Application of CTL-Based Stop Motion Learning Videos for Understanding Elementary School Science Concepts in Lebak Regency

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Abstract. The impact of the Covid-19 pandemic has made it difficult for elementary education institutions to implement online learning. In the application of audio-visual stop motion learning media based on CTL in elementary schools, it will become a reference material for teachers in implementing online learning, especially in science learning which adheres to scientific concepts through observation and experiments on a contextual basis. Thus, this study aims to apply audio-visual stop motion learning media based on CTL in elementary schools and to measure children's understanding of the concept of science. The specific goal is to make online learning more meaningful by using CTL-based audio-visual stop motion video learning media in science learning in elementary schools. The benefit of teachers and students is that there are learning media that become references for online learning designs.

1. Introduction
The current positive case for Covid-19 as of October 21, 2020, according to the Ministry of Health, which was conveyed through the Covid-19 Task Force on the www.covid19.go.id page, there were an additional 4267 confirmed positive for the Corona virus with a total of 373,109 positive cases in Indonesia. This causes all the habits of people's activities begin to change. The community must limit social interaction during activities outside the home. This also applies in the world of education, especially in the implementation of learning activities.

The government issued Circular Letter Number 36962/MPK.A/HK/2020 which was made in order to minimize the spread of Covid-19 by directing, teaching and learning activities both at schools and college campuses using the online method (in the network). This decision confused many parties. The unpreparedness of schools in implementing online learning programs is one of the main factors of the difficulties faced. Based on the preliminary study, information was found that one of the unpreparedness in carrying out online learning is the preparation of learning tools, such as Learning Implementation Plans, learning media, and evaluation of learning with online methods.

In the implementation of online learning, the teacher said that they only used the ability to lecture and give questions. That way, students become bored, no focused, and not motivated in learning. In addition, learning becomes unattractive because the learning process is not face-to-face. Even in the assessment process, students get less than optimal results, especially in science learning. So we need a solution that can make it easier for teachers to carry out online learning and attract students' attention so that learning objectives can be achieved even though learning must be carried out online.

Science learning will not be conveyed properly if it is only presented with the lecture method. Must use at least pictures so that students can visualize the science material. The use of learning videos can be a solution to the problems encountered. This is supported by Agustiningsih's research [1] Video is a form of learning media that can accommodate student learning needs in accordance with the competencies mandated in the curriculum. This research is an experimental research type with the research subjects being fourth grade students at SDN Ajung 03 Jember. Data collection methods used
are test, observation and interview methods. The results of the study are shown from the results of calculating the difference in the pre-test and post-test scores of the experimental and control classes which show that 7.8 and 1.998, then > that is 7.8 > 1.998 from df = 65 at a significance level of 5% so that it can be stated that learning using video media is better than not using video media or in other words rejected and accepted. Referring to the results of key research that the effect of the application of video on student learning outcomes so that the video can be used as an alternative learning media in order to support the implementation of the 2013 curriculum. Furthermore, based on research by Guswiani, et al. [2] This study aims to determine the use of video media on students’ motivation and learning outcomes. The research approach used is a quantitative approach with Quasi Experimental Design research methods, namely experimental research designs, with data collection techniques using tests and observations. Based on the results of data analysis, it was concluded that the use of learning videos was very effective in increasing student motivation and learning outcomes in Front Office learning in Class XI Hospitality Accommodation at SMKN 3 Garut. This is indicated by the difference between motivation and student learning outcomes between classes that apply video media and classes that are given learning video media. The existence of media that can present images as well as sound, can help students divert their boredom and will be more interested in participating in learning that uses multimedia than just following conventional learning through lectures conducted by teachers [3], especially in online learning. Science material requires visualization of concepts in its delivery to students. The effectiveness and efficiency of online learning can be increased by using innovative learning media, one of which is CTL-based stop motion audio-visual video media.

Stop motion can help teachers visualize science material with interesting concepts. In line with Sumardi’s research [4] Based on the results presented, inquiry-based stop-motion learning media can be used as learning media in schools for students. This video is also designed based on the components of contextual learning, namely constructivism, inquiry, questioning, community learning, modeling, reflection, and authentic assessment. These components are put together in the form of videos so that the learning process can be more meaningful. Learning will be more meaningful if the process is related to what students learn and what they experience directly in real life. That way, students will not only respond to learning that is only limited to remembering a concept, but a fact that can be useful in students’ lives [5]. So, the solution to this problem is to apply CTL-based stop motion audio-visual video media in elementary schools.

2. Literature Review

2.1. Stop Motion

Stop motion animation is an easy-to-use technique for taking still images one-by-one with the camera and producing playable video clips [6]. Then, stop motion also shows adaptability to support teachers in learning various science concepts and knowledge of technology pedagogical content. In the development of this type of animation with objects being moved, clay is often used, so stop motion is often also referred to as claymotion [7]. But now available various types of stop motion animation. The International Design School explained that there are seven types of stop motion animation, which are as follows:

- Cut Out Animation
- Clay animation
- Puppet/Doll Animation
- Pixilation Animation
- Graphic Animation
- Object Animation
- Silhouette Animation
2.2. Contextual Teaching and Learning

Contextual learning is based on the understanding of progressivism by John Dewey, an educational philosopher, namely learning whose methods are based on children's experiences. When students accept learning and relate the information they know to what is being studied, they will be actively learning on their own well [8]. Contextual learning certainly requires a design that is reflected in the ideas and principles of Contextual Teaching and Learning (CTL). The teacher then develops is as follows [9].

2.2.1. Constructivism

Building contextual learning by using a constructivist foundation where knowledge is built by students themselves, discovering their own concepts, seeking their own meanings, concluding their own understanding through knowledge and findings that are owned or discovered by themselves.

2.2.2. Inquiry

Learning that starts with questions so that it can raise students' curiosity, motivation is a learning process based on discovery, namely inquiry.

2.2.3. Questions

Knowledge will be obtained when someone starts asking questions. This questioning activity can encourage students' curiosity. By asking, they can seek other knowledge, motivate, criticize a finding, identify the information received lead students to find conclusions about something.

2.2.4. Learning Society

This activity is carried out so that students are accustomed to doing work together and looking for more benefits of learning. Students can carry out this component of the learning community during the learning process. For example, criticizing each other, exchanging information, exchanging ideas, exchanging experiences, and also exchanging knowledge between students with other students.

2.2.5. Modeling

The teacher can give a job by displaying something so that students can imitate, imitate and or do something that is shown by the teacher according to the model shown.

2.2.6. Reflection

Students who have carried out a series of lessons can review or provide responses that have the aim of making known and unidentifiable knowledge so that students are able to take an action to develop knowledge.

2.2.7. Authentic Rating

Authentic assessment is a procedure for providing grades that display student competencies in real terms. Learning must be able to lead students to gain knowledge and understanding of an information. Learning improvement is assessed not only on the results obtained, but also on the process that has been passed by students.

2.3. Understanding of Science Concepts

The location of a concept in science learning is part of a product that includes science facts. Understanding science concepts is the ability of students to be able to understand a concept or fact and answer it using their own sentences without changing the meaning of the intended concept. Understanding the concept of science is defined as the process of explaining a fact or science concept in detail, through observation and experiment [10].
2.4. Science Concept Understanding Indicators

Cognitive processes, including: interpreting (interpreting), giving examples (exemplifying), classifying (classifying), summarizing (summarizing), drawing inferences / inferring (inferring), comparing (comparing), and explaining (explaining) [11].

- Interpreting, changing from one form of information to another, for example from words to graphics or pictures, or vice versa, from words to numbers, or vice versa, as well as from words to words, for example summarizing or paraphrasing;
- Exemplifying provides an example of a general concept or principle. Giving examples require the ability to identify the characteristics of a concept and then use these characteristics to create examples;
- Classifying, recognizing that something (object or phenomenon) falls into a certain category;
- Summarizing, making a statement that represents all the information or making an abstract of an article;
- Inferring, finding a pattern from a series of examples or facts;
- Comparing, detecting similarities and differences between two objects, ideas or situations;
- Explaining, constructing and using a causal model in a system.

3. Method

This research method is descriptive qualitative with data collection techniques in the form of literature studies from various relevant references and by using interview techniques and google forms to determine the level of effectiveness and motivation in learning CTL-based Stop Motion Learning Videos. The data collected were analyzed descriptively and qualitatively. The goal is to see the effectiveness of learning from home during the Covid-19 pandemic.

4. Results

Based on the results of this study, it obtained very significant results based on the scientific understanding test on the topic of energy and its changes with the following results:

| No. | Description                              | Results |
|-----|------------------------------------------|---------|
| 1   | Number of Completed Students             | 22      |
| 2   | Number of students who did not complete  | 4       |
| 3   | The highest score                        | 8.7     |
| 4   | Lowest value                             | 6       |
| 5   | Formative test mean                      | 7.73    |
| 6   | Percentage of learning completeness      | 92.31%  |

Source: The results of the formative test of students' speaking skills

The table can be explained that by applying CTL-based stop motion video media to improve learning outcomes on the concept of energy and its changes, the average value of student achievement is 7.73 and learning completeness reaches 92.31% or there are 22 participants from 26 students who have complete in learning to improve science learning outcomes on the concept of energy and its changes. These results indicate that students are quite good in learning even though there are some students who have not finished, because students who get a score of 7.00 are only 92.31% of science learning outcomes on the concept of energy and its changes. In addition to the results of tests conducted online, this research is strengthened by the results of interviews and google form questionnaires, where all
students want science learning with online learning media, which can be linked to everyday life, and consider CTL-based stop motion learning videos to be effective for used during online learning.

5. Conclusion
Based on all the discussions and analyzes that have been carried out, it can be concluded that using CTL-Based Stop Motion Learning Videos can improve understanding of science learning on the topic of animal metamorphosis in grade IV SDN Muara Ciujung Timur, Lebak Regency. So the use of CTL-Based Stop Motion Learning Videos is highly recommended in science learning to support online learning to make it more interesting, and students are motivated in science learning in elementary schools.

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