1 learning is 15.14 motivations when the learning process takes place at SDN 2 learning is 14.4.*

Keywords: ***CLIS, media, model, motivation, achievement***

Introduction

Education is one of the most important things in human life. This is because education can create high quality and high-quality human beings. The State of Indonesia has regulated the rights of every Indonesian citizen to obtain education as a means to improve the quality of life, namely according to what is stated in the Constitution Article 28C paragraph 1 and 2 and article 31 paragraphs 1 and 2. The educational process is all learning experiences that take place in all environments and occur throughout life. Narrowly, education is defined as a learning process held in schools as a formal educational institution.

Learning in school is an activity that needs to be carefully planned. Planning in a learning process includes learning activities, management during learning, and learning outcomes in the classroom. There are many problems that occur when the learning process takes place one of which is the lack of learning motivation for students to participate actively in the learning process. This will result in the occurrence of problems when the evaluation of learning is done to find out student learning outcomes.

Physics is one example of subjects that require very high learning motivation. This is because many students consider Physics subjects to be difficult and frightening subjects because they are full of complex formulas and numbers. Essentially Physics is a science that studies the behavior of matter and its motion and in scope and time, along with the concept of force and energy. Concepts are mental images and processes. In connection with the process of consolidating the concepts accepted by students, the learning should be done by students is a learning that relates to the daily lives of students so as to make learning more meaningful (Khaerul, 2013). The concept of physics can be well controlled if educators can create effective teaching and learning processes. The concept of effective learning can only occur if students are actively involved in a learning process. This can be done by developing the creativity that is in students so that students are able to discover and develop facts and concepts and solve problems themselves (Bajongga, 2014).

In the world of education there are several components that can support students' learning motivation, namely teachers and students themselves. Teachers must pay attention to efforts to improve student learning motivation, so that students have a high willingness and enthusiasm for learning. Without the motivation to learn, students will easily experience boredom and are reluctant to follow the learning process well, so this will affect their learning outcomes. Motivation to learn itself comes from the word motif, which means it is the effort to encourage someone to do something. Motive is the driving force from inside and inside someone to do certain activities in order to achieve a goal (Sardiman, 2010). Motivation is a basic element that moves a person to behave (Uno, 2011).

There are several efforts that can be done to increase learning motivation and student learning outcomes, one of which is the selection of media and interesting learning models by the teacher. The use of media and appropriate learning models will help students understand the material presented and make the learning process in the classroom more enjoyable.

The voiced tree learning media based on the Children Learning in Science model is one of the learning media created with an interesting form by utilizing the students' own activeness in

the learning process. This learning media was created to encourage student motivation in learning and facilitate students to explore the concepts of physics in a fun way. Children Learning in Science learning model are a learning model that adheres to constructivism principles (Samatowa, 2010). This model was developed in the United Kingdom by Driver in 1998. Children Learning in Science Model is a learning model that seeks to develop ideas or ideas held by students about the problems found in learning by reconstructing ideas or ideas based on the results of observations and experiments carried out during the learning process takes place (Widiarti, 2012).

Children Learning in Science Model have a goal to improve rational thinking skills possessed by students based on constructivism views that pay attention to students' experiences and concepts as a source of learning. The things that need to be considered in the learning process using the Children Learning in Science model are the implementation of open learning situations and the opportunity to ask questions freely to students. Characteristics possessed by the Children Learning in Science model that is, (1) based on constructivism views, (2) student-centered learning, (3) conducting hands-on mind-on activities, and (4) using the surrounding environment as a learning resource.

Research Method

The stages in the research process include identification of the needs of students in Trenggalek State Elementary School, making learning media, and testing at Trenggalek Public Elementary School. The study was conducted at the Ngembel 1 Elementary School and Ngembel 2 Elementary School Watulimo District, Trenggalek District.

The research model used is Research and Development (RnD). The approach in this study uses a model from Borg and Gall. This research combines the voiced media media with the Children Learning in Science learning model .

Data collection techniques in this study were conducted by means of literature studies, observations, and the implementation of pre-tests and post-tests conducted at the beginning and end of the learning process. Observations were made to observe the results of research before and according to the use of voiced tree media based on the Children Learning in Science model . Pre-test and post-test are used to determine student learning outcomes before and after the learning process.

The data analysis technique used in this study is Pre-Experimental Design with type one group Pre-test and Post-test Design. This is done to accurately compare the conditions before and after treatment.

Results and Discussion

The research data obtained relates to student learning outcomes and student learning motivation after being given voiced tree media based on the *Children Learning in Science* model . The CLIS learning model is a frame of mind to create an environment that enables the occurrence of teaching and learning activities that involve students in observation and experimental activities (Ismail, 2017). CLIS consists of constructivism activities to build student experience and the initial concept with a focus on learning is a discovery activity . In addition, CLIS is considered to make students more independent, especially in

solving problems and creating creative things so that they will work together in comfortable classroom situations.

Based on the results of the study, a summary value description of the research data as shown in table 1 is obtained.

Table 1. Summary of Description of Data on Student Learning Outcomes

Description	SDN 1 Ngembel	SDN 2 Ngembel
Average *pre-test value*	25.36	25.71
Average *post-test score*	66.43	68.93
Average value increase	41.07	43.22

Based on table 1, it can be seen that the average learning outcomes of the pre-test scores of SDN 1 Ngembel students are 25.36 while the post-test average scores after learning using the media using voiced trees based on the *Children Learning in Science* model is 66.43. While for the average pre-test value of SDN 2 Ngembel obtained a value of 25.71 and the average posttest value after learning with the medium of voiced trees based on the *Children Learning in Science* model is 68.93. Based on the two data values of the pretest and posttest of SDN 1 Ngembel and SDN 2 Ngembel, data were obtained for the average value increase of 40%.

Data from learning motivation results from the results of the study can be seen in table 2.

Table 2. Summary of Learning Motivation Value Data for Students at SDN 1 Ngembel and SDN 2 Ngembel

Description	SDN 1 Ngembel	SDN 2 Ngembel
Average results of observation of learning motivation	15.14	14.4

Based on table 2. it can be seen that the average observation result of learning motivation during the learning process at SDN 1 Ngembel is 15.14 while the observation results of learning motivation when the learning process takes place in SDN 2 Ngembel is 14.4.

The highest pre- test value for SDN 1 Ngembel is 40, while the lowest value for the pre-test is 10. At SDN 2 Ngembel the highest pre-test value is 40, while for the lowest value the pre-test is 10 (see figure 1).

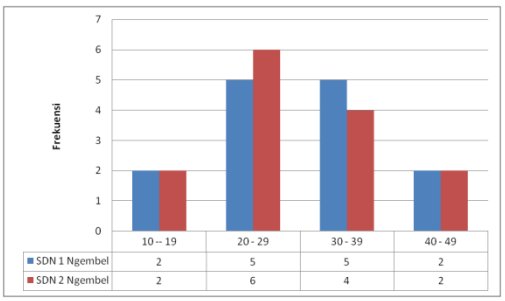

Figure 1. Pre-test value frequency distribution histogram for SDN 1 Ngembel and SDN 2 Ngembel

Based on the histogram in Figure 1, it can be seen that the pre-test value data for SDN 1 Ngembel and SDN 2 Ngembel before being given the highest learning media based on *Children Learning in Science* models is found at intervals of 20-29 with 5 students in SDN 1 Ngembel while in SDN 2 Ngembel as many as 6 students. The lowest frequency was obtained at intervals of 40 - 49 da 10-19 with frequencies in SDN 1 Ngembel and SDN 2 Ngembel each of 2 students.

The highest post- test score at SDN 1 Ngembel is 80, while the lowest value for post-test is 45. In SDN 2 Ngembel the highest post-test score is 80, while for the lowest post-test score is 50. If observed SDN 2 Ngembel has the lowest score higher than SDN 1 Ngembel. The post

test value distribution for SDN 1 Ngembel and SDN 2 Ngembel can be seen in the histories in Figure 2.

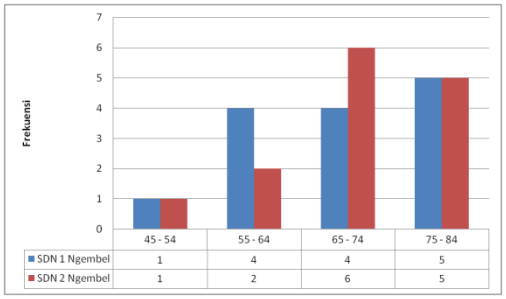

Figure 2 . Frequency distribution histogram of post test value SDN 1 Ngembel and SDN 2 Ngembel

The frequency distribution of high and low learning motivation for students of SDN 1 Ngembel and SDN 2 Ngembel is presented in figure 3.

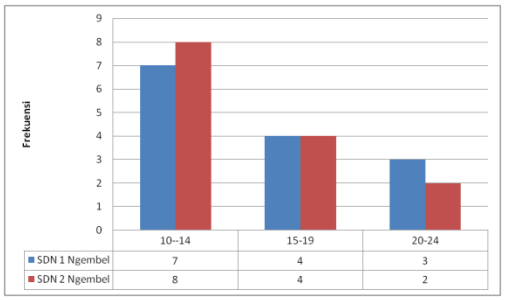

Figure 3. Frequency distribution histogram Motivation for Learning at SDN 1 Ngembel and SDN 2 Ngembel.

Based on the histogram in Figure 3, it can be seen the distribution of learning motivation data in SDN 1 Ngembel where the highest frequency is found in intervals of 10-14 with a frequency of 7 students, while the lowest frequency is in intervals of 20-24 with a frequency of 3 students. Distribution of data on student motivation in SDN 2 Ngembel the highest frequency is found in intervals of 10-14 with a frequency of 8 students, while the lowest frequency lies in intervals of 20-24 with a frequency of 2 students.

In this study the hypothesis test conducted to determine the effect of voiced tree media based on the Children Learning in Science model on learning achievement is to use the T test. Based on the results of the T test of the pretest and posttest values of SDN 1 Ngembel students, the t table value is 2.160369 while the tcount is -15,064. Whereas for the results of the T test the value of the pretest and posttest of SDN 2 Ngembel students, the t table value is obtained at 2.160369 while the t-count is -14.408.

Based on the T test carried out the value of the pretest and posttest of SDN 1 Ngembel students, the t_{table} value is obtained at 2.160369 while the t_{count} is -15.064. From these results it can be concluded that the value of ttable> thitung so that Ho is rejected so there is the influence of voiced tree media based on the Children Learning in Science model on students' learning achievement in Physics at SDN 1 Ngembel. Whereas from the T test the value of the pretest and posttest of the SDN 2 Ngembel students, the t_{table} value was obtained at 2.160369 while the t_{count} was -14.408. From these results it can be concluded that the value of ttable> thitung so that Ho is rejected so there is the influence of voiced tree media based on the Children Learning in Science model on student learning achievement in SDN 2 Ngembel. This is consistent with the research conducted by Turyati, et al (2016) where there is an influence of audio visual media on student learning outcomes.

This research was also conducted to determine the effect of voiced tree media on student learning motivation. According to Edgar Dale in Indriana (2011: 17) knowledge received by someone will be more abstract if only conveyed through verbal, as a result students will only understand something in the form of words without understanding and

understanding the meaning contained in them. One way that is done so that students have concrete knowledge is to use interesting and innovative learning media. The process of making voiced tree learning media based on the Children Learning in Science model is carried out with the active role of existing students. This is needed so that the learning process can run pleasantly and not boringly. The process of making voiced trees is done by students by making leaves using colored paper affixed to imitation trees. The leaves that are taped contain the completion of the problems that exist in the LKS that will be answered by students with their groups when the learning process with the experimental method is carried out. The experimental method is used so students can prove the theory that they only get through the book so far. The answers to the problems they wrote and compiled in the leaf-shaped paper they were going to temple will be read in front of the class. This is what causes this learning media to be called a sound tree, because the sounds are obtained from the students concerned. From the learning process like this obtained habwa data of the learning process with Children Learning in Science -based voiced tree media influencing students' learning motivation.

Certainly, young people will be different from adults, and the possibility of older children, in the way they investigate science, and how they conceptualize these ideas because of their experience and background knowledge. However, through appropriate science instruction, we have found that young people can participate in experiences that contribute to their understanding of science (Akerson, et al., 2011). The understanding of students is greatly helped by the application of Children Learning in Science. The role of the teacher is indispensable in fostering motivation and building student experience. The key role of teachers from a social constructivist perspective is to scaffold children's learning (Watters, 2001).

Conclusion

Based on the results of the research and data analysis, it was concluded that the application of voiced tree media based on the Children Learning in Science model had an effect on Physics learning achievement of students both SDN 1 Ngembel and SDN 2 Ngembel. SDN 1 Ngembel produces a value of t_{table} amounting to 2.160369 while t_{count} is -15.064, while SDN 2 Ngembel the value of t_{table} is 2.160369 while t_{count} is -14.408. Based on the results of research and data analysis it was also concluded that the application of voiced tree media based on the Children Learning in Science model had an effect on students' learning motivation with the results of observational data on learning motivation during the learning process at SDN 1 Ngembel was 15.14 while the results of observation were motivation to learn during the learning process taking place at SDN 2 Ngembel is 14.4.

Suggestions for future researchers are to perfect the shortcomings of this learning media. The disadvantage in this study is that the student activeness has not been evenly distributed when group discussions were held. The next researcher must be able to make all students actively participate in the learning process.

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