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Animation Media on Human Digestive System Material for Fifth-Grade Elementary School Students

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ABSTRAK

Kurangnya pemahaman materi siswa dalam proses pembelajaran memberikan dampak pada hasil belajar siswa. Guru hanya terpaku pada satu sumber buku ajar, sehingga siswa kesulitan dalam memahami materi yang bersifat abstrak. Selain itu, guru dalam kegiatan belajar mengajar hanya menggunakan metode konvensional sehingga pembelajaran lebih berfokus pada guru bukan pada siswa. Penelitian ini bertujuan untuk mengembangkan media pembelajaran video animasi pada materi sistem pencernaan manusia kelas V Sekolah Dasar. Pengembangan media dalam penelitian menggunakan model ADDIE yang meliputi tahapan Analyze, Design, Development, Implementation, dan Evaluation. Metode pengumpulan data penelitian ini menggunakan metode kuisioner dan instrumen rating scale. Teknik analisis data menggunakan analisis data statistik deskriptif kualitatif dan statistik deskriptif kuantitatif. Hasil penelitian ini yaitu hasil perhitungan rata-rata skor uji validitas diperoleh hasil bahwa persentase yang diperoleh dari segi materi secara keseluruhan yaitu 95,71%. Hasil persentase dari ahli materi pembelajaran berada pada rentangan 90-100 dengan kualifikasi sangat baik dan tidak perlu direvisi. Hasil perhitungan persentase uji validitas dari segi desain secara keseluruhan yaitu 94,61%. Hasil persentase dari ahli desain pembelajaran berada pada rentangan 90-100 dengan kualifikasi sangat baik dan tidak perlu direvisi. Dilihat dari rata-rata skor dari segi ahli media dinyatakan media pembelajaran ada pada kualifikasi sangat baik dengan 92,93%. Sementara itu, dari uji praktisi menyatakan bahwa media pembelajaran ada pada kualifikasi sangat baik dengan persentase keseluruhan yaitu 100 %. Jadi, media pembelajaran video animasi layak untuk digunakan dalam pembelajaran. Implikasi penelitian ini yaitu media video animasi dapat membantu siswa dalam proses pembelajaran.

ABSTRACT

The lack of understanding of the learning material has an impact on the results of student learning. Teachers only depend on a single source, textbooks, so it is pretty tricky for students to learn abstract material. In addition, teachers in teaching and learning activities only use conventional methods to focus on the teacher, not the students. This study aims to develop animated video learning media on the human digestive system material for fifth-grade elementary school. Media development in research uses the ADDIE model, which includes the Analyze, Design, Development, Implementation, and Evaluation stages. The data collection method in this study used a questionnaire method and a rating scale instrument—the data analysis technique used qualitative descriptive statistical data analysis and quantitative descriptive statistics. The study result showed the calculation result of the average validity test score; the result is that the percentage obtained in terms of the material as a whole is 95.71%. The percentage of learning material experts is 90-100 with outstanding qualifications and does not need to be revised. Calculating the percentage of the validity test in terms of the overall design is 94.61%. The percentage of learning design experts is 90-100 with outstanding qualifications and does not need to be revised. From the average score in terms of media experts, it was stated that the learning media had outstanding qualifications with 92.93%. Meanwhile, from the practitioner test, it was stated that the learning media had outstanding qualifications with an overall percentage of 100%. So, animated video learning media is feasible to use in learning. This research implies that animated video media can help students in the learning process.

1. INTRODUCTION

Science and technology development has consequences for every generation in several fields of Education (Saurina, 2016). Speedily developing science and technology requires the high growth of Education quality; therefore, the rate of human resources can be increased (Awalia et al., 2019; Lase, 2019; Willya et al., 2019). Through Education, individuals can develop their skills and potential (Muslina et al., 2018; Robandi & Mudjiran, 2020). In addition, education also aims to build capable, creative, independent, and responsible human beings (Sutrisno, 2016). Quality human resources can be

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achieved through an optimal learning process (Hanik, 2020; Yulianingsih et al., 2020). The learning process can run well if it involves the students' activeness, the need, and the use of the learning media according to students' characteristics. (Crismono, 2017; Novita & Pratama, 2019). Furthermore, learning media must also be developed with various innovations following the science and technology development (Manuaba, 2017; Kuswanto & Walusfa, 2017; Putri, 2017).

Indeed, teachers only rely on textbooks in learning activities, so it is difficult for students to grasp the material and perform the tasks given. Furthermore, learning tends to be monotonous, making students bored (Sadikin & Hamidah, 2020; Wahyono et al., 2020). Learning using only the teacher-centered and assignment methods makes students less active in the classroom (Pertiwi et al., 2019; Widiatmika et al., 2017). The results of interviews with a Homeroom Teacher for 5th-grade students at the 2nd Kubu Public Elementary School support this. It showed that the lack of media for school learning overwhelms teachers in finding media for learning subjects. It reduces the enthusiasm of students and makes the material difficult to understand during their online learning. Furthermore, the results of science learning remain relatively low and below the minimum learning mastery standard score. If the problem is left unchecked, an effective solution to overcome these problems is needed in the online learning process.

The solution is to use the learning media. Learning media can help students understand the material given by the teacher well (Diputra, 2016; Shetu et al., 2021; Sunismi, 2015). Therefore, learning video becomes one of the media which can help students to learn. Learning videos can help students learn materials quickly and increase students' motivation to learn (Awalia et al., 2019; Heo & Toomey, 2020). Learning video allows students to understand abstract subjects to be more concrete, so students will not be quickly bored in the classroom (Andriyani & Suniasih, 2021; Panjaitan, 2020; Soucy et al., 2016; Taqiya et al., 2019). Therefore, students' interest and motivation for learning can be increased. Animated video is a type of learning media that can increase the enthusiasm and motivation of students to learn. Animated media is a learning media in the video that can visualize abstract concepts to make them more real (Muslina et al., 2018; Panjaitan, 2020; Stoll et al., 2021). The development of animated videos for elementary schools based on elementary school students' characteristics, namely imitation, observation, and interest in animated cartoons. With this video, students are hoped to be able to understand the material during online learning materials.

The previous research findings showed that animation media could raise the interest and motivation of students in learning (Muslina et al., 2018; Widiyasanti & Ayriza, 2018). Animated media can improve learning results for students as well (Eli & Sari, 2018; Iqbal & Tarigan, 2019). Animated media can be used on math material (Awalia et al., 2019; Stoll et al., 2021). The animated video "Hands Move" helps teachers deliver material in social studies subjects (Permatasari et al., 2019; Wouters et al., 2019). Various previous research findings relating to animated video learning media but no science lessons with the material of the human digestive system have been applied. Besides, the human digestive system material has no animation media at school. This media has the advantage of giving the students an increasing interest in animation, sound, and pictures presented in a simple way, allowing the students to understand the content more easily (Chang et al., 2020; Indriyani & Putra, 2018). This study aimed to develop animated video learning media on human digestive system material for 5th-grade students at the 2nd Kubu Public Elementary School. Animated media of the human digestive system can help students understand the material during online learning. The media is hoped to promote and increase students' interest and motivation to learn to improve their learning outcomes.

2. METHOD

The type of this research is development research. The ADDIE model, which contains the following steps; Analyze, Design, Development, Implementation, and Evaluation, is the model used to refer to learning media development research. This model is selected because the model is very understandable, has a systemic flow, and is very clear. Some subjects conducted the study; two material experts, two media and design specialists, and two practitioners. The technique used in collecting data in this study is a questionnaire using the Likert scale instrument. Tables 1, 2, and 3 show the grid of data collection instruments to measure the validity of the developed learning media.

Table 1. Media Validation Sheet Grid for Animated Media Expert

No.	Aspect	Indicator	Total Item	Item Number
1	Content	The presented material suitability with the core competencies and the basic competencies.	1	1
		The material suitability with the learning video media and	1	2

No.	Aspect	Indicator	Total Item	Item Number
		indicators.		
		The material/information completeness is contained in the learning video media.	1	3
		The conformity between the content of the exercise and the learning objectives.	1	4
		The conformity between the content of the summary and the core points of the learning content.	1	5
		The content of the material in the learning video media arouses students' curiosity.	1	6
		The material suitability with the example in everyday life.	1	7
		The language used is easy to understand.	1	8
2	Language	The standard language used.	1	9
		The effectiveness of the sentences used.	1	10
		The use of words following the correct spelling.	1	11
3	Practical	The ease of learning video media used.	1	12
4	Effective	The effectiveness of using learning video media.	1	13

Table 2. Animated Media Validation Sheet Grid for Material Expert

No.	Aspect	Indicator	Total Item	Item Number
1	Cover	Learning Media Identity	1	1
		The cover attractiveness	1	2
2	Format	The attractiveness of learning media display	1	3
		The color, writing, and pictures/videos harmony on learning video media	1	4
		The compatibility of use and font size	1	5
		The suitability of the learning video media layout	1	6
		The suitability of the image with the material content	1	7
		The stipulations of paragraph stylists describing learning materials	1	8
3	Practical	The ease of learning video media used	1	9
4	Effective	The effectiveness in using learning video media	1	10

If the content validity requirements are met, an instrument can be said to be good. The instruments that have been compiled are then tested for content validity by several experts (judges) so that they can be said to be valid. The validity of the instruments was tested using the Gregory formula. Based on the content validity criteria, the content validity coefficients of the three instruments are at very high content validity criteria. Data analysis methods and techniques used in this development research use qualitative descriptive statistics and quantitative descriptive statistics. Qualitative descriptive statistical analysis is used in processing the results of reviews, suggestions, or inputs made by experts or judges on the developed learning media. Quantitative descriptive statistical analysis is used to process data as numbers from the assessment provision sheets for learning media instruments developed by media experts, design experts, science content experts, and teachers. A five-scale conversion benchmark is used to make decisions about media development.

3. RESULT AND DISCUSSION

Result

The animation learning media development design for the human digestive system material has been carried out with the development model named the ADDIE development model, including the Analyze, Design, Development, Implementation, and Evaluation stages. The first step is analyzing. At this stage, an analysis of needs, curriculum, and media is carried out. Based on the observations and interviews results, it was found that the learning resources used by students were limited to textbooks and worksheets and the use of media was still rarely found so that the material obtained is not optimal. The science competence knowledge of fifth-grade students of the 2nd Kubu Public Elementary School is still low. Students tend to be bored by monotonous learning as they are not very enthusiastic about learning.

Based on the learning media analysis results, the availability of learning media remained lacking; the current media were limited to image media only. Lack of teacher creativity to develop learning media according to student characteristics. Therefore, the teacher uses books only as a learning resource in the learning process. Curriculum analysis is done by first analyzing the basic competencies, the core competencies, indicators of competency achievement, learning objectives, and material contained in the book as a basis in the preparation of learning media developed. The results of the competency and indicators analysis are presented in Table 3.

Table 3. Basic Competencies (KD) and Competency Achievement IndicatorsTable

No	Basic Competency (KD)	Competency Achievement Indicators
1	1.1 Analyzing the digestive organs and their functions in animals and humans as well as maintaining the health of human digestive organs	1.1.1 Explain the meaning of the human digestive system. 1.1.2 Explain the process of the digestive system occurrence.

The second stage is designing. This stage begins with the compilation of media assessment instruments and the animation learning media development design. The designed media is an animated learning video that discusses the human digestive system material. This learning media is intended for fifth-grade elementary school students. The storyboard in the developed animated video contains the stages of the plot, namely the cover, the learning video title, the video maker name, essential competencies, achievement indicators and learning video competencies, animation-based learning video storylines. Furthermore, the design of the media concept is made in the form of a storyboard. The storyboard is made to visually display animated learning media on the material of the human digestive system.

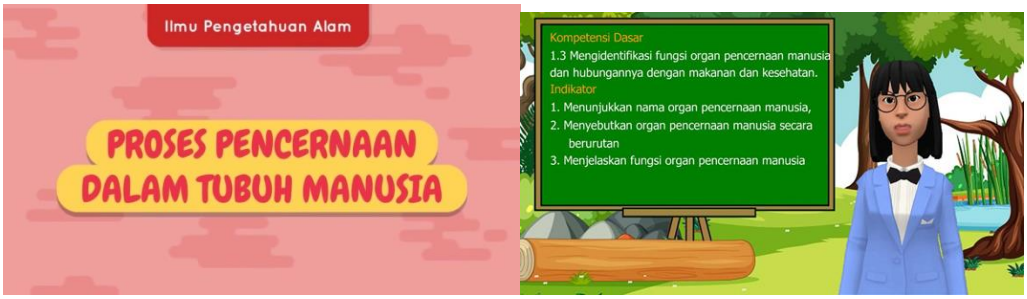

Figure 1. Design of Animation Learning Media

The actual product is being developed in this development stage. In addition, the validity of the developed animation learning media is determined by experts and practitioners on this product and to receive suggestions and comments to make improvements to the media to become appropriate learning media to use in the learning process. The calculation result of the average validity test score showed that the percentage obtained in terms of the material as a whole is 95.71%. There are decent qualifications for the percentage of learning material experts from the 90-100 range, and they need not be revised. The calculation result of the validity test percentage in terms of the overall design is 94.61%. The percentage result of learning design experts with outstanding qualifications ranges between 90 and 100 and need not be revised. Based on the average media expert score, it was noted that the learning media have outstanding qualifications at 92.93%. Meanwhile, the practitioner test showed that the learning media had an excellent qualification with an overall percentage of 100%. Based on these results, animation learning media for digestive system material in science subjects is declared valid with outstanding qualifications. After the product is completed and declared feasible, the next stage is implementing the animated video. Then, the evaluation stage is completed after the implementation stage. Due to unfavorable circumstances in the Covid-19-pandemic situation, the implementation and evaluation of this animated video of the human digestive system material could not be done. The suggestions given by experts and individual trials are presented in the Table 4.

Table 4. Feedback and Suggestions from Experts

Video Trial Subject	Feedback and Suggestions
Learning Material Expert Test	Learning objectives use the ABCD format; When discussing what gastric juice consists of, it does not fit the video display and the text with the words of explanation; The description of the pancreas does not match the picture. On the slides are written amylase, trypsin, and lipase enzymes; The small intestine mentioned should be the same as the picture in the video; In the video, there is no evaluation according to the instrument sheet. An evaluation instrument can be added at the end after the conclusion.
Learning Design Expert Test	Learning objectives need to use the ABCD format; Use plain fonts such as Arial, Tahoma, or others for easy reading; Add the supervisor at the end of the video; The small intestine mentioned should be the same as the picture in the video; In general, the videos made are excellent and ready to be used in the learning process. Then it can be developed on other themes to be more varied. In addition, examples of more contextual activities can also be added.
Learning Media Expert Test	In the beginning, add the class, semester along with the name of the developer; Show and focus the part of the respiratory apparatus in question with the arrow. The videos produced are generally outstanding and ready for use in the learning process. It can then be more varied on other topics. Furthermore, examples can be added of more contextual activities.
Expert Practitioner Test	Animated videos are suitable for use in elementary school; The animated videos tested are good, and hopefully, there will be videos like this again in other themes.

Based on the feedback and suggestions provided by experts and test practitioners, the developed product was then revised to a higher quality. The results of the revisions made are presented in Figure 2.

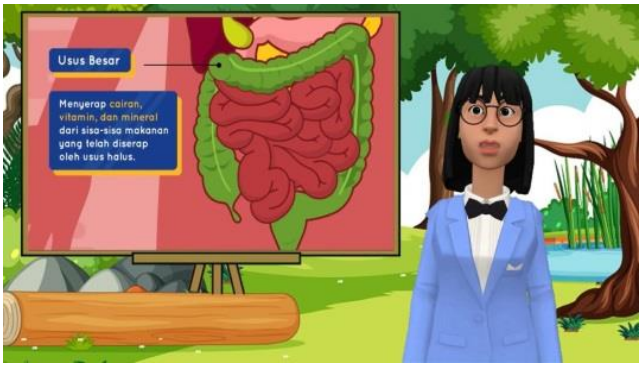

Figure 2. Revision Result of Animated Video Media

Discussion

Based on the analysis result, the animated video media of science learning, particularly the material for the human digestive system, get outstanding qualifications, so it is feasible to be applied in the learning process. It is worth developing animated video media in science learning for the human digestive system material, as this video learning medium can help students learn independently. Furthermore, this media will also facilitate learners' understanding of the learning material to influence students' learning outcomes. Animated video media for the human digestive system material in science learning has outstanding qualifications and merit application due to numerous factors. First, the developed animated video media can help students understand the material. It attracts students' attention and motivates students that can be seen from presenting the material. The developed media creatively display learning materials based on student characteristics to increase student focus (Knoop-van Campen et al., 2020; Wuryanti, 2016). Furthermore, the aspects are very credible to increase the understanding of the material by the students. It is in line with the theory that learning media are everything used to channel senders' and recipients' messages to encourage students' thoughts, concerns, feelings, and interests

(Andriyani & Suniasih, 2021; Indahini et al., 2018). The learning results are influenced by numerous factors, including media use in teaching and learning activities (Ilmawan Mustaqim, 2017).

Second, developed animated video media can enhance students' learning experiences. Videos enable students to increase their interest in learning because this learning media can provide a fun and efficient learning experience. Other research findings indicate that children learn more from the educational process involving media and image, color, and motion components (Najib, 2016; Rose et al., 2016; Wuryanti, 2016). Various components allow the developed media to attract interest in learning and bring students more significant learning experiences. The results of previous research on animated learning videos can be used for learning because they can increase the excitement and motivation of students in the learning process (Widiyasanti & Ayriza, 2018). Animated video learning media is suitable for use in the learning process in elementary schools (Panjaitan, 2020; Wuryanti, 2016). Animated video media can also increase the interest and motivation of students in their Education (Hua et al., 2020; Permatasari et al., 2019; Stoll et al., 2021).

The animated video media that has been developed includes the cartoon images, sounds, words, and music presented together so that students will be more interested in learning (Chang et al., 2020; Sudiarta & Sandra, 2016; Yuniarni et al., 2020). It can be concluded that learning media in animated videos can help students learn to help improve student learning outcomes. The benefits of this video media are attractive and highly suitable for elementary school students' characters. Moreover, the presence of photos and audio can appeal to students, so they do not have to be bored. This animated video media can be used without using an application, making it easier for students to use video media. This video media, however, develops only on one subject: human digestive system material. Moreover, the media is only developed until the validation stage. The implementation and evaluation stage cannot be carried out due to the Covid-19 pandemic. Further research at the implementation and evaluation stages is hoped to be carried out. Teachers and students can be helpful with animated video media, particularly on the human digestive system material. It is expected that the implications of this research will impact the results of student science learning.

4. CONCLUSION

In the scientific learning process, animated video learning media for the human digestive system material is feasible. This animated video media can help students understand science subjects, especially about human digestive system material. It is hoped that video media learning will be more efficient and effective in achieving learning goals in the learning process.

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