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Development of Learning Video Media in Biology Subjects

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Abstract
The purpose of this study is to produce valid and practical learning video media for use in the learning process. This research is a development research used to produce a product in the form of learning video media. The stages in this development include: planning stage, design stage, and development stage. The subjects in this study were 2 validators consisting of learning media experts and content or learning media material experts, 31 grade XI science students and 1 Biology subject teacher. Data collection techniques used observation, interviews, questionnaires and documentation. The data analysis techniques used were Qualitative Descriptive Analysis, and Descriptive Static Analysis. Research on this offers novelty in the form of more visual and interactive learning media, allowing students to understand complex biological concepts through interesting graphical and animated representations. In addition, these learning videos provide flexibility for students to learn independently and repeatedly, thus improving conceptual understanding and accommodating various learning styles.

Keywords: Video Media, AVS Video Editor, Biology Subject

INTRODUCTION

Efforts to improve the quality of education must be made in order to support national development. Teachers are the central point in the implementation of learning because teachers are components of education that are directly related to students (Amtu et al., 2020; Sutiah et al., 2020). So that teachers become the mainstay of hope to realize aspects of National Education. Therefore, the main thing that teachers must do in an effort to improve the quality of education is to increase students' interest in learning first (Amiruddin et al., 2021; Gultom et al., 2020). Teachers as educators and teachers must be able to create three interesting learning in the classroom so that students are able to concentrate and take an interest in the learning process (Filgona et al., 2020; Seven, 2020).

Teachers play an important role in teaching students, especially in efforts to shape students' character through the development of personality and desired values (Khaidir & Suud, 2020; Syarnubi et al., 2021). Considering that one of the elements of education is the process of interaction between teachers and students, the educational process is a reciprocal communication between students and educators that is directed at achieving educational goals. Optimal achievement of educational goals is achieved through the

process of communicating incentives by manipulating the content, methods, and educational tools. Teachers as key holders who can control the effectiveness and efficiency of educational interactions, are expected to be able to answer these challenges (Chew & Cerbin, 2021). The Ministry of National Education as a policy maker in the field of education responds to demands to improve the quality of education.

Learning media are tools, means, intermediaries, and connectors to spread, carry or convey a message so that it can stimulate the thoughts, feelings, actions, interests and attention of students in such a way that the teaching and learning process occurs in the students. Media are tools or means used to convey messages from communicators to the audience (John & De'Villiers, 2020). In the world of education, all forms of intermediaries are referred to as learning media. The use of learning media in the classroom greatly helps teachers in fostering interest in learning for students (Claresta et al., 2024; Sutarto et al., 2020). By using learning video media, students' minds will be more easily stimulated, in addition, learning video media is also able to provide clearer images to students about what is being studied (Liando et al., 2022).

Video media is one type of audio-visual media. Audio-visual media is media that relies on the sense of hearing and sight (Primastuty & Asmawulan, 2023; Setiyanti & Nur, 2021). Audio-visual media is one of the media that can be used in listening learning (Kartika et al., 2023). Videos are images in frames, where frame by frame is projected through a projector lens mechanically so that the screen displays live images. The ability of video to depict live images and sound provides its own appeal. Videos can present information, explain processes, explain complex concepts, teach skills, shorten or extend time, and influence attitudes.

Previous research conducted by Siswosuharjo et al., (2024) Previous research has focused more on developing learning videos for general science subjects, covering a variety of topics in science such as physics, chemistry, and biology. However, the latest research offers a more specific and in-depth approach to biological materials. The gap that emerged was that previous research tended to be general and did not place special emphasis on the unique characteristics of biological materials, such as anatomy or ecosystems, which require more detailed visualization and explanation. The latest research attempts to close this gap by designing learning videos that are more tailored to the needs of biological materials, allowing students to better understand complex biological concepts.

This research offers novelty in the development of more interactive and contextual learning media, especially in biology subjects that require detailed visualization to understand abstract concepts such as cells, anatomy, and ecosystems. Learning videos developed specifically for biology materials can increase students' absorption, by presenting visual representations that are close to reality. The urgency of this research lies in the need for more effective learning in the digital era, especially in facing the challenges of distance learning and limited visual resources in the classroom. With videos that are in accordance with the curriculum and characteristics of biology, students can more easily understand and apply the concepts taught. Based on the background above, the purpose of this study is to produce valid and practical learning video media for use in the learning process

RESEARCH METHODS

Research Design

The researcher uses a development research method or known as Research and Development. The suitability of the stages carried out in this study include: planning stage, design stage, and development stage.

Research Subject

The subjects in this study were 2 validators, namely learning media experts and content or learning media material experts, 31 students of class XI mathematics science 1 and 1 Biology subject teacher. While the object of research studied here is the development of video media avs videoeditor

Instruments, and Data Collection Techniques

To obtain the required data, the researcher used a data collection technique in the form of a questionnaire. The questionnaire used to collect data in this study included a questionnaire on the quality of learning media for teachers and a questionnaire on student responses and input on learning video media.

Data analysis technique

This development research uses descriptive statistical analysis. This analysis technique is used to process data obtained through questionnaires in the form of descriptive percentages. The formula used to calculate the percentage of each subject is:

$$Presentation = \frac{\Sigma\ (answer\ x\ weight\ of\ each\ choice}{N\ x\ highest\ obot}\ x\ 100\%$$

Description: $\sum$ = total N = total number of questionnaire items. Furthermore, to calculate the percentage of all subjects, the formula is used:

$$Percentage = \frac{F}{N}$$

Description: F = total percentage of subjects N = number of subjects. In order to provide meaning and decision making on student identification questionnaires, learning media content/material test questionnaires, learning media test questionnaires, large group test questionnaires, small group test questionnaires, the following provisions are used:

Table 1. Conversion of Achievement Level with Likert Scale

Achievement Level	Qualification	Information
90% - 100%	Very good	No revision required
75% - 89%	Good	No revision required
65% - 74%	Enough	Revised
55% - 64%	Less	Revised
0% - 54%	Very less	Revised

RESULTS AND DISCUSSION

Validation by Learning Media Experts on Sparkol Videoscribe Video Media

Based on the results of the assessment of learning media experts, the percentage of achievement level can be calculated as follows:

$$Percentage = \frac{53}{5\ x\ 13}\ x\ 100\% = 88\%$$

After being converted with the conversion table, the achievement rate percentage of 88% is in the very good qualification.

Validation by Content Experts or Biology Learning Materials for Learning Video Media

Based on the results of the assessment of content experts or learning media materials, the percentage of achievement level can be calculated as follows:

$$Percentage = \frac{47}{10\ x\ 5}\ x\ 100\% = 94\%$$

After being converted with the conversion table, the achievement rate percentage is 94%, which is in the very good qualification.

Small Group Trial Assessment

Based on the results of the assessment through a questionnaire, the percentage of small group trials on video media can be seen as follows:

$$\frac{75\% + 81\%}{2} = 78\%$$

The average percentage of learning video media is 78% in good qualification. The following is the data obtained from the large group trial. This individual trial, consisting of 5 students, was asked to assess the learning video media. Based on the assessment results through the questionnaire, the average percentage of learning video media can be seen as follows:

$$\frac{80\% + 84\% + 68\% + 88\% + 68\% + 80\% + 76\% + 72\% + 84\% + 72\% + 76\% + 72\%}{9} = 76\%$$

The average percentage of learning video media is 76% in good qualifications. The following is the data obtained from the responses of Biology Subject teachers. Based on the results of the assessment through the Biology Subject teacher response questionnaire, the percentage of achievement levels can be calculated as follows:

$$Percentage = \frac{55}{12\ x\ 5}\ x\ 100\% = 91\%$$

After being converted with the conversion table, the achievement rate percentage is 91%, which is in the very good qualification.

The process of developing learning video media involves the performance of several computer programs or software such as sparkol videoscribe, Camtasi 8, AVS video editor and filmora, components of learning video media do not only consist of text, and images, providing space to explore more varied content by adding sound and animation. The output of learning video media products is in the form of video media.

At the validation stage by learning media experts, a very good qualification was obtained consisting of assessments on the appearance aspect, learning aspect and operational aspect. The appearance aspect consists of the quality of the appearance/media design, the appropriateness of the use of animation, the size and type of font used, the appropriateness of the color selection, and the appropriateness of the use of language. The learning aspect is related to the suitability of the media with the learning objectives, the suitability of the media with the learning material (Hardiansyah, 2022; Supriyatno et al., 2020). Then the operational aspect is related to the ease of operation. The data obtained in the form of a score is used to determine the feasibility of the media, while the data in the form of suggestions and comments are used to revise the learning video media product.

The next validation stage is validation of content/material by experts who obtained very good qualifications that only look at the learning aspects, namely the suitability of the material with learning activities in the learning implementation plan, the suitability of the material with the learning implementation plan, the relevance of the material with learning objectives, the accuracy of the title with the content of the material, the suitability of the video media with learning objectives, the clarity of the material with the video media, the suitability between the image/video with the material, the suitability between the narrative with the material and according to the needs of the students. The data obtained in the form of scores used to determine the feasibility of the material taking place, students seemed enthusiastic and serious about learning, in the small group trial taken as the subject of this small group trial were 6 students of Senior High School 5 Jeneponto with high learning

achievement, moderate learning achievement, and low learning achievement. In the small group trial, the results were in good qualifications, so that the developed learning video media did not need to be revised.

The learning video media was then assessed by the Biology Subject teacher. The assessment aspect, video media makes it easier for teachers to achieve learning objectives, video media is in accordance with student needs (Suaib, 2020), learning video media is in accordance with the material presented, the use of standard and communicative language, the suitability of colors with the appearance of the video media, the quality of the font used, the quality of images in the video media and the quality of animation in the video media. The results of the Biology Subject teacher's responses are in the very good qualification.

The limitation of the video media development research that was developed is that this research does not measure the level of effectiveness of video media products, but only to find out the response and usefulness of video media products seen from the validation weight and practicality of each trial conducted. Based on the results of the validation and trials that have been carried out, and with the achievement of valid and practical learning video media products based on various theories, of course this is a means that can help the learning evaluation process so that it has a good influence on students.

The disadvantages of the developed video media product include, firstly, the presentation in the learning process, because when you want to present this video media, you need supporting tools such as LCD to project the video media. In addition, the disadvantages lie in the format developed because it is not available in print but in the form of a computer, laptop or notebook screen reading format.

The application of this learning video media in State Senior High School 5 Jeneponto is very suitable for use, because by looking at the response of teachers and students who are very enthusiastic in using this media, especially in the Biology Subject, this media is suitable for use in this school because the school has adequate facilities, which can support the use of various media, especially the application of learning video media.

Based on the results of the research that has been carried out, the media that has been developed has proven to be valid and practical because it can be seen from the questionnaire responses of 63 students and the responses of the Biology Subject teachers who are in very good qualifications, so that it is possible for the media to be used sustainably in State Senior High School 5 Jeneponto.

This research has the potential to provide a significant impact on improving the quality of biology learning, both for students and teachers. For students, the use of interactive and visual learning videos can increase interest in learning, deeper understanding of concepts, and critical thinking skills in solving biology problems. Meanwhile, for teachers, these videos can be an effective tool for delivering complex material in a more interesting and easy-to-understand way. The broader impact of this research also includes the creation of more inclusive learning, where students with different learning styles—such as visual and auditory—can gain more optimal benefits, and support the application of technology in education in line with the demands of the digital era.

CONCLUSION

The conclusion of this study is the validation results carried out by two practicing teachers to determine the teacher's response to the colloidal system student worksheet developed, this stage is carried out by providing media and validation sheets to chemistry teachers at the 5th State Islamic Senior High School in Aceh Besar, so that a percentage value of 25% is obtained with the category of very interested, 65% interested and less interested is 10%. The results of student responses are carried out to determine student responses to the colloidal system student worksheet developed. The trial was carried out by providing a student response questionnaire and the developed student worksheet to students in class XII science 1, with the percentage of students who chose very interested amounting to 34%, interested 55%, less interested 11%, while those who chose the criteria not interested and very not interested were none. It can be concluded that student responses to student worksheets based on a scientific approach to the colloidal system material are feasible so that they are practical to use on students. It is recommended that further research explore the integration of interactive technologies, such as augmented reality or virtual simulations, in the development of biology learning videos to enhance students' learning experiences and deepen their understanding of complex concepts.

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