

Development of Biology Learning Media Video Tutorial

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Abstract

This research is a research and development which aims to produce valid biology tutorial video learning media. This research was conducted using a 4D development model from Thiagarajan, with the Define, Design, Development, and Disseminate stages involving two expert validators and one practitioner validator. The instrument used is a validation instrument sheet. The data collection technique is that the validation sheet is distributed to the validator to get the value of the validation of the development of learning media. The data obtained were analyzed using the validity criteria according to Yamasari. The results of the study indicate that the -based learning media Camtasia Studio software has high validity. The results of the media validity research are shown based on the validation results from expert and practitioner validators are the average value of validity for the material aspect $3.82 = \text{valid}$ and the average value of validity for the media format aspect is $3.78 = \text{valid}$. The average value of the total validity of Camtasia Studio is $RTV = 3.80$ and is included in the valid category. Based on the results of this study, it can be concluded that the Camtasia Studio-based learning media produced is valid so that it is feasible to use.

Keywords

research development; 4D; digestive system; camtasia studio



I. Introduction

The development of science and technology as well as the demands for improving the quality of learning increasingly encourage efforts to renew the use of technological results in the learning process. The development of science and technology always produces creative learning media innovations. The change of conventional learning media into modern learning media is expected to support the learning process so as to improve student learning outcomes. The learning is aimed at reconstructing students who are looking for information and finding out knowledge that is able to solve problems, cooperate, and tolerate diversity. If the desire is successful in a satisfying way, it will increase students' self-confidence as well as a high sense of responsibility and civilized humans who can identify themselves with stable, independent personalities and have emotional stability with intellectual knowledge. (Pradana, D. et al. 2020). A good learning media is the one which can adapt various student learning styles in order to achieve the learning goals – one of them is digital flipbook. It is an electronic learning media in which text, audio and visuals are included. Flipbook is one of the classic animations made by a piece of paper, mostly found in the form of 'thick' book, and each paper aims to describe something – its appearance is designed in some specific ways so that the within objects may move or pop-up when opened (Nafiah in Afwan, B. et al, 2020).

Computers were initially used very limitedly, only for calculating purposes in administrative activities, but now computer applications are no longer only used as a means of computing and word processing (word processor) but are now used as a learning

tool or learning media. SalaOne application that is currently being developed in the world of education is the creation of computer-based learning media or CBI (Computer Based Instruction). Applications such as multimedia and the web, in the field of education gave birth to many new breakthroughs in increasing the efficiency and effectiveness of the learning process.

Learning media can be interpreted as everything that is used in the distribution of information, in this case science. Not only through books, but also through media such as laptops or gadgets, either connected to the internet or without an internet connection. Learning media created or developed by teachers, for example, are then disseminated to students, so that students can learn through laptops or gadgets independently.

Based on interviews conducted by researchers with students of class XI IPA SMAN 8 Bulukumba, information was obtained that students found it difficult to understand biological concepts. In addition, students also stated that the learning carried out by the teacher generally used the memorization method. Students feel they need certain tools that can help students understand a lesson more pleasantly.

Researchers also conducted an analysis of 30 lesson plans for biology teachers at SMA Negeri 8 Bulukumba. Based on the lesson plans, information was obtained that in learning generally teachers use blackboards and markers, as well as printed books. For presentation media, the teacher uses power point media with LCD tools. Children's learning opportunities are very limited if only face to face. So we need a media that is able to make students / children learn independently.

Preliminary research data shows that all (100%) students agree that learning by using pictures and animations is fun learning and can help students understand the lesson, 90.3% of students agree that the use of video tutorial presentation media is an integral part of the learning process, 90, 3% of students agree that video tutorial presentation media has the potential to be an effective learning media. These data prove that students of SMA Negeri 8 Bulukumba have a need for autonomy which is central to self-determination, not rewards or pressure from researchers.

Learning media used by teachers have an important role in every learning process, so that teachers as educators are expected to be able to create, develop and use learning media so that learning objectives can be achieved (Yolida, 2021: 27). Learning media is a tool to convey messages in learning activities, which serves to attract student interest, so that students are enthusiastic in the learning process (Suhailah, 2021: 20).

Video tutorial comes from the word video and tutorial. Video is a technology for recording and storing images. While tutorial means teaching carried out by an expert or a tutor (Batubara, 2020: 75). Learning videos are suitable learning media because their use in class is more time efficient, can explain learning materials, students can be more active in learning, and different student learning styles in the use of videos are all fulfilled (Agustini, 2020: 63). Video tutorials can facilitate students to learn, both with education and independently (Hendriyani, et al, 2018: 87).

Tutorials are a more effective method of transferring knowledge than books or teachers (Wind, 2014: 1). Tutorials can guide every step of the application or an activity. Tutorials can also explain difficult-to-understand instructions with written explanations. Tutorials can make students' understanding of the learning materials obtained better. Besides, tutorial learning is also more interesting.

The learning process that occurs does not only take place formally in the classroom, but can be done anywhere when students get positive new knowledge and things and add insight. Student learning activities of SMA Negeri 8 Bulukumba are carried out during

class hours and outside class hours. Based on the results of initial observations, it is known that 100% of students have used laptops and computers, 100% of students know how to use computers and laptops, 80% of students already have laptops/computers, and 100% of students agree if a biology tutorial learning video is produced. The researcher believes that producing tutorial media using Camtasia Studio software can help students absorb a lesson. Even this media can be used by teachers in the learning process.

Based on this, several problems can be identified, namely:

1. The learning carried out by the teacher has not been maximal in applying learning media that helps students understand the concept of biology well. The implementation of learning media that supports students' thinking in learning biology will certainly affect students' understanding of the biological concepts being studied.
2. Independent learning has not been socialized and has not yet developed among students. Children's learning opportunities are very limited if only face to face. So we need a media that is able to make children learn independently.

In order to provide a more focused, detailed and not deviating picture from what has been described in the background above, it can provide a good understanding, the authors limit the problem to:

1. The use of Camtasia Studio 7 software as a medium for independent learning for class 2 science 1 SMA Negeri 8 Bulukumba material on the digestive system.
2. Create tutorial learning videos with Camtasia Studio 7 software.

Based on the description above, the authors are interested in developing the Camtasia Studio application into a quality learning media that combines various media from other applications. The author develops learning media for Camtasia Studio tutorial CDs by combining various media from other applications such as power points, images, and animated videos.

II. Research Method

This type of research is research and development (Research and Development). Research and Development Method is a research method used to produce certain products and test the validity of these products. The development model used was adapted from the Thiagarajan (4D) development model. The Thiagarajan (4D) development model consists of four stages of development, namely define, design, develop, and disseminate. This study adapted the Thiagarajan development model and only arrived at development resistance, then tested the validity of the resulting learning media.

2.1 Research Locations and Objects

This research was carried out at SMA Negeri 1 Bulukumba with the object of research being high school students of class XI.

2.2 Development Procedure

This research on the development of Camtasia Studio learning media adapts the 4-D development model from Thiagarajan. This model consists of 4 stages of development, namely defining, designing, developing, and disseminating. However, the researcher only did 3 stages, namely defining, planning, and developing. The dissemination or disseminate stage was not carried out due to time and cost constraints.

This definition stage is carried out to determine and define the requirements of the developed media. There are 4 main steps in this define stage, namely front-end analysis,

student analysis (learner analysis), task analysis, concept analysis and the formulation of learning objectives (specifying instructional objectives) in learning media.

The design stage aims to design learning media. There are four steps that must be taken at this stage, namely: (1) designing a design format that is in accordance with the characteristics of the material and learning media, as well as reviewing and determining the format of the media to be developed, (2) selecting material, (3) preparing tests, and (4) make an initial design according to the selected format.

The development stage is the stage to produce product development which is carried out through expert appraisal followed by revision.

2.3 Data Collection Method

The data collection instrument used in this study was a validation sheet for validation experts.

2.4 Technical Data Analysis

Determination of the presentation of data results, namely using the formula Find the average of each criterion from the three validators with the formula:

$$K_i = \frac{\sum_{h=1}^3 V_{hi}}{3} \text{ (Yamasari, 2010:3)}$$

Information:

K_i = average of criteria i

V_{hi} = score of the h -th validator assessment for the i -th criterion

i = criteria

h = validator

Find the average of the three aspects with the formula:

$$A_i = \frac{\sum_{j=1}^n K_{ij}}{n} \text{ (Yamasari, 2010:3)}$$

Information:

A_i = average of the i -th aspect

K_{ij} = average for the i -th aspect of the j criteria

n = number of criteria in the i -th aspect

i = aspect

j = criteria

ij = the i -th aspect of the j criteria

Finding the average total validation of the three aspects with the formula:

$$RTV = \frac{\sum_{i=1}^n A_i}{i} \text{ (Yamasari, 2010:3)}$$

Information:

RTV = average total validity

A_i = average of the i -th aspects

i = aspect

Table 1. Validation Criteria:

Range	Validity Criteria
3 RTV 4	Valid
2 RTV 3	Quite Valid
1 RTV 2	Invalid

III. Result and Discussion

3.1 Research Results

a. Define

The results of the front-end analysis, namely observations and initial investigations show that the learning carried out by the teacher has not been maximal in applying learning media that helps students understand biological concepts. Based on the results of the analysis of the lesson plans for biology teachers, the media used by teachers generally use printed books and power points for presentation media.

Student analysis which carried out based on the level of cognitive development of students Jean Piaget, so that it was found that class XII high school students were in the formal operational stage.

Identification of student characteristics is carried out for the purposes of instructional development. Observation techniques used are questionnaires and free interviews. The data obtained are one hundred percent of students have used audio-visual tools such as laptops or computers, all students agree that pictures and animations help students understand the subject matter, 93.6% of students state that images and animations are easy to understand in the learning process, almost all students have laptops, that is 80% of students have laptops, and all students understand how to use/operate laptops/computers. This information is input for researchers to make video tutorial media.

The resulting task analysis is the main concepts that will be presented in the media that will be developed, arrange them in a hierarchical form, and detail the concepts. The main concepts in the digestive system material are then used as a concept map that is ready to be developed into a material in the video tutorial learning media.

Concept analysis and learning objectives produce instructional learning objectives that are in accordance with the digestive system material that will be included in the video tutorial learning media.

b. Design

The results at the design stage are the format of the biology learning tutorial video, the consistency of the type of writing, the size of the writing in the title and subtitle, as well as the use of features from the Camtasia studio software used during the preparation and editing of the video tutorial. Then the initial design of the video tutorial is generated.

c. Development

The result of the development stage is a video tutorial that has been validated by the validator which has undergone changes according to the input of the validator. Until the video tutorial learning media is valid and can be used.

Table 2. Summary of validation results of all aspects of Camtasia Studio-based learning media by validators I, II, & III

No	Device Components	Rating Average Score	Status
1	Material Aspect	3.82	V
2	Media Format Aspect	3.78	V
Total average		3.80	V

3.2 Discussion

The validity of this tutorial CD learning media consists of two, namely the validity data of the learning media obtained from material experts and media experts. The first criterion of validity is from the aspect of the format. The average value of validity for the video tutorial format aspect of Camtasia studio is $RTV = 3.85$. The conclusion is that this media is included in the "valid" category ($3 < RTV < 4$). The assessment indicator for this aspect shows that the material contained in the video tutorial has color harmony, text, and image display, as well as the alignment of the image and writing display in the practice questions.

The second criterion of validity is the content aspect. The average value for this aspect of content is $RTV = 3.8$, it can be concluded that this value is included in the "valid" category ($3 < RTV < 4$). This valid value is obtained by the achievement of assessment indicators in the form of suitability of presentation of learning materials with indicators of competency achievement, media support for concept planting, suitability of learning materials with learning objectives, correctness of descriptions of learning materials, order of presentation of learning materials, suitability of images and animations with descriptions of learning materials, the suitability of the practice questions with the learning objectives, and the clarity of the description of the learning material. Achieving content validity, being able to easily create video tutorials based on Camtasia studio to describe the substance of facts, concepts, principles, and theories.

IV. Conclusion

The developed learning media has met the criteria of validity referring to Hobri. Based on the data from the validation results of the media by the validator, the average value of the total validity of the material is 3.82 and the average value of media validity is 3.78., which means that the Camtasia Studio-based learning media developed has a high level of validity.

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