

DEVELOPMENT OF FLIP CHART LEARNING MEDIA IN VIRUS MATERIALS FOR GRADE X HIGH SCHOOL STUDENTS

Aan Rinda Erviana¹⁾, Devita Sulistiana²⁾, Maratus Sholihah³⁾
^{1,2,3}Islamic University of Balitar; Jl. Majapahit No.04, Telp. (0342) 813145
Program Pendidikan Biologi, FKIP Universitas Islam Balitar, Blitar
e-mail: ¹aanrindaervi@gmail.com, ²devitasulistiana@unisbablitar.ac.id,
³maratussholihah@ unisbablitar.ac.id

ABSTRACT

Based on preliminary observations that show that as many as 51,2% of 123 students stated that biology lessons were a difficult lesson. As many as 77,3% of students experience learning difficulties on virus material. Learning activities can not be separated from the use of learning media. This development aims to know the valid of flip chart learning media on virus material for high school students of class X. This research is a Research & Development (R&D) study using the Thiagarajan et al 4D development model, which is limited to the develop stage. This development research resulted in flip chart learning media through validation by a team of experts getting a total value of 80% with a valid category. Readability test results by students amounted to 94% with a very valid category. Flip chart learning media is worthy of being used as a learning medium on virus material.

Keywords: *Flip Chart, Development Research, Virus*

1. INTRODUCTION

According to Law Number 20 of 2003 concerning the National Education System Article 1 point 19, the curriculum is a set of plans and arrangements regarding the purpose, content, and material of the lesson as well as the methods used to guide the implementation of learning activities to achieve certain educational goals. 2013 Curriculum is an integrated curriculum as a concept can be said as a learning system or approach that involves several disciplines to provide meaningful and broad experience to students. Learning with the 2013 curriculum requires teachers to be able to provide innovative and creative learning in the hope that students are able to achieve learning goals. Learning activities in its application can not be separated from the use of learning media and

teaching materials. Learning activities in its application can not be separated from the use of learning media and teaching materials. Learning media as one of the supporting facilities in effective learning and can increase student activity.

There are various learning media that can increase student activity in learning, which can be audio, visual and audio visual. Visual media can be in the form of print media such as images, posters, text and graphics. One of the printed learning media that contains images and important information in the form of flip chart learning media. Flip chart learning media is a learning media that can help students understand biological material easily.

Kustandi and Sutjipto (2013) suggest that learning media is a tool that can be used in the teaching and learning process and serves to clarify the meaning conveyed with the aim that learning is better and perfect. Media flip chart learning has several advantages, namely presenting a message in a concise and practical manner, can be used inside or outside the room, increasing student learning activities (Susilana & Riyana, 2007). Other than that, flip chart learning media presents messages in stages and focuses on the material being taught.

Submission of material in biology learning needs to contain several real examples with the aim to facilitate students in learning and obtaining information easily. For example in viral material, this material requires sample images of the characteristics of viruses, the form of viruses, the structure of the virus body and the role of viruses for life so that material is easier for students to understand. The statement was supported by the results of preliminary observations from 123 students from 4 schools stating that as many as 51.2% of biology lessons were difficult lessons. As many as 77.3% of students had difficulty learning in virus material.

The use of flip chart learning media can be an alternative learning media used in supporting biology learning activities in the classroom. Based on the results of the observation, it was shown that flip chart

learning media had never been used as a medium of learning in schools. The results of interviews with biology teachers stated that the media stated that the learning media used for the biology learning process used LCDs and sample images. Biology teachers need innovative, creative learning media and with the development of flip chart learning media capable of providing new innovations in learning.

The development of flip chart learning media is supported by previous research conducted by Rimayati (2016), Ratnasari (2017), Rosita (2017). The results of the three studies indicate that flip chart learning media are suitable to be used as learning media. The purpose of the study was to determine the feasibility of flip chart learning media on virus material for high school students of class X.

1. RESEARCH METHODS

The development of flip chart learning media in virus material for high school students in class X uses quantitative and qualitative approaches. Quantitative data in the form of assessment scores from expert teams. Qualitative data in the form of input and suggestions from the expert team. The research design used was Research and Development (R & D) with a development model using Thiagarajan 4D, which consisted of define, design and development without disseminate.

The research procedure begins with the stages of defining, designing and developing. The defining stage is done to find out the needs in the field and the products developed by conducting front end analysis, student analysis, task analysis and concept analysis. At the design stage that is done is compiling test instruments, compiling media, composing the format, the initial design of the product. The development stage is a process carried out to realize the design that has been formulated into a product that is feasible to be used through validation by a team of experts.

The product developed has a specification that is designed like a desk calendar or desk calendar in the form of print media in A4 paper with

310 types of paper art paper. Writing in the product uses letters namely Times New Roman 12, Comic Sans MS 15, 16, 18, 13, Arial Black 14, 37, Segoe Script 14, 35. Media flip chart learning contains a summary of the material, images of various forms of the virus, the composition of the body of the virus, replication of the virus, and examples of images of viruses that are harmful in life and their explanations. The flip chart learning media is equipped with a crossword puzzle at the end of the flip chart.

Products that have been declared feasible by the expert team can be used for product testing. Product testing is done by readability tests by students. Instruments and data analysis techniques are as follows.

1. Research Instruments.

The research instrument used a validation questionnaire by a team of experts and student readability questionnaires.

2. Data Analysis Techniques

The data obtained from this study are qualitative data and quantitative data. Qualitative data is data in the form of input and suggestions from expert teams which are then analyzed descriptively, while quantitative data is data in the form of scores from expert teams and readability of students. Quantitative data were analyzed using a Likert scale with the following score criteria.

Score 5 = Very Valid

Score 4 = valid

Score 3 = Quite valid

Score 2 = Less valid

Score 1 = Very Less valid

(Sugiyono, 2015).

Calculate the percentage of assessment given by the expert team and the readability test of students using the following formula.

$$NP = \frac{R}{SM} \times 100\%$$

Information :

NP= Percentage sought

R = Scoring answer score

SM = Maximum score

The criteria for the validity of flip chart learning media are shown in Table 1.

Table 1. Criteria for the level of validity (Sugiyono, 2011).

Percentage (in percent)	Information
81-100	Very Valid
61-80	Valid
41-60	Quite Valid
21-40	Less Valid
0-20	Very Less Valid

Products that have been tested are evaluated and refined so that the products developed are in accordance with the learning needs and are suitable to be used as learning media in schools.

3. RESULTS AND DISCUSSION

The define phase is used to conduct front end analysis, student analysis, task analysis and concept analysis. The analysis is the basis for developing products that meet your needs. The front end analysis is used to find out the curriculum used in the school. The curriculum used is the 2013 curriculum. The results of student analysis show that students have different learning characteristics. Analysis of tasks carried out in learning is adjusted to KI and KD. Concept analysis is to identify the main concepts that will be taught systematically, namely about virus material.

The design phase is to plan the product design that is developed in the form of flip chart learning media on virus material for class X high school students. Product design is by presenting virus material tailored to the learning objectives. The choice of background on the product is made in contrast to the writing color of the product and background made different on each sheet by product sheet.

The Development Phase is the product development stage which was developed through validation by a team of experts namely material experts, media experts and linguists. The results of the validation by the expert team are shown in Tables 2, 3 and 4. The results of the readability test by students are shown in Table 5.

Table 2. Results of Material Expert Validation

No	Description	Score			Percentage in (%)	Category
		Material Expert 1	Material Expert 2	Material Expert 3		
1.	Fill in the material	18	14	18	83%	Very Valid
2.	Presentation Aspect	18	17	25	80 %	Valid
Total Score		36	31	43		
Total Score Percentage (%)		80 %	68%	95%		
Score of Average Material Experts		81%				Very Valid

Table 3. Results of Media Expert Validation

No.	Description	Score			Percentage in (%)	Category
		Media Expert 1	Media Expert 2	Media Expert 3		
1.	Physical condition	8	10	9	90	Very Valid
2.	Letters used	8	10	7	83%	Very Valid
3.	Clarity of Selection and Layout of Images	19	21	21	81%	Very Valid
4.	Color Selection	7	10	8	83%	Very Valid

5.	Compilation of the Content Section	16	19	17	86%	Very Valid
Total Score		58	70	62		
Total Score Percentage (%)		77%	93%	82%		
Average Score of Media Experts					84%	Very Valid

Table 4. Results of Language Expert Validation

No.	Description	Score			Percentage in (%)	Category
		Language Expert 1	Language Expert 2	Language Expert 1		
1.	Aspek Bahasa	18	23	16	76%	Valid
Total Score		18	23	16	76%	Valid
Total Score Percentage (%)		72	92	64		
Average Score Linguists Experts					76%	Valid

Table 5. Readability Test Results

No.	Description	Total Score	Percentage	Category
Student 1	Coverage of Material	20	100%	Very Valid
	Graphic design	21	84%	Very Valid
	Linguistics	13	86%	Very Valid
Student 2	Coverage of Material	19	95%	Very Valid
	Graphic design	22	88%	Very Valid
	Linguistics	13	86%	Very Valid
Student 3	Coverage of Material	20	100%	Very Valid
	Graphic design	23	92%	Very Valid
	Linguistics	13	86%	Very Valid
Student 4	Coverage of Material	25	100%	Very Valid
	Graphic design	20	100%	Very Valid

	Linguistics		15	100%	Very Valid
Student	Coverage	of	20	100%	Very Valid
5	Material				
	Graphic design		25	100%	Very Valid
	Linguistics		15	100%	Very Valid
Total Score			284		
Percentage of Total Score in percent (%)			94%		Very Valid

Based on the results of expert validation and student readability, the development of flip chart learning media on virus material can be used as learning media. Assessment by a team of material experts, media and languages was 81%, 84% and 76% respectively. The average rating by the expert team is 80% with a valid category. Readability tests of students get an assessment of 94% with a very valid category. So that overall flip chart learning media on virus material is valid of being used as a learning medium. The same results are shown in research and development by Rosita (2017) entitled "Development of Flip Chart Biology Learning Media in Mushroom Materials" resulting in biology learning media that are valid to use. This is evidenced by the results of the assessment of material experts obtaining a percentage score of 89.1%, 77.5% of media experts and teacher perception results with a percentage of 91.4% with very good categories.

The products developed cannot be separated from the revisions that have been made according to the input and suggestions given by the expert team and examiners as a form of product evaluation so that the products developed are suitable for use. Product evaluation is done to improve the product developed, based on input from the examiner, which is added to 4.4 KD "campaigning about the dangers of viruses in life, especially the dangers of AIDS based on virulence levels". Inputs and suggestions from the examiners are followed up as product enhancements so that the products developed are suitable to be used as learning media.

4. CONCLUSIONS AND SUGGESTIONS

A. CONCLUSION

The results of the research data analysis showed that flip chart learning media in virus material for high school students in class X according to material experts was 81%, 84% media experts, 76% linguists, 94% readability. The average percentage of expert team assessment is 80% with a valid category so that it can be used as a learning media.

B. SUGGESTIONS

Suggestions that can be given is that it is better at the development stage to re-validate the test in order to get better results and are advised to develop until the disseminate stage.

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