



Animated Video on the Topic of Plants and Their Functions in Science Learning

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ABSTRAK

Guru hanya menggunakan buku paket yang didapatkan dari sekolah. Buku paket dirasa sangat kurang membantu siswa dalam belajar karena tanpa bimbingan guru, siswa tidak dapat memahami materi dengan baik. Tujuan penelitian ini yaitu mengembangkan media pembelajaran video animasi topik bagian tumbuhan dan fungsinya pada pembelajaran IPA kelas IV di sekolah dasar. Jenis penelitian ini yaitu pengembangan dengan model ADDIE. Subjek penelitian dari 2 ahli materi dan 2 ahli media. Subjek uji coba terdiri dari 2 orang guru dan 3 orang siswa kelas IV SD. Dalam penelitian ini, menggunakan metode angket (kuesioner), wawancara, observasi, dan dokumentasi. Penelitian ini menggunakan instrumen rating scale. Pada penelitian ini menggunakan 2 teknik analisis data, yaitu analisis deskriptif kualitatif dan analisis deskriptif kuantitatif. Hasil penelitian dari ahli materi pembelajaran yaitu 93,3% (Sangat Valid) dan ahli media pembelajaran yaitu sebesar 88,9% (Sangat Valid). Hasil uji kepraktisan dari guru yaitu 95,5% (sangat layak) dan hasil uji respon siswa yaitu 97,2% (sangat layak). Disimpulkan Video Animasi layak digunakan dalam pembelajaran. Implikasi penelitian ini yaitu video dapat digunakan guru dalam pembelajaran.

ABSTRACT

Teachers only use textbooks obtained from schools. Package books are considered less helpful for students because, without teacher guidance, students cannot understand the material well. This study aims to develop an animated video learning media on plant parts and their functions in science learning for fourth grade in elementary schools. This type of research is the development of the ADDIE model. The research subjects were two material experts and two media experts. The test subjects consisted of 2 teachers and three fourth-grade elementary school students. This study uses a questionnaire (questionnaire), interviews, observation, and documentation. This study uses a rating scale instrument. In this study, two data analysis techniques were used, namely qualitative descriptive analysis and quantitative descriptive analysis. The research results from learning material experts are 93.3% (Very Valid), and teaching media experts are 88.9% (Very Valid). The results of the practicality test from the teacher are 95.5% (very feasible), and the results of the student response test are 97.2% (very possible). It was concluded that animated videos were suitable for use in learning. This research implies that teachers in learning can use videos.

1. INTRODUCTION

Education is a human right that anyone has the right to get and is facilitated by the government. Education can foster physical and spiritual innate potential following applicable norms (Deville et al., 2021; Wijaya et al., 2021). In education, the process of learning activities must be active to be able to develop the potential and spiritual strength of personality and skills that are indispensable for the nation (Schneider & Bodensohn, 2017; Teräs et al., 2020; Yüksel & Gündüz, 2017). It is what causes education to be the main basis for achieving national progress. The better the education the nation provides, the better human resources quality will be (Muhamad Nova, 2017; Saputro, 2020). Through superior and quality human resources, it will positively impact national development. The poor quality of education will impact the lack of human resources, which certainly negatively impacts nation development. Education is important for superior human resources (Hermino, 2020; Hyder & Bhamani, 2016; Tzivinikou, 2015). Learning must be adapted to the development of the 4.0 education era to create this goal. Education 4.0 is a learning activity that integrates technology into

learning (Masalubu, 2018; Reflianto & Syamsuar, 2019). Education 4.0 is marked by the development of electronics that can be used as learning media. In this era, the development of ICT is very dynamic and can be momentum for teachers to improve the quality of learning in the classroom (Dwipayana et al., 2018; Haji et al., 2015; Oktavian & Aldya, 2020). Technology-based learning activities are considered very interesting by some students because students are also used to using technology in everyday life (Devi et al., 2020; Sudana et al., 2019). Previous research also stated that technology-based learning is innovative and creative, impacting student interest and learning outcomes (Kosim, 2020; Qureshi et al., 2021; Setiawan et al., 2019). However, current technological developments have not been able to be used as much as possible. The government has made efforts to improve the quality of education with various strategies such as equal distribution of education, improvement of facilities and infrastructure, and training for teachers and education personnel (R. A. Fatah et al., 2018; Widodo, 2015). However, some of these programs have not produced maximum results. The findings of previous studies also state that the quality of Indonesian education has not been able to compete with superior developed countries (Suriadi et al., 2021; Tahmidaten & Krismanto, 2020). The quality of education is still not optimally developed because there are problems that cannot be handled optimally. The factors causing the less than optimal quality of education in Indonesia are macro and micro problems (Rois Abdul Fatah et al., 2018; Natajaya & Dantes, 2015). Macro problems arise within education, namely a system that covers all life, such as uneven implementation (Halimatuzzuhrotulani, 2020; Sujarwo, 2015). Micro problems arise from the education component, such as monotonous education administration (Aji, 2020; Priatna & Setyarini, 2020). The implementation of monotonous education also affects student interest. Less interesting learning activities will cause student motivation to be very low in learning (Kibtiah et al., 2021; Yulia et al., 2019). Low interest and motivation will impact low quality and low learning outcomes (Maison et al., 2019; Wibowo, 2018). Students who only take learning activities not seriously will certainly experience some problems such as lack of ability and lack of knowledge. In addition, students who only take part in learning passively will certainly affect the quality and learning outcomes that are lacking (Cahyani, 2020; Susiana & Wening, 2015). This problem cannot be avoided because it often occurs in learning.

Previous findings also stated that teachers did not use technology less (Rofiq et al., 2019; Sukmana & Suartama, 2019). Other findings state the lack of teacher skills in using appropriate technology for learning (Riwu et al., 2018; Wikanda et al., 2021). Other research states that some teachers feel less able to adapt to the rapid development of technology (Dwiqi et al., 2020; Juniari & Putra, 2021; Putra et al., 2018). It is a monotonous learning activity because teachers do not use technology as a learning tool. The observations made at SD Negeri 1 Poh Bergong also found that teachers who only use textbooks are considered less helpful to students in learning because, without teacher guidance, students cannot understand the material well. Another problem is that the teacher's skills in developing media have not been maximized, so learning activities tend to be monotonous and affect low interest and science learning outcomes. If this condition continues, it will affect the results of student motivation and learning outcomes. The solution that can be done to overcome this problem is to develop media that can facilitate student learning activities. Media is a tool that can convey messages clearly to students (Rofiq et al., 2019; Yuniarni et al., 2020). Its use can also improve the quality of learning to be very good or to be better than before. Teachers must be able to design or determine a learning model and media that is suitable for students or learning (Anggreni et al., 2021; W. Kurniawan et al., 2019; Qistina et al., 2019). Teachers must be creative in learning activities, especially developing attractively packaged media. Even more so, teachers are highly required to be digitally literate (Geni et al., 2020; Sanusi et al., 2015). The media that can be used is animated video. Animated video is media that contains a series of sequential images that can move into a video (Antika et al., 2019; Wuryanti, 2016). The animation uses a computer in the manufacturing process to contain digital content with a combination of text, images, or audio in an integrated manner (Lubis & Hidayat, 2021). This animated video is appropriate for science learning because it clarifies abstract concepts into concrete. This animation conveys a complex concept visually to attract students to learn (Alfianti et al., 2020; Widjayanti et al., 2019). In addition, animated videos are also able to stimulate students' minds so that they can help students understand concepts better. Previous research findings stated that a good video could facilitate students' learning (Asmawati & Dalming, 2019; Wulandari et al., 2020). Other findings also state that well-packaged animated videos can facilitate students (Candra Dewi & Negara, 2021; Widiyasanti et al., 2018). Other research states that animated videos stimulate thinking and improve student learning outcomes (Ayuningsih, 2017; Prasetya et al., 2021). There is no study on developing animated video learning media on plant parts and their functions in fourth-grade science learning in elementary schools. The advantage of this animation is that it presents interesting characters to attract students' attention. In addition, this media is equipped with examples to clarify the meaning of the material. This study aims to develop an animated video learning media on plant parts and their functions in fourth-grade science learning in elementary schools. It is hoped that the animated video can help students learn the topic of plant parts and their functions.

2. METHOD

This type of research is the development of the ADDIE model, which includes analysis, design, implementation development, and evaluation (Bela et al., 2021). The research subjects were two material experts and two media experts. The test subjects consisted of 2 teachers and three fourth-grade students at SD Negeri 1 Poh Bergong. This study uses a questionnaire, interviews, observation, and documentation. The questionnaire in this study was used to collect data regarding the feasibility of using media. Observations and interviews are used to collect information about things needed for research. This study uses a rating scale instrument. The grids are presented in Table 1 and Table 2.

Table 1. Material Expert Instrument

No	Aspect	Indicator
1	Feasibility Aspects of Content	<ol style="list-style-type: none"> 1. The suitability of indicators with basic competencies 2. The suitability of the learning objectives with the learning indicators
2	Material Aspect	<ol style="list-style-type: none"> 1. The accuracy of the sequence of material presented 2. The depth of the material presented 3. The breadth of the material presented 4. Completeness of the material presented 5. Ease of students' understanding of the material presented 6. The illustrations used in the media can clarify the material
3	Giving Practice Questions	<ol style="list-style-type: none"> 1. The suitability of the practice questions with the material presented 2. The practice questions given can train students' thinking skills 3. There is an answer rubric for the given practice questions
4	Language Aspect	<ol style="list-style-type: none"> 1. The accuracy of the use of grammar in the delivery of material 2. Ease of students' understanding of the language used in delivering the material 3. The accuracy of the use of terms in the delivery of material 4. The accuracy of the punctuation used in delivering the

(Modified from Ompi et al., 2020)

Table 2. Media Expert Instrument

No	Aspect	Indicator
1	Visual quality	<ol style="list-style-type: none"> 1. Interesting learning media cover 2. The suitability of the cover with the content in the learning media 3. The attractiveness of the animation shown
2	Aspects of Voice Clarity	<ol style="list-style-type: none"> 1. Clarity of narrator's voice articulation 2. The accuracy of the intonation of the narrator's voice 3. Narrator volume accuracy 4. Appropriate use of sound effects 5. Accuracy of sound effect volume 6. Regularity of background music 7. Background music volume accuracy
3	Duration	<ol style="list-style-type: none"> 1. The ideal duration of the developed animated video
4	Interest/ Attention	<ol style="list-style-type: none"> 1. Videos can motivate and increase students' attention to study 2. Videos can facilitate students' understanding of the material
5	Message Design	<ol style="list-style-type: none"> 1. The color of the image is comfortable to look at 2. The accuracy of presenting illustrations with the material presented 3. The accuracy of the text size (font) used 4. The accuracy of the type of text (font) used 5. The accuracy of the text color (font) used

(Modified from Ompi et al., 2020)

In this study, two data analysis techniques were used, namely qualitative descriptive analysis and quantitative descriptive analysis. This qualitative descriptive analysis technique is used to process data from expert reviews. The data obtained through the assessment instrument during the validity and practicality tests were analyzed using quantitative descriptive statistics. To make it easier to read the results of the study used, the Percentage Level of Product Validity scale 4.

3. RESULT AND DISCUSSION

Result

This study developed an animated video learning media in the fourth-grade science subject of Elementary School with ADDIE material on Plant Parts and Functions. First, analysis. In SD Negeri 1 Poh Bergong, it was also found that teachers only used textbooks from schools. Package books are considered less helpful for students because, without teacher guidance, students cannot understand the material well. Another problem is that the teacher's skills in developing media have not been maximized, so learning activities tend to be monotonous and affect low interest and science learning outcomes. The curriculum analysis is presented in Table 3.

Table 3. Basic Competencies and Learning Indicators

Basic Competencies	Learning Indicators
Analyze the relationship between plant structure and function	Analyzing the relationship between root structure and function

Second, design. The designs made are material design and media design. The design of the material is arranged according to the main objective, namely developing material through learning videos. The media design makes a video using the Kine Master application. The size ratio of the learning video is 16:9, and the resolution is 1280x720p. In addition, the techniques for making learning videos are designed with the support of images or animations according to the material discussed. The results of the media design are presented in Figure 1.

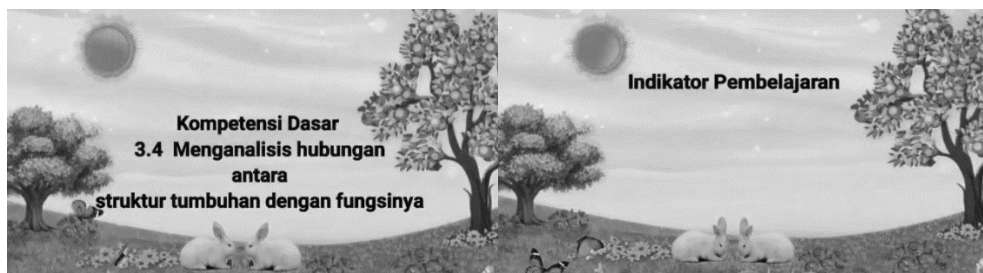


Figure 1. Animated Video Design

Third, development. This stage develops an animated video. The animated video media developed consists of 4 parts: the opening, presentation of the material, practice questions, and closing. This section contains the identity of the learning video, which consists of the Tut Wuri Handayani logo, the Undiksha logo, the author's identity, the supervisor's identity, greeting students, and the title of the learning video, basic competencies, learning indicators and learning objectives. Presentation of Material, containing the subject matter by the learning, namely the characteristics of plants as living things, then the material on plant parts consisting of roots, stems, leaves, flowers, and fruits and their functions. This section contains practice questions in the form of multiple choice, as many as ten questions given to students as learning evaluation material. The closing section contains closing greetings. The results of the development are presented in Figure 2.



Figure 2. Animated Videos

The animated video that was developed was then tested for validity. The assessment results from learning material experts are 93.3%, so the animated video developed is categorized as very valid and suitable for use. The assessment results from the learning media experts are 88.9%, so the animated video media developed is categorized as "very valid and feasible to use." The results of the practicality test from the teacher are 95.5%, so it is categorized as "very good and suitable for use." The results of the student response test are 97.2%, so it is categorized as "very good and suitable for use." It is concluded that the animated video is suitable

for use in learning. The input given is that in the animated video, Basic Competencies and Core Competencies are added, and it is necessary to add a rubric for the answers to the exercises given. The results of the revision are presented in Figure 3.



Figure 3. The Revision of the Animation Video

Discussion

Animated videos that are developed are worth using for several factors. First, Animated Video is worth using because it makes learning easier for students. The use of this media helps students accelerate the deepening of the material. Appropriate media can accelerate the process of student understanding so that it has an impact on their abilities (Anggrasari, 2020; Hidayah et al., 2020; Rahayu et al., 2019). Animated media is very suitable for science material. Animation is an effective medium that can attract attention because it combines audio and visual (Amrullah et al., 2021; Rachmavita, 2020; Endang Saripudin et al., 2018). This animation provides stimulation through moving images to make it easier for students to interpret the learning material. In addition, this media is independent so that it provides convenience and completeness of content so that students can learn without the guidance of others (Kusumawati, 2017; Lukman et al., 2019; Widayanti et al., 2019). These animations also hone students' skills because they present the material. Media that can present questions will help students discover the depth of their understanding after participating in learning (Dede Trie Kurniawan & Maryanti, 2018; Fauzan & Rahdiyanta, 2017). This media is also uploaded on Youtube so students can easily access it. Media access also helps students learn anywhere (Dede Trie Kurniawan & Maryanti, 2018; Rahayuningsih, 2020). Second, the animated video that was developed motivates student learning. Animated videos present interesting sounds and images, so students don't get bored. Animation media can be regarded as digital media. Technology-based learning activities are considered very interesting by some students because students are also used to using technology in everyday life (Devi et al., 2020; Sudana et al., 2019). Attractive media can increase motivation and the learning atmosphere (F. Y. Kurniawan et al., 2020; Resita & Ertikanto, 2018; E Saripudin et al., 2018). When two elements, such as audio and visual, are combined, it will significantly motivate students to see learning (Febliza & Okatariyani, 2020; Ponza et al., 2018; Widjayanti et al., 2019). Therefore, students are moved to pay attention to the learning material. The advantage of this media is that it reduces the object's size and presents something complex enough to motivate students. In addition, this media is very interactive. Interactive media are also very helpful in increasing learning motivation (Andini et al., 2018; Hariandi et al., 2020; Sittichailapa et al., 2015). This media is following students' needs so that students' problems can be resolved properly. This media can increase students' motivation and enthusiasm to participate in learning activities. Previous findings suggest that digital media is needed to increase (Kosim, 2020; Qureshi et al., 2021; Setiawan et al., 2019). Other findings also state that digital media can attract students' interest (Riwu et al., 2018; Wikanda et al., 2021). Its use can also improve the quality of learning to be very good or to be better than before. This animated video is appropriate for science learning because it clarifies abstract concepts into concrete. This animation conveys a complex concept visually to attract students to learn (Alfianti et al., 2020; Widjayanti et al., 2019). In addition, animated videos are also able to stimulate students' minds so that they can help students understand concepts better. This research implies that teachers can use animated video learning media on plant parts and their functions. This media can indirectly arouse students' enthusiasm for learning so that it has an impact on increasing student understanding.

4. CONCLUSION

The Animation Videos developed get very good qualifications from experts, teachers, and students. It can be concluded that the animation video on plant parts and their functions in science learning is appropriate for use in learning. Animated videos can help students and increase their motivation to learn science.

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