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Video Scribe Learning Media Material Changes in Forms of Objects Solutions to Increase Competency in Natural Science Knowledge

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ABSTRAK

Rendahnya hasil belajar dan antusias siswa dalam pembelajaran IPA, dikarenakan isi atau materi yang diberikan kurang menarik. Pendidik perlu memanfaatkan teknologi, salah satunya yaitu dengan menggunakan media pembelajaran yang menarik. Penelitian ini bertujuan untuk menciptakan media pembelajaran VideoScribe pada materi perubahan wujud benda. Penelitian pengembangan ini mengadaptasi model pengembangan ADDIE. Metode pengumpulan data yang digunakan yaitu wawancara, observasi, angket atau kuesioner, tes, dan dokumentasi. Teknik analisis data yang digunakan adalah analisis kuantitatif dan analisis kualitatif. Penelitian ini menghasilkan validasi media pembelajaran VideoScribe pada materi perubahan wujud benda dinyatakan layak dari hasil validasi ahli materi pembelajaran dengan presentase (96,00%) dengan kriteria sangat baik, hasil validasi ahli media pembelajaran memperoleh presentase (94,5%) dengan kriteria sangat baik yang menyatakan bahwa media pembelajaran VideoScribe sangat layak digunakan. Tingkat kepraktisan media pembelajaran VideoScribe dari hasil respon guru memperoleh persentase (95,3%) dan hasil respon siswa memperoleh persentase (95,41%) dengan kriteria sangat praktis. Serta tingkat keefektifan media pembelajaran VideoScribe memperoleh nilai rata-rata pretest (69,68), nilai rata-rata posttest (78,06). Disimpulkan media pembelajaran VideoScribe efektif dalam meningkatkan hasil belajar siswa dalam materi perubahan wujud benda pada siswa kelas V.

ABSTRACT

Students' low learning outcomes and enthusiasm in learning science are due to the content or material provided needing to be more interesting. Educators need to utilize technology, one of which is by using interesting learning media. This research aims to create VideoScribe learning media on material changing the shape of objects. This development research adapts the ADDIE development model. The data collection methods are interviews, observation, questionnaires, tests, and documentation. The data analysis techniques used are quantitative analysis and qualitative analysis. This research resulted in the validation of VideoScribe learning media on material changing the shape of objects, which was declared feasible from the validation results of learning material experts with a percentage (96.00%) with very good criteria. The validation results of learning media experts obtained a percentage (94.5%) with very good criteria. Both state that VideoScribe learning media is very suitable for use. The level of practicality of VideoScribe learning media from the results of teacher responses obtained a percentage (95.3%), and the results of student responses obtained a percentage (95.41%) with very practical criteria. Moreover, the level of effectiveness of VideoScribe learning media obtained an average pretest score (69.68) and an average post-test score (78.06). It was concluded that the VideoScribe learning media effectively improved student learning outcomes in the material on changes in the shape of objects for class V students.

1. INTRODUCTION

Learning is a process of interaction between students and teachers in guiding and providing learning within the scope of the teaching and learning process in the classroom. Learning in the era of

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revolution 4.0, which has developed rapidly, currently emphasizes using digital technology in learning (Miftah, 2013; Prasetyo & Trisyanti, 2018). The use of science and technology will be faster to produce learning media in the form of learning media to help educators recognize and develop more innovative, creative, and interesting learning activities (Lasmaida & Sukmawarti, 2022; U. Pratiwi et al., 2020)). With this development, it is hoped that students can participate more actively and creatively in the learning process. One of the most important elements in the learning process to create a pleasant and meaningful atmosphere is adequate learning media (Lasmaida & Sukmawarti, 2022; Widiari & Astawan, 2021). If the learning media used can be delivered well, it will be easier for students to receive the learning material well and can be taught effectively (Septianti et al., 2020). This is because learning media is a forum and tool for teachers to convey messages to their students (Jannah et al., 2020; Syahroni et al., 2020). There are three types of learning media: learning media that can only be seen (visual media), for example, books, pictures or photos, posters, concept maps, diagrams, graphs, maps or globes; media that can be heard (audio media) for example language laboratories, radio, magnetic tape recorders; and learning media that can be seen and heard (audio-visual media), for example, television, video cassettes, sound films, sound frame films (sound slides), and so on (Arismunandar et al., 2021; Miftah, 2013).

However, the facts found in the field are that several problems are still faced during the learning process in science learning, especially in the material on changes in the state of objects. Some students need help understanding the properties of solid, liquid, and gas objects. This is because the learning process in class still relies on students' books and the surrounding environment, which causes students to need more understanding of the material and lack of student interest in learning. After all, learning is monotonous (Agusti & Aslam, 2022; Handayani et al., 2017). Besides, teachers have not utilized innovative learning video media due to their limited time to create learning media. In the learning process regarding the material on changes in the form of objects, teachers still use conventional methods such as explaining the material on changes in the form of objects to students, then continuing by giving practice questions to students referring to the Student Worksheet book. Apart from that, from the results of observations made in fifth grade in the science learning process in the classroom, teachers have yet to utilize innovative technology-based learning media such as audio-visual media. The facilities and infrastructure in this school are adequate, but some teachers still need to develop creative and innovative audio-visual-based learning media. In learning activities, teachers also use theme books and worksheet books, which contain practice questions and assignments that lack interesting pictures in their learning. Apart from that, there needs to be more interest and enthusiasm among students in participating in science learning, which makes the learning process monotonous so that student learning outcomes in learning activities decrease.

The low learning outcomes and enthusiasm of students in learning science are due to the content or material provided needing to be more interesting. Educators must utilize technology using interesting learning media because the 2013 curriculum demands that students be actively involved. So, facilitating student learning is very helpful in improving student learning outcomes related to science subjects in the material of changes in the shape of objects. Science is a subfield of science that studies nature and its contents. So, knowledge of science subjects is closely related to everyday life. Science learning can arouse students' interest in learning because its knowledge contains secrets that must be investigated through experiments, observations, and so on (Check, 2014). However, in reality, this has yet to produce optimal results. Based on the results of the Program for International Student Assessment (PISA) survey conducted by the Organization for Economic Cooperative and Development (OECD), it was recorded that 2006, science in Indonesia aged 15 years was ranked 50th out of 57 countries with a score of 393. In 2009, it was stated that children's science abilities in Indonesia were ranked 60th out of 65 countries and obtained a science score of 383. Then, in 2012, Indonesia experienced a decline, ranked 64th out of 65 countries with a score of 382. Then, it experienced an increase in ranking in 2015 to 64th out of 72 countries with a score of 403. The last PISA report at the end of 2018 reached a low figure of 369. Based on the results of the PISA survey, it can be concluded that a lack of understanding of concepts and weak content aspects among students causes low science or science scores in Indonesia. If these problems are not addressed immediately, they will impact the quality of education.

The solution to this problem is implementing learning media, one of which is learning video media. Learning video media is a type of audio-visual media that is capable of presenting information in the form of text, animated images, and sound. These learning videos will support and increase students' interest in the teaching and learning process (Novisya, 2019). Educators can use learning videos to express their creativity to make learning more interesting and easy for students. Considering the benefits of using learning videos, students can repeat the lesson material inside and outside the classroom (Dewi & Negara, 2021; Octavyanti & Wulandari, 2021). It makes producing interesting and enjoyable learning possible, one of which is science lessons. One interesting learning media developed for this learning activity is VideoScribe. Sparkol VideoScribe is an animated video learning media comprising a series of images

arranged into a complete video (Pamungkas et al., 2018). VideoScribe has the characteristic of presenting learning content that combines animated images, sound, and attractive design so that students can enjoy learning in a fun way. Sparkol VideoScribe is software that can create animated designs on a white background as a communication medium (Imamah & Ma'ruf, 2019). This software was developed by Sparkol, a company that has been in the UK since 2012. VideoScribe is an audio-visual video learning media used in the learning process to make it more interesting and easier to present.

Previous research findings state using VideoScribe media in scientific literacy learning for students (Yusnia, 2019). Thematic learning becomes effective for fourth-grade elementary school students using VideoScribe media (Muskania et al., 2019). VideoScribe is feasible and valid for elementary school students (Putra et al., 2021; Sukadana & Japa, 2021; Suwardana et al., 2022). Learning videos state that learning videos assisted by the Sparkoll Videoscribe application can be used in the learning process (Ahmad Fadillah & Bilda, 2019). Videoscribe learning media can increase the character of tolerance in students (Afifah, 2019). There has yet to be a study regarding the development of videoscribe-based media on changing the shape of objects for elementary school students. The advantage of this VideoScribe-based media is that it increases student activity in learning to stimulate student motivation and abilities, especially in science learning. Apart from that, another advantage is that Videoscribe also presents material such as animation so that it is very interesting and easy for students to understand. This research aims to create VideoScribe learning media on material changing the shape of objects. It is hoped that the Sparkol VideoScribe-based learning media can foster students' interest and enthusiasm in learning, make it easier for students to understand the material on changes in the shape of objects, improve student learning outcomes, and this learning media can be used as a tool to help teachers in the learning process.

2. METHOD

This research is research and development (R&D) research. This research and development (R&D) development model is used to develop and produce a product, and the product's effectiveness will be tested (Sugiyono, 2017). In this research, a learning media product was developed as a VideoScribe. The learning video focuses on material changing the shape of objects for fifth-grade students. In developing VideoScribe learning media on material changing the shape of objects, the development model used in this research is ADDIE, which consists of five stages in the development process, including analysis, design, development, implementation, and evaluation (Tegeh & Kirna, 2013). The subjects in the research were validators consisting of two validations, material expert validation and media expert validation, who provided assessments for learning media and learning video materials, as well as teachers and fifth-grade students. The data collection methods used in this research are interviews, observation, questionnaires, tests, and documentation. Data analysis methods and techniques in this research use qualitative descriptive and quantitative descriptive analytical techniques. The instruments used in this research are presented in Table 1, Table 2, and Table 3.

Table 1. Media Expert Instrument Grid

No	Aspect	Indicator
1	Audio and Visuals	Accurate selection of font size and type
		Clarity of display and sound quality on videos
		Suitability of language selection with video
		Clarity of video flow
		The accuracy of using images in videos is of good quality.
		Accurate use of music and sound
		The attractiveness of media presentation
2	Media	Suitable video duration
		Interesting video flow
		Ease of media access
		Media can be saved and expanded
3	Benefit	Makes learning easier
		Media can be used at any time.
		Media can attract students' attention.
		Clarity of the material presented

Table 2. Material Expert Validation Instrument Grid

No	Aspect	Indicator
1	Eligibility of Material Content	Material completeness
		Accuracy of examples and exercises
		Image selection accuracy
2	Feasibility of Presentation	Clarity of presentation of material
		Explanation of material
		Language use
3	Implementability	The attractiveness of learning media
		Media increases students' understanding.
		Effectiveness of learning media

Table 3. Teacher Validation Instrument Grid

No	Aspect	Indicator
1	Content View	Suitability of the material to the learning objectives in the video
		Material completeness
		Do not use too many types of letters (fonts)
		The colors used in the video vary.
		The practice questions presented are by the material.
		The image matches the material
2	Media Display	Text appears clearly
		The choice of background varies.
		The dubbing sound is clear.
		Animated images help remember the material studied.
		The order of delivery of material is structured systematically.
		Media is easy to use
3	Video Display	Video Effectiveness
		Video Attractiveness
		Videos can improve student understanding.

Table 4. Student Response Questionnaire

Variable	Indicator	Sub Indicator
Learning Media	Appearance	Image attractiveness
		Attractive color
		Video attractiveness
		The text or writing is clear.
	Language	The language used is easy to understand
		Increase enthusiasm for learning.
		The material in the video is clear and easy to understand
	Presentation	Practice questions according to the material
	VideoScribe	Effects on video
		Video practicality

3. RESULT AND DISCUSSION

Results

Developing VideoScribe learning media produces learning media containing pictures, attractive colors, and material with handwritten animations that attract students' attention. Developing VideoScribe media includes designing videoscribe learning media, created using the ADDIE model stages, which consist of five stages. The first stage is analysis. In this stage, information and needs are collected in the learning process. The stages in collecting information are analyzing the needs of teachers and students in learning and analyzing student learning facilities. The results of the analysis show that in the learning process regarding the material on changes in the form of objects, teachers still use conventional methods such as explaining the material on changes in the form of objects to students, then continuing by giving practice questions to students referring to the Student Worksheet book. Apart from that, from the results of observations made in fifth grade in the science learning process in the classroom, teachers have yet to utilize innovative technology-based learning media such as audio-visual media. The facilities and infrastructure in

this school are adequate, but some teachers still need to develop creative and innovative audio-visual-based learning media. In learning activities, teachers also use theme books and worksheet books, which contain practice questions and assignments that lack interesting pictures in their learning. Students also need more interest and enthusiasm to participate in science learning, which makes learning monotonous, so learning outcomes in learning activities decrease.

The second stage is design, which carries out the design or planning for the VideoScribe learning media. Activities carried out at this stage are designing the flow of the media that will be created (flowchart), preparing the material that will be used in product development, designing the learning media design (storyboard), and designing the appearance of the learning media, including cover appearance, typeface, font size, spacing, coloring by using Sparkol VideoScribe and using the internet to look for animated images and characters that are suitable and desired in making the product. The third stage is development. Previously determined designs carry out product development. Measurements of this product include expert feasibility, small group trials, and field trials. The video validity and practicality test results are shown in Table 5.

Table 5. Summary of Validity and Practicality Test Results

No.	Expert	Average Score	Description
1.	Learning Media Expert	94.50%	Very good
2.	Materials Expert	96.00%	Very good
3.	Small Group Trials	95.40%	Very good
4.	Field Trials	95.41%	Very good
5.	Teacher Response Test	95.30%	Very Practical
6.	Student Response Test	95.41%	Very Practical

The fourth stage is implementation. At this stage, the media that has been developed will then go through a validation stage by validator experts, material experts, and media experts. After the media developed is declared valid by the validator, the learning media product that has been developed is implemented or product tested to obtain practical data on the learning media using a questionnaire given to students and teachers. The trial stages of this product are small group trials and field trials. The final stage of the ADDIE model is evaluation. This evaluation stage aims to determine the success of the product that has been designed and developed. This research uses formative and summative evaluation. Formative evaluation is carried out to measure learning products. The results of the effectiveness of Sparkol VideoScribe-based learning media are based on initial ability scores (pretest) with final ability tests (post-test). In analyzing this data, the SPSS version 25.0 application was used, with a significant value of <0.05, to determine the results of the normality test value using the Kolmogorov formula and homogeneity test using the Anova formula (analysis of variance), as well as data analysis using the paired sample t-test. The analysis data from the tests is presented in Table 6.

Table 6. Pretest-Posttest Average Comparison Results

Score	Average	Difference
Pre-test	69.68%	8.54%
Post-test	78.22%	

The test was given to 31 fifth-grade students. The form of the test, which was given multiple-choice, consisted of 20 questions regarding changes in the form of objects, with a Minimum Science Completeness Criteria score of 75. Based on the results of the tests, 23 students had improved or completed, and eight students experienced a decline or were incomplete, with the highest score of 90 and the lowest score of 55. The students' learning outcomes obtained an average pretest score of 69.68% and a post-test of 78.22%, so they experienced an increase after using VideoScribe learning media of 8 54%. Learning outcomes from the post-test students obtained an average score of 78.22% in the range of 80%-100% with very effective criteria. Based on data from Table 6, the comparison of the difference between pretest and post-test scores shows that there has been an increase with a difference of 8.54 on average. The developed VideoScribe learning media from these data influences the student's learning process and outcomes. It is proven by the difference in scores before the media was applied (pretest) and after the VideoScribe learning media was applied (post-test) on the material on changes in the shape of objects grade five. The paired sample t-test using SPSS 25.0 showed a result of 0.000, which means there is a significant difference between before and after using VideoScribe learning media.

Discussion

The effectiveness of VideoScribe learning media is determined based on student learning outcomes assessed through pretest and post-test results. The effectiveness of using videoscribe learning media can be seen from the average student's learning outcomes before and after being given treatment. Apart from the results of student learning tests, this VideoScribe learning media is said to be effective because, firstly, in terms of appearance, the VideoScribe contains interesting animated images and examples of images related to everyday life combined with a variety of bright colors so that it can attract attention students and increase students' enthusiasm for learning (Hasbullah et al., 2022; Riyanto et al., 2019; Septianti et al., 2020). Then, from the aspect of the language used in the scribe video, it is communicative, making it easy for students to understand or comprehend. The presentation aspect is that the material in this scribe video contains material on changes in the form of objects. It is presented completely and clearly so students can understand it more easily. From the benefit aspect, using this VideoScribe media in the learning process can make it easier for students to understand the material on changes in the form of objects and can foster students' curiosity in learning so that this VideoScribe learning media is effective to use (Mutmainah et al., 2022; Siregar & Sukmawarti, 2022).

The VideoScribe learning media can be declared effective in use because it meets the effectiveness criteria that have been explained, so the VideoScribe learning media on the subject of changing the shape of objects meets the effectiveness criteria. Learning media is anything that is used to channel messages from the sender and recipient so that it can stimulate students' thoughts, attention, feelings, and interests (Asnur & Ambiyar, 2018; Kurniawan et al., 2017; Maqfiroh et al., 2020; Tegeh et al., 2019). Several factors influence student learning outcomes, one of which comes from outside, such as using tools in teaching and learning activities. The benefit of using video learning media in learning is that it clarifies the presentation of messages so that the learning process runs smoothly and learning outcomes increase (Pramana et al., 2016; Yudha et al., 2017). The advantage of video media is that it can convey or clarify messages. It can be adjusted based on student needs by applying manipulation techniques (time and display) (Purwanti, 2015; Utari, 2016). Learning media can make it easier for students to understand and receive information contained in the media. VideoScribe learning media can attract students' attention in the learning process, can improve student learning outcomes in the learning process, and students can more easily understand the material in learning (Hasbullah et al., 2022; E. D. Pratiwi et al., 2019; Widiari & Astawan, 2021). By using VideoScribe learning media, teachers can find it easier in the learning process, especially in the material on changes in the form of objects, because it is supported by learning media that is interesting, creative, and easy to understand (Amin, 2019; Muskania et al., 2019).

This finding is strengthened by previous research findings stating that Sparkol Videoscribe-based animated video learning media about preparations for Indonesian independence in fifth-grade elementary schools is feasible and valid to use (Silmi & Rachmadyanti, 2018). Sparkol Videoscribe-based bilingual mathematics learning media is effective (Rahmatika & Ratnasari, 2018). Using VideoScribe media in scientific literacy learning for students (Yusnia, 2019). Thematic learning becomes effective for fourth-grade elementary school students using videoscribe media (Muskania et al., 2019). Videoscribe is feasible and valid for elementary school students (Putra et al., 2021; Sukadana & Japa, 2021; Suwardana et al., 2022). Learning videos state that learning videos assisted by the Sparkoll Videoscribe application can be used in the learning process (Ahmad Fadillah & Bilda, 2019). Videoscribe learning media can increase the character of tolerance in students (Afifah, 2019). The implications of this research can motivate teachers to be able to use and utilize existing facilities and infrastructure in schools and provide benefits to schools so that schools have new teaching materials in the form of VideoScribe learning media that can be used for fifth-grade students on the subject of changing the shape of objects. By developing videoscribe learning media, researchers can provide ideas to teachers on developing creative and innovative learning media so that teachers get references for creating more varied learning media. The limitation of this research is that the VideoScribe learning media product was developed based on the characteristics of the research subjects, fifth-grade elementary school students, so the media developed was only intended for research subjects or other subjects with similar characteristics. This development also does not carry out individual testing stages. It is only limited to small group trials and field tests.

4. CONCLUSION

The VideoScribe media is practically used in the learning process. Apart from that, the VideoScribe learning media on material changing the shape of objects is effective to use and shows a significant difference between before and after using the VideoScribe learning media, especially on material changing the shape of objects for fifth-grade elementary school students.

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