



Online Learning Innovation: Topic of “Natural and Energy Resources” Using Powtoon-Based Learning Video

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ABSTRAK

Penelitian ini didasari oleh pembelajaran daring di masa pandemi. Pemanfaatan media pembelajaran yang kurang inovatif berdampak pada minat dan pemahaman siswa. Oleh sebab itu, perlu dikembangkannya media pembelajaran inovatif yang dapat meningkatkan minat dan pemahaman siswa. Penelitian ini bertujuan untuk mendeskripsikan proses rancang bangun video pembelajaran dan mengetahui hasil keberterimaan video pembelajaran pada muatan pelajaran IPA kelas IV Sekolah Dasar yang dikembangkan. Jenis penelitian yang digunakan adalah penelitian pengembangan. Desain pada pengembangan video menggunakan aplikasi Powtoon. Metode pengumpulan data yang digunakan adalah metode kuesioner. Subjek pada penelitian ini adalah keberterimaan produk yang dinilai oleh 2 orang dosen dan 2 orang guru. Instrumen yang digunakan untuk mengukur tingkat keberterimaan video pembelajaran adalah rating scale berupa lembar penilaian video pembelajaran dari ahli. Data yang diperoleh kemudian dianalisis dengan menggunakan rumus gregory tabulasi silang 2x2 untuk mengetahui keberterimaan video pembelajaran yang dikembangkan. Hasil analisis menunjukkan nilai yang diperoleh dari keempat ahli adalah 1,00 dengan kualifikasi keberterimaan produk sangat tinggi. Berdasarkan analisis tersebut maka dapat disimpulkan bahwa video pembelajaran yang dikembangkan valid dan dapat digunakan dalam proses pembelajaran di kelas IV sekolah dasar.

ABSTRACT

This research was conducted based on online learning during the pandemic. The use of learning media that is less innovative has an impact on students' interests and understanding. Therefore, it is necessary to develop innovative learning media that can increase students' interest and understanding. This study aims to describe the process of designing learning videos and to find out the results of the acceptance of learning videos on the content of science lessons for grade IV Elementary Schools to determine the acceptance of the products developed. The type of research used is development research, design on video development using the Powtoon application. The data collection method used is the subject questionnaire method in this study is the acceptability of the product which is assessed by 2 lecturers and 2 teachers. The instrument used to measure the acceptability of learning videos is a rating scale in the form of a learning video assessment sheet from an expert. The data obtained were then analyzed using the Gregory formula of 2x2 cross-tabulation to determine the acceptability of the developed learning video. The results of the analysis show that the value obtained from the four experts is 1.00 with a very high product acceptance qualification. Based on this analysis, it can be said that the learning videos developed are valid and can be used in the learning process in the fourth grade of elementary school.

1. INTRODUCTION

Covid-19 pandemic made a big impact particularly in education field (Angrist et al., 2021; Liu & You-Hsien Lin, 2021; Sabates et al., 2021). The spread of Corona Virus affects the government to make regulations regarding to the implementation of learning from home or it mostly called as online learning. During the implementation of online learning, students are required to study at home independently. Therefore, self-learning is becoming increasingly important in twenty-first century due to the rapid changes caused by technological advances and the covid-19 outbreak (Hussein et al., 2020; Sato et al., 2021; Toh & Kirschner, 2020). The current Covid-19 pandemic changed the implementation learning process into online learning as one of a solution to implement social distancing for the purpose preventing the spread of COVID-19 outbreak (Clark et al., 2020; Handarini & Wulandari, 2020; Khan et al., 2021; Neukirchen et al., 2021). However, during the implementation of online learning process, the teachers are required to replace learning media by using E-learning or online media for the students. Online learning media is a type of learning media that suitable for distance learning and it uses internet connection which facilitating the teacher and students to communicate to each other (Purwanti, 2015). As one of learning

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media that can be utilized by the teacher is using WhatsApp group and it is commonly used by the teacher to deliver learning material to the students. All of learning subject are delivered through online learning and it includes science subject. However, in science subject, the use of media should be carried out properly. First, the structure and content of science is filled by abstract concepts and principles which affect that the media can concretize them. Second, natural phenomena are elementary science platforms, so science subject should be simple and practical, which can only be stated if assisted by the media (Wahyu et al., 2020). Therefore, this online learning process are requiring the application of the use of learning media. In the learning process, learning media is a necessary component. The use of learning media is able to help the students in understanding the learning material and hopefully it can increase students' learning outcomes. In line with a research which found that the use media had an influence on students' reasoning abilities and affects student learning outcomes (Pravitasari & Yulianto, 2018). Students who learn using learning media will tend to be more interested in learning than students who only learn by listening to the teacher's explanation (Parta & Wati, 2016; Putri et al., 2019). The use of varied learning media in the online learning process is expected to provide a better learning experience for students and deepen their understanding of teaching materials.

However, based on the result of observation and interview to the teachers of Elementary school SDN 2 Sedang particularly 4th grade teacher, it found that there are some teachers who not use online learning media. This is happened due to lack of exploring various types of online learning media which has an impact on students who are unable to practice basic science process skills and scientific attitudes. Therefore, this certainly affects the development of students critical thinking skills through existing problems and it affects the students to not accustomed in thinking and being scientific. Less innovative learning media has an impact on decreasing student interest and understanding of the content of science lessons (Kusumayuni, 2021). Basically the learning process needs to involve good communication, so the information conveyed by the teacher to students can be received and understand by students optimally (Rahmawati & Dewi, 2019). Media is a communication tool that is needed in online learning, if the media is not used during online learning it will affected students' learning outcomes. Students will find difficulties in learning independently at home. In addition, if the teacher does not use effective media, the science learning process is not obtained through the results of human thought, but is produced through a process of observation and experimentation of a natural phenomenon that is on earth (Acesta, 2014). So the application of appropriate learning approach is expected can help the students to increase students' understanding, especially on the content of science lessons in the online learning process. Given the gaps regarding the application of the learning approach and the use of instructional media, a solution to this problem is certainly needed. One solution that can be given is a learning video.

One of solution that can be utilized to overcome the problem is through make a video as learning media solution offered is to make learning video media. The use of online learning video can lead the students during online learning independently (Tarchi et al., 2021). Video is more sophisticated than using pictures because video has some advantages such as video can display sound and image simultaneously (Hong et al., 2021). However, it can be avoided that the implementation of online learning is dependent on the use of information, communication, and technology (ICT) to facilitate online learning and the other contexts related to learning between the teacher and the students (Arulogun et al., 2020). The use of video media is highly important especially in online learning context, it is because video able to deliver material through the hearing and vision sensation, in line with the statement which states that online media can encourage the students to have deep understanding related to learning material, but the teacher still have important role to give clear guidelines to the students during online learning (Aderibigbe, 2021). Online learning media can increase students' motivation as well as their confidences during online learning process (Rafique et al., 2021). The power of learning video is in the line to a research who developed learning videos with the Powtoon application (Awalia et al., 2019). In his study, learning videos using Powtoon can improve students' understanding to the learning material and this media also proof that it can be feasible to develop online learning media which affects the students to be more motivated to participate in online learning process (Sholihin et al., 2020; Yoon et al., 2021). So it can be concluded that the use learning video media using Powtoon can be an alternative for the teacher in the learning process, this has an impact on submission of more concrete information, easy to understand by students, and can motivate students to learn. The use of learning videos in learning activities that have been applied to the study is proven to provide significant changes to learning activities, but previously the development of learning video have not developed particularly in science subject such as natural resource material and energy sources.

The learning video developed in this study was distributed in link format which can be accessed using various digital equipment such as through mobile phones, personal computer and other digital equipment. Learning videos which developed in this study is used approach process in delivering material

to the students and it hopes the students are able to practice some skills regarding to the science subject such as tailored to the stages of student cognitive development. By the development of learning video, it is expected that the learning media that can help students to learn independently, and increase students learning interest. In addition, the development of this learning video is expected to be feasible in the online learning process particularly in science subject and able to attract the students to learn using innovative learning media, and it is also expected that the use of online learning video can be an alternative way as an approach to the students during online learning process. Therefore, it is important to develop a learning video particularly on science subject to the 4th grade elementary school students. This study aims to describe the design process of learning videos and to find students acceptances regarding the use of learning video for 4th grade elementary school students on science subject based on the elementary school assessment.

2. METHOD

The research method used in this research is a type of research and development (R&D). Research and Development or (R&D) is a series of process to develop or improve a product and can be accounted for (Nadiyah & Faaizah, 2015; Ozdilek & Robeck, 2009; Salim dan Haidir, 2019). The research model used in the development of learning video media is the Addie model. The subject in this study was 4 experts consisting of 2 lecturers and 2 teachers. To collect data in this study the questionnaire method was used in this study. The steps or stages of the ADDIE model (Tegeh et al., 2014), namely: (1) analyze. At this stage, it analyzes learning needs, implementing curriculum analysis, analyze learning materials related to product development, (2) Design. At this stage, it determines the hardware and software that will be carried out, making a building design from the learning video (storyboard), designing the learning video component using the Powtoon software, compiling material on the Powtoon software, and making learning video assessment instruments, (3) Development. At this stage, learning video production activities in accordance with the predetermined design and the final product from this development stage that can be assessed by the validator as a test subject. In order to produce a product that is suitable to be used and has good quality, product trials are conducted. The subjects of this study were 4 experts, such as 2 lecturers and 2 teachers. (4) The implementation, the implementation is carried out to determine the user's response to the media while during online learning process. Things that need to be done at this stage is product trials in the learning process. Due to current situation of the Covid-19 pandemic which made it is impossible to hold activities involving many students, this research has reached the Development stage. And (5) Evaluation. The evaluation carried out in this study was a formative evaluation which included an acceptance test by experts. The method of data collection in this study is collected using questionnaire method. The questionnaire method was used when analyzing student needs, testing product acceptance by 4 experts. The data collection instrument used in this development research was a questionnaire. The assessment instruments for this learning video product are shown in Table 1.

Table 1. The Indicators of Acceptance Instruments

No.	Aspect	Indicators	Total Point	Number of Point
1	Utility	Video usage on online and offline learning	1	1
		Motivated the students	1	2
2	Feasibility	The learning video is easy to be used	1	3
		The interest of learning video	1	4
3	Accuracy	The completeness of the material on learning video	1	5
		The appropriateness of learning video to the students' development	1	6
		The appropriateness of learning video to the learning indicators	1	7

Questionnaire instruments was arranged using assessment typically Likert scale (Darmadi, 2011). The analysis technique used in this study is quantitative data analysis. Quantitative descriptive analysis method is one of technique analysis / processing data by systematically compiling in the form of numbers and / percentage and it will be obtained by the general conclusion (Agung, 2014). The data obtained from the questionnaires based on the acceptance of experts will be processed by using Gregory formula. The results of the assessment of experts will be analyzed quantitatively using Gregory Formula 24 to determine the level of coefficient of product acceptance. After the score using the formula, then the

calculation results are included in the next step, namely determining the category of product acceptance coefficients obtained based on the criteria on Table 2.

Table 2. Acceptance Media Criteria

Acceptance Coefficient	Qualifications
0,80-1,00	Very High
0,60-0,79	High
0,40-0,59	Medium
0,20-0,39	Low
0,00-0,19	Low

(Sutama, 2014)

3. RESULT AND DISCUSSION

Result

This study developed learning media in the form of learning videos on the content of science lessons for elementary school students particularly 4th grade students. This research is a type of research and development study. In this study, it found that two main things such as the design of learning videos and the results of the acceptance of the learning videos according to reviews from experts. The development model of this study is the ADDIE model with five stages, namely Analyze, Design, Development, Implementation, and Evaluation stages. In the process of developing this learning video, there are limitations where the implementation stage could not be carried out. The implementation stage is carried out after the product is declared feasible and used in the learning process widely in order to determine the effectiveness of the product. However, because the research was conducted during the Covid-19 pandemic, the implementation phase, which includes summative evaluation through the learning process between teachers and students directly, cannot be carried out. The stages of developing this learning video are as follows.

The first stage, analyze. At this stage, the researcher analyzes the characteristics of students' needs, analyzes the curriculum, and analyzes the content or material before developing the product. It takes learning media that can be used independently and students can still carry out learning activities to support student understanding in science subject. The analysis of the characteristics of student needs that has been carried out, it was found some information such as during the online learning process students need something new and something that easy to be used as learning media, so that they can be used independently and increase student interest in learning by using learning videos. The media used by the teacher during the online learning process, namely, Whats-App Groups. In addition, it is known that all students have used personal communication tools and other supporting tools such as mobile phone to study. However, it is really beneficial to support the development of instructional videos. Based on the results of interview to the teacher and conduct observation regarding the results of the assessment for half the semester, it was found that students had problems in science subjects. This is caused by the learning process that applies the lecture method, so the students tend to be passive and the teacher more active than the students. Second, the design stage. At this stage, researchers conducted several things related to product design such as making Storyboards from learning videos on the content of this science subject which is containing science learning scenarios, especially on natural resources and energy sources. Storyboards contain visual designs of learning videos and text outlines of material on learning videos, outline material content in media, design media, arrange learning activities, and create product assessment instruments. This learning video was developed using several applications and sites such as Powtoon, Filmora, OBS and YouTube. The results of the development of Learning Videos on science content which is includes the front cover of the video to the back of the video.

Third, the development. This stage consisted of the production of instructional videos in accordance using predetermined design and the final product, from this stage of development which can be assessed by the validator as a test subject. The production activities of this learning video consist of activities: (1) Making learning video material with the help of the Powtoon application according to the design that has been made, (2) Collecting some pictures which is relevant to the material that used on the learning video through the Powtoon and Google sites, (3) Recording material in the Powtoon application using the OBS application so that it can be exported into MP4 (video) format, (4) Dubbing recording (5) Combining video material with dubbing using the Filmora application, (6) Video is saved in MP4 format by adjusting the quality of the video resolution, so the pictures look clearer. The trial of the feasibility of the learning video product was carried out to determine the quality and feasibility of the product that had been developed so that it could be used as a learning medium. The feasibility of the product is known

through an assessment process given by experts as validators on research subjects. To determine the feasibility of a product, a product acceptance test was conducted and involved 4 experts such as 2 lecturers and 2 teachers. The acceptance instrument of this product is a questionnaire. The results of product tests conducted by 4 experts and it found that videos with the powtoon application were said to be relevant with a score of 1.00. If classified using the product acceptability coefficient criteria, the value is in the range 0.80-1.00. This means that the learning video with the powtoon application is declared valid with a very high level of product acceptance.

Discussion

ADDIE model is used to develop media in this study which conducted through 3 stages, namely analyze, design, and development stage. At the analysis stage, it was carried out by analyzing student needs through interviewing the teacher and analyzing the curriculum. Based on the analysis stage carried out by the learning video media with the Powtoon application using a theme *Kayanya Negeriku*, sub-theme the use of natural resources in Indonesia, 4th grade of elementary schools students is suitable to be developed due to it is in the line to the analysis of student needs on 4th grade elementary school students of SDN 2 Sedang which mentioned that 4th grade students need online learning during current situation Covid-19 pandemic and it involves need analysis and curriculum analysis which used to determine the material that used in the video. The third stage is design. The design stage is done by making a learning video design. Design made using the powtoon application. The media that was developed was designed using attractive colors and images adapted to the theme *Kayanya Negeriku*, the sub-theme of the use of natural resources in Indonesia, 4th grade of elementary school students. The use of animation is taken from the powtoon and google applications to make it rich of varieties. Before developing, at the design stage, a storyboard is designed which will be used as a framework in developing a powtoon video. After the design is completed, then the creator consulted to the supervisors.

Next is the development. The development stage is carried out by developing learning videos. The learning videos developed are in accordance with the design that has been made, the components in the developed learning videos are in the form of attractive background selection, filling the appropriate back sound, adding gifs, animations, images, and also combining all of these components using Filmora application. After completing the combination of the video, the supervisor was consulted before being tested by the 4 experts. The assessment was carried out by 2 lecturers and 2 teachers using the learning video assessment sheet that had been made. The purpose of this assessment is to know the feasibility level of the product that has been developed. The results of the assessment by 4 experts found that the product trial score was 1.00 with the product acceptance coefficient category in the range 0.80-1.00. From the results of these values, product development can be said to be very feasible with a very high acceptability coefficient.

Learning videos media tend to be feasible and valid to be developed because Powtoon learning videos are interesting, can concrete abstract material, able help teachers in explaining material during online learning process, effective, practical and suitable to the students' characteristics. Learning videos using powtoon is feasible because it is in accordance with the characteristics of students at the concrete operational stage. The powtoon learning video is able to make students more enthusiastic in listening to the material presented by the teacher (Tarchi et al., 2021). Through the powtoon learning videos, students are more active in participating during online learning (Yoon et al., 2021). The aspect that supports the feasibility of the powtoon learning video is that, the learning video can increase students' motivation, they more interested in taking part in learning. The language used is easy to understand for students who are still in the 4th grade of elementary school. The attractiveness of the display of learning videos in the form of colors, text, backgrounds, images, animations and sounds is able to make students continue to follow the learning given (Seo et al., 2021). The completeness of the material in the powtoon learning video is able to cover all the material to be explained. One of the highlights of the powtoon learning video is the features provided, starting from the background, text, characters, props, shapes, images, sounds, videos and specials. In addition, there are also features in the form of handwritten animations, cartoons, transition effects, and easy use of the timeline. So, the learning video with the powtoon application on Natural Resources and Energy Sources material is declared feasible / valid. The feasibility of developing this Learning video in terms of the type of learning media developed is in accordance with the results of previous research where the use of instructional videos as a learning medium has big positive influence for students (Awalia et al., 2019; Nurdiansyah et al., 2018; Qurrotaini et al., 2020).

The implication in this research is the existence of instructional media which is video learning media using powtoon qualified as very good qualification. This learning media can be used in the learning process of science content, especially on natural resources and energy resources. In order to be able to streamline the teaching and learning process, the thing that must be done by the teacher are requires to

know the students' characteristics. In theory, elementary students are at a concrete operational stage, during learning process they need help to the concrete objects to have better understand to the material that being studied. Moreover, online learning requires teachers to implement online learning. With this media, it can facilitate students in online learning and the objectives of learning can be achieved optimally.

4. CONCLUSION

The development media in this study is proven to be feasible or proper with a very high level of product feasibility aid to be feasible with a very high level of product feasibility. This is can be seen through the aspects that assessed by 4 experts. These aspects include aspects, utility, feasibility and accuracy aspect. Learning videos using Powtoon is feasible to be developed. In this study, the implementation phase and the evaluation phase were not carried out. So it is suggested for other researchers to continue this research.

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