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Developing contextual learning videos on energy transformation for elementary students

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Abstract: The use of learning media can attract students' interest in learning, increase motivation and make it easier to understand the material. This research aims to develop learning video media with a feasible and interesting contextual approach. This research is a Research and Development with the flow of the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation). The data collection instruments used were in the form of validation sheets and student response questionnaires. This research was conducted in class IV C SDN 006 Tarakan. The results of the validation of material experts were obtained at 80%, including the feasible category, media experts were obtained at 88.33% including the very feasible category, linguists were obtained at 83.13% including the very feasible category. The results of the limited trial student response were obtained of 82.54%, including the very interesting category, and the results of the field trial student response were obtained of 89.72%, including the very interesting category. Based on the results of the validation of materials, media and language, as well as student response questionnaires in limited trials and field trials, learning videos with a contextual approach were declared feasible and interesting to be used in the learning process.

Keywords: Learning video; Contextual; ADDIE; Research and development

INTRODUCTION

Education is a process and learning environment that is arranged in such a way as to encourage students to actively develop their abilities, individual strengths, ethical principles, thinking skills, noble behaviors and various abilities needed both for personal interests and for society in order to achieve the expected goals. Education has a crucial role in producing a smart and competitive generation in the midst of globalization. However, not a few think that the learning process at the elementary school level often feels monotonous, so that student learning achievements are less than optimal, one of the factors that causes it is the lack of creativity of teachers in presenting an interesting and fun learning experience (Fadilah et al., 2023). Development emphasizes the importance of high-capacity human resources and the ability to manage information, thereby triggering competition in various aspects of life. Although the advancement of science and technology brings many benefits, it also has negative impacts. Therefore,

it is important to prepare the community and anticipate the adverse impacts that arise, especially through education. Education has a crucial role because it greatly affects the learning process (Hidayat & Khotimah, 2019). The purpose of National Education (Habe & Ahiruddin, 2017), including education in elementary schools, is to create an atmosphere and learning activities that are able to actively involve students, pursue the development of their potential in order to obtain qualities such as moral and spiritual toughness, self-control, personality, intellectuality, and noble morals, as well as the abilities needed by themselves, society, and the state. There are three categories of education in Indonesia, namely formal, non-formal, and informal Referring to Law No. 20 of 2003 concerning the National Education System, the education system in Indonesia consists of four stages, namely early childhood education, elementary level, secondary level, and higher education.

The definition of natural and social sciences is the process of finding and mastering a collection of information in the form of facts, ideas, and principles. Students are expected to learn more about themselves, their environment, and their development opportunities through learning science to be applied in daily life (Sarminah, 2018). IPAS education focuses on providing students with hands-on experience that helps them develop the skills necessary to understand the world around them scientifically. Social studies learning can be interpreted as the process of remembering, understanding, and finding ideas and information from nature (Amalia et al., 2021). Social studies learning plays an important role in the educational process because of its ability to stimulate students' enthusiasm for learning (Hakim, 2021). In this context, we can conclude that IPAS learning is the process of studying various facts and events that occur through research that combines opinions and scientific discoveries (Murti et al., 2023). However, IPAS learning now has to follow the new curriculum transferred from the 2013 Curriculum, namely the Independent Curriculum. As a result of the 2013 curriculum revision, there have been changes in the independent curriculum in tactics, strategies, methods, and learning models (Nikmatin et al., 2022).

Learning media is a learning tool that helps children explore their knowledge (Setyowati & Utami, 2022). The media that can be used in IPAS learning is a learning video which is one of the educational media born from the advancement of information and communication technology to facilitate the delivery of information from teachers to students and increase interest and interest in achieving learning goals (Wijaya et al., 2021) . Most students are unable to relate what they have learned to use in daily life and later life, so teachers are looking for ways to convey the material that has been taught to students who can use and store the information. The learning video of the IPAS subject on the theme of changing the form of energy on the topic of discussion of the content of the energy transformation material around us, can be one way to improve the quality of learning media (Kristanti & Sujana, 2022). Based on the above opinion, it can be concluded that learning media is everything that can be used in the learning process to convey information to students to achieve learning goals more effectively.

Based on the results of observations and interviews conducted, the researcher found several problems in the teaching and learning process, teachers tend to use the lecture method during learning activities in the classroom and teachers only use learning resources from package books and teaching aids as learning media, which is due to the limitations of learning media in schools and the lack of development of learning

media from teachers, As a result, students quickly feel bored and seem less active in the learning process in class. There is no use of learning videos using a contextual approach in 4th grade.

Therefore, the researcher wants to develop learning video media with a contextual approach, which has not been used in 4th grade. which will later become a strategy in presenting material from teachers to students. The learning media that will be designed has the advantage of displaying learning in the form of audio and visuals (images and sound), which is equipped with a guiding voice that is easy to understand and comprehend (Nurwahidah et al., 2021). Video media tends to be clearer and easier to remember and easy to understand because it utilizes more than one type of senses (Octavyanti & Wulandari,2021). The learning video with this contextual approach contains material, questions, and experimental videos about energy transformation around us. Learning videos are live video recordings with the aim of delivering learning materials to help students achieve learning objectives (Elihami & Saharuddin, 2018; Nuritha & Tsurayya, 2021). This learning media follows the development of the times and the curriculum applied, which can increase students' motivation to learn independently. The use of learning videos with this contextual approach is still rarely used by teachers due to the lack of development of multimedia learning media. Learning videos with a contextual approach are expected to help teachers in the process of learning activities in class and make it easier for teachers to explain the material on energy transformation around us and increase students' interest in following the learning process. The contextual approach is a learning approach that connects learning materials with life. Students are encouraged to discover their own understanding through experience and relate it to everyday life (Sukmadewi et al., 2022) in the daily life of humans using energy by changing their shape. It can be concluded that learning media is an intermediary used by teachers in the process of learning activities, one of which is learning media that can be used is learning video media with a contextual approach. This research aims to develop media in the form of learning videos with a contextual approach and which is worthy of being reviewed by material experts, media experts and language experts.

METHODS

The type of research used in this study is Research and Development (R&D) which develops a product to test the feasibility of the product. This study uses the ADDIE model. ADDIE was used in this study because it is appropriate for developing educational products and other learning resources (Branch, 2009). ADDIE is an acronym for Analyze, Design, Develop, Implement, and Evaluate. The Analysis Stage is carried out to find out and analyze problems that occur during the learning process. The *Design* stage is used to determine the format of making learning videos to be developed. The Develop stage is validated video by material experts, media experts and linguists on the product that has been developed. The implementation stage aims to find out the attractiveness of students from student responses to learning videos. The subjects in this study are grade IV students of SDN 006 Tarakan. The subject of the limited trial was carried out by 5 students 4th grade and the field trial was carried out by 20 students 4th grade. The Evaluation stage is repaired if the product has deficiencies from the previous stages and the product will be finished.

Tabel 1. Research Timeline

Analyze	Design	Develop	Implement	Evaluate
March 13 to March 23, 2025	March 26 to March 29, 2025	April 1 to 30, 2025	May 1 to 17, 2025	May 20 to 31, 2025

The data collection technique in this study uses observation and interviews at the analysis stage, validation of product feasibility with experts and the provision of student response questionnaires. The types of data used in this study are qualitative and quantitative. Qualitative data was obtained from criticism and validation suggestions from media experts, material experts, and linguists. Meanwhile, quantitative data was obtained from assessment scores from validation sheets of media experts, material experts, linguists and student response questionnaires. Quantitative data analysis of expert validation results and student responses using the Formula 1.

$$P = \frac{R}{SM} x100\% \quad \text{..... 1]}$$

Information
P= Expected Percent Value, R= Score obtained, SM= Maximum score

The results of the calculation of the Formula 1 for the results of expert validation are measured by the criteria in accordance with the Table 2.

Table 2. Eligibility Criteria for Subject Matter, Media and Language Experts *(Marisa et al., 2020)*

Achievement Score	Category
81%-100%	Very Feasible
62%-80%	Feasible
43%-61%	Quite Decent
42%-33%	Not Eligible
<32%	Very Unworthy

The results of the calculation of the Formula 1 for the results of student responses are measured with criteria in accordance with the Table 3.

Tabel 3. Attractivity Criteria (Kurnia & Yuanita, 2023)

Achievement Score	Category
75,01%-100%	Very Interesting
50,01%-75%	Pull
25,01%-50%	Quite interesting
0 %-25%	Unattractive

RESULTS AND DISCUSSION

This study uses the ADDIE model to develop contextual learning videos on energy transformation for elementary students 4th grade that are feasible and interesting at SDN 006 Tarakan. The ADDIE model was chosen because it was in accordance with the development of learning media.

In the first stage, analysis is carried out to find out and analyze problems that occur during the learning process of Natural and Social Sciences (IPAS), especially in the material of changing the form of energy in class IV which is then studied and solved the problem. At this stage, observations and interviews are carried out in the classroom, namely the researcher finds problems during observation in the classroom, teachers tend to use the lecture method and teachers only use learning resources from the package books that apply nationally. In this situation, students only memorize the

concept of energy. The process of energy change that occurs cannot be seen directly by students during the learning process. This kind of thing results in teachers not being able to provide a detailed and real learning process or explanation of the energy changes that occur. According to Sifah et al. (2024), learning only with lectures and package books can result in students being less active in learning. It also appears during observation that students quickly feel bored and look less active. Students are also less active due to learning contexts that are less relevant to their daily activities. Based on this analysis, teachers need learning media that is relevant to daily activities and encourages students to be actively involved in learning. Therefore, the researcher developed a contextual-based learning video. Learning videos are audiovisual media that contain good learning messages so that they help students understand the subject matter. Learning videos combine various human senses students not only hear what the teacher is explaining, but also see the learning videos that the teacher shows to the students (Elihami & Saharuddin, 2018). Sarminah (2018) also explained that the contextual approach is a method that encourages students to find concepts independently in learning that while being taught and connect the material to real life that can be encountered in life.

The Design Stage is a stage used to determine the format of making learning videos to be developed. As for making a design from a learning video with the following steps. First, the preparation of learning materials is adjusted to the needs of students. The material presented consisted of learning objectives and the subject matter of energy transformation around which includes electrical energy, chemical energy, motion energy and heat energy.

Second, design learning videos using *the Canva Pro. Canva* was chosen as a visual communication software to develop learning videos with several advantages of premium design, advanced design features, and ease the design editing process (Zulfiati et al., 2023). The design of all parts of the pure learning video was made by the researcher with the results of original photo images in accordance with the ability to design media. The arrangement of learning video media formats with a contextual approach is*; (a) Opening,* contains the title of the material, (b) Learning objectives, include learning objectives for transforming energy*, (c) Inquisition,* displaying simple examples of energy transformation in daily life*, (d) construction,* displaying material about energy transformation in daily life, which includes the definition of energy, various types of energy in daily life*, (e) asking* questions, presenting questions for examples of energy transformation problems in daily life accompanied by visual displays*, (f) modeling,* describing examples of energy problems in daily life*, (g) reflection,* conclusions that include the material that has been studied.

Third, designing research instruments in the form of validation sheets or tests of media experts, materials and languages as well as student response questionnaires according to the product to be used. The validation components of media experts include the display of learning media, the effectiveness of learning media, and audio (Wirasasmita & Putra, 2017). The validation component of the subject matter expert includes the suitability of the material with the learning objectives, the depth and breadth of the material, and the suitability with the contextual. Linguist validation components include straightforwardness, communicative, dialogue and interaction, language suit-ability with student development, integration of materials, and use of

PUEBI (General Guidelines for Indonesian Spelling). The response questionnaire for students include appearance, material, relevance of material and language.

Figure 1. Views on contextual-based videos

The develop stage is to further develop learning video media with a designed contextual approach by taking into account suggestions from subject matter experts, media experts and linguists on the product that has been developed. Based on the results of the validation of media experts, a percentage of 80% was obtained, which is included in the feasibility criteria with the feasibility level in the range of 62%-80%, the Worthy category. In more detail, the validation results can be seen in the Table 4.

Table 4. Results of media instrument validation

Yes	Indicator	Scores obtained	Percentage (%)
a	Learning media display	17	85
b	Effectiveness of Learning Media	11	73
c	Voice	7	70
d	Language	5	100
	Sum	40	
	Average Percentage		80%

Based on input and suggestions from media experts, there are several parts in the learning video media with a contextual approach that need to be improved. The revisions that need to be improved include: (1) the vocals are not firm, there is no power; (2) The delivery of material is too monotonous. Based on the results of the revision of media experts, it can be seen in the Figure 2.

Before After

Figure 2. Media Expert Revision

Improvements have been made to make the media less monotonous by exploring further using Canva Pro to make it easier for students to learn. The use of the canva application in making learning videos can attract students' attention in learning Putri et al., (2021). Canva also has a variety of attractive designs, able to increase the creativity of teachers and students in designing learning media because of the many features available, saving time in learning media practically, and using it through mobile phones (Tanjung et al., 2019). The researcher also took a re-recording of the sound so that the resulting vocal sound was more firm and clear and provided additional material explanations from the recorded videos in order to encourage students to be enthusiastic in learning the material. Pratiwi et al, (2018) stated that multimedia learning with the use of clear text, the right colors, animation, narration and music can increase interest and encourage students to be more enthusiastic in participating in learning.

Based on the results of the validation of material experts, a percentage of 88.33% was obtained, which was included in the very feasible criteria with the feasibility level in the range of 81%-100%. This is said to be feasible because the suitability of the material based on learning objectives is in accordance with the material, the content of this contextual learning video has included the material in the curriculum, the suitability of the use of material in the learning video in accordance with the characteristics of the students according to the Table 5.

Table 5. Results of matter instrument validation

Yes	Indicator	Scores obtained	Percentage (%)
a	Material Alignment with Learning Objectives	13	86,66
b	Material Accuracy	17	85
c	Supporting Learning Materials	10	100
d	Material Up-to-Date	13	86,66
	Sum	53	
	Average Percentage		88.33 %

Material validation was carried out twice, in the first stage with the following comments and suggestions; (1). Add references to each picture; (2) The steps of the experiment are not clear and pay attention to the lack of understanding. Based on the results of the revision of the material expert, it can be seen in the Figure 3.

Before

After

Figure 3. Subject Matter Expert Revision

Improvements have been made by adding references to image sources. In the experimental section, it is selected that is relevant to the students' daily lives. This is necessary because the contextual approach is a learning approach that connects learning materials with real daily life Sukmadewi and Suniasih, (2022). This is also in line with Amalina (2020) that contextual learning is learning that helps teachers

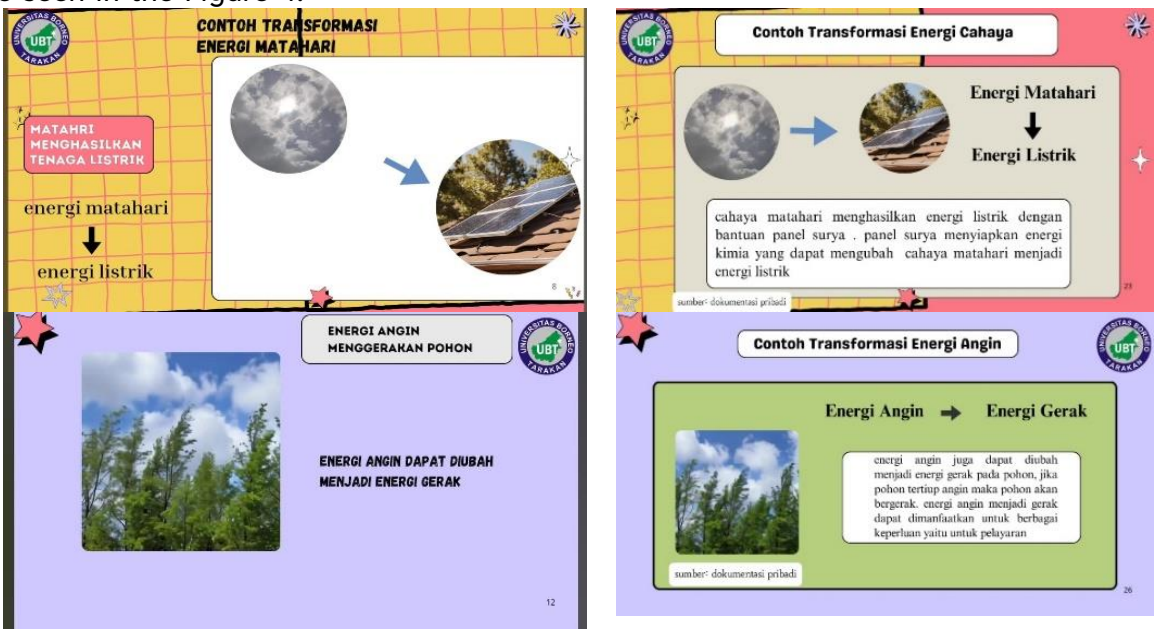
connect teaching materials with real-life situations and encourages students to systematize scientific approaches and their application in daily life. This video is feasible because of the suitability of the material based on the learning objectives in accordance with the material, the content of this contextual learning video has included the material in the curriculum, the suitability of the use of material in the learning video is in accordance with the characteristics of the students.

Based on the results of the validation of linguists, a percentage of 83.63% was obtained, which was included in the criteria of very feasible with the feasibility level in the range of 81%-100%. This is said to be very feasible because the sentences used are simple and direct to the target, the language used is able to motivate messages or provide information, the language used is in accordance with the intellectual development of students. Based on the results of the revision of the linguists, it can be seen in the Table 6.

Table 6. Language instrument validation results

No.	Indicator	Scores obtained	Percentage (%)
1.	Clear	9	90
2.	Communicative	12	80
3.	Dialogical and interactive	5	100
4.	Suitability to the student's level of development	8	80
5.	Collapse and integration between learning activities	4	80
6.	Use of language in accordance with EBI	8	80
	Sum	46	
	Average Percentage		83,63%

Based on input and suggestions from linguists, there are several things that need to be revised in contextual learning video media, including: (1) the use of language must be in accordance with PUEBI (General Guidelines for Indonesian Spelling); (2) inconsistency, there are no titles and from the beginning of the use of capital letters there are uppercase and lowercase letters. Based on the results of the linguist's revision, it can be seen in the Figure 4.



Before After

Figure 4. Linguist Revision

Improvements have been made by changing inconsistent letters to consistent, and replacing headings with single lines and adding boxes to each heading. The linguistic aspect is important so that students can easily read and understand the context of the material according to the stage of language development because aspects of language development will affect students' cognitive levels (Desrinelti et al., 2021). In addition, it also encourages students to be able to achieve learning goals (Tyas et al., 2024). This is said to be very feasible because the sentences used are simple and directly targeted, providing information, in accordance with the intellectual development of students. Analyze the assessment results from the validators of materials, media, and languages, it can be seen in the Table 7.

Table 7. Recapitulation of Percentage of Scores of Eligibility Aspects

No.	Validator	Percentage of Score (%)
1.	Media Validator	80
2.	Material Validator	88,33
3.	Language Validator	83,63
	Presentase	83,98%
	Information	Very Feasible

Based on the results of the recapitulation of the percentage of scores of feasibility aspects obtained from material, media and language validators, the percentage of score obtained is 83.98% which is included in the very feasible category. According to Arini and Agustika, (2021) states that learning media can help teachers in delivering material to students and make it easier for students to understand the material presented. Arini's statement is in accordance with research conducted by Fadillah and Bilda (2019) stating that learning video media can increase students' enthusiasm for learning and learning outcomes.

The Implement stage is an implementation of a video that has been validated. The implementation stage aims to find out the attractiveness of students from the student response questionnaire to the learning video. The learning video was then carried out a limited trial and field trial to 4th grade students of SDN 006 Tarakan and then given a student response questionnaire. The limited trial consisted of five class students, while the size of the field trial was 20 students.

Based on the results of the product trials, small groups and large groups show that students can understand learning and are interested in the use of learning videos with a contextual approach so that students do not feel bored and excited in the learning process. At the time of the trial, there were no suggestions and inputs from students on this learning video media with this contextual approach, but students commented on the learning video media with contextual, namely I am very happy to show that in the learning media students like learning videos with this contextual approach. The students' response to this learning media can be seen from the percentage of attractiveness questionnaires distributed as a whole. The students' response to the limited trial showed that the percentage obtained was 82.54%. In the field trial, the percentage was obtained of 89.72%. The percentage of limited trials and field trials is included in the very interesting category with an average percentage of 85.13%. In more detail, you can see the Table 8.

Table 8. Results of the Student Response Questionnaire

No.	Number of Students Indicator		Scores obtained	Percentage (%)
1	Limited Trial	5	227	82,54%

2	Field Trials	20	987	89,72%
	Average Percentage			85,13
	Information			Very Interesting

Based on the Table 8, a percentage of 82.54% was obtained, which is included in the very interesting criteria with the level of attractiveness in the range of 75,01%-100%. This is said to be interesting because the images in this learning video are original/real according to what is displayed, the material taught in this learning video can be understood by students, the use of learning videos adds to students' interest in learning. Based on the results of this percentage, it can be said that with the existence of learning videos, learning materials are easy for students to understand and are able to arouse students' motivation and attention in receiving learning. Learning videos are one of the innovative and creative learning media that can help in conveying messages or information in learning that can be heard and seen simultaneously in the form of a combination of images, sounds, texts and animations that are studied briefly and interestingly (Trisnawati et al., 2018). In addition to being equipped with images, narrator voices, narratives explaining the material, this learning video media is equipped with driving music which is one of the The backsound supports the student's learning spirit and the suitability of the background makes it easier for students to understand the material and attract students' attention.

The evaluation stage is the last stage of this research flow, based on the score results of the validation of media experts obtained a percentage of 80%, the validation of material experts 88.33%, and the validation of linguists 83.63%. Based on the results of the recapitulation, the score of the feasibility aspect in the category is very feasible. Based on the results of the questionnaire on the attractiveness of student responses in limited trial students in 4th grade IV, the percentage of 82.54% was categorized as very interesting. The researcher continued the field trial in 4th grade. Based on the results of the questionnaire of the response of grade IV students, a percentage of 89.72% was obtained, including the very interesting category. The researcher evaluated by recapitulating the results of student responses in limited trials and field trials. The researcher received a positive response from the students. Based on the results of the recapitulation of the attractiveness questionnaire and comments from the students, this learning video is very fun and can be used in learning in the classroom so that there are no revisions to the media that has been used. The learning media that will be produced in the research is a learning video with a contextual approach to the material Transformation Energy in 4th grade. This learning video media with a contextual approach is made through an online application, namely *Canva*. In designing learning videos with a contextual approach, using the Canva application can increase students' attractiveness in learning activities and increase student motivation by presenting interesting material. *Canva* has a diverse and attractive design that makes the learning process less monotonous and boring (Anggraeny et al., 2021). The Canva application has a variety of attractive designs and many features that have been provided, therefore, learning video media with a contextual approach is used using the Canva application as an alternative to support the learning process that actively engages students. Interesting learning media such as learning videos can be used as fun media for students so that students do not get bored easily in learning.

The advantages of learning video media with a contextual approach are: (1). Text messages are appropriate in the learning medium, (2) real examples, audio and images; (3) Learning videos can be accessed via the internet; (4) 7 Minute learning video duration so that students don't get bored easily. This is in line with Akmal et al. (2020) that video media used in the teaching process has many benefits and advantages, including: (1) material in the form of text, images, sounds, animations, music and videos in learning videos; (2) and can be accessed on the internet only and anytime; (3) this learning video can increase students' demand to participate in learning because learning videos can increase the impression of learning that is interesting to them. The advantage of this learning video is that it is a way to learn that is not just memorizing but facilitating and building new knowledge and skills through real problems that they experience in daily life. The video presents material that is tailored to the characteristics of the students.

However, this medium still has weaknesses: (1) Video learning media can be accessed on the internet; (2). Students can only access this learning video during learning at home because students are not allowed to bring their mobile phones to school unless they are allowed by the school teacher; (3). The researcher brought a speaker so that students could hear clearly when the learning video was shown in the classroom. According to Pebriani et al., (2021), the disadvantages of learning videos are that they require mobile phones, laptops, and computers to access learning videos and require quotas/data packages to access them. In addition, the weakness of the learning video developed in this study is that the scope of the material developed is still narrow, namely only fixated on the content of IPAS material on changing the form of energy contained in topic Transformation Energy. Based on the explanation above that contextual learning video media is very feasible to use and very interesting. Learning videos are a tool for teachers and students in the learning process in the classroom, and are able to present material by displaying learning videos in the classroom during the learning process, this learning media can attract students' attention to learn and is easy to understand through visuals and audio.

CONCLUSION

The conclusion of this study is based on the results, so this contextual learning video media is very feasible to use. This is known from the material presented clearly based on the learning objectives in accordance with the material, including the material in the curriculum. This learning media meets the eligibility criteria. In addition, this shows the activeness of students and the ease of students in participating in learning activities using video learning and creating a fun learning atmosphere. In addition, the use of learning video media makes students feel happy and attracts students' attention to learn and makes it easier for students to understand the material.

The application of this research is expected to make it easier for teachers to develop, use, and utilize contextual learning video media in learning so that it can make it easier to convey material to students so that the learning process is more enjoyable. For the next researcher, it is hoped that learning videos can be more interesting and more creative by utilizing various editing applications and measuring students' skills by adjusting the applicable curriculum.

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