

(Development of Biology Based Learning Media *Flip Chart* on Rhizophora Material for Class X High School Students)

Muhammad Ikhsan

Prodi Pendidikan Olahraga dan Kesehatan, FIKKM, Universitas Pendidikan Mandalika, Mataram

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Abstract

The low percentage of students' test scores on rhizophora material shows that rhizophora material is included in material that is difficult for students to understand. Apart from that, the lack of learning resources and supporting facilities in delivering learning material is also a factor in the low grades obtained by students. One effective way that teachers can use to overcome this problem is by using learning media, one of which is Flip Chart media. This media was designed using the Adobe Photoshop application with the final result in the form of printed media. The aim of this research is to develop biology learning media in the form of a Flip Chart, and determine the feasibility and determine the perceptions of teachers and students towards the Flip Chart media. This research is development research (R&D) which uses the ADDIE development model (analysis, design, development, implementation and evaluation). The final product produced is learning media in the form of a mushroom flip chart. Small group trials were carried out at SMA Negeri 8 Mataram City with test subjects of 9 class X students. The instruments used were open questionnaires and closed questionnaires. The types of data in this research are quantitative data and qualitative data. The validation results by media experts obtained a final score of 62 or 77.5% in the "very good" category, and the validation results by material experts obtained a final score of 57 or 89.1% in the "Very Good" category. The results of the small group trial obtained a score of 547 or 95% in the "Very Good" category. Meanwhile, the teacher's perception results obtained a score of 117 or 94.1% in the "Very Good" category. Based on the research results, it can be concluded that biology learning media in the form of Flip Charts using mushroom material is suitable for use in classroom learning activities or as an independent learning resource for students. The deficiencies in this media can be corrected in further relevant development research.

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Corresponding Author:

Muhammad Ikhsan

Universitas Pendidikan Mandalika, Mataram

1. INTRODUCTION

Biology education involves dynamic learning because the theoretical research developed by biology is related to social phenomena. Therefore, to facilitate students' understanding of biology lessons, they must continue to study according to Dimiyati and Mudjiono (2009:18). The cognitive, emotional, and psychomotor domains are all involved in complex internal learning processes. where certain learning resources become the focus of the learning process that actualizes various cognitive domains.

Of course, there are times when learning activities are not carried out perfectly. The smooth operation of a learning activity depends on several different variables. Some of the elements referred to are the use of models, approaches, techniques and learning media by teachers, as well as learning

materials and supporting facilities. Therefore, so that learning activities can run smoothly, a teacher in the education sector needs to be aware of what needs to be changed. Creating learning media that can be used as a tool or additional teaching material as well as providing learning content is one way that teachers can do this.

Media is one of the tools. Meanwhile, learning media is one of the tools used in the teaching and learning process to develop creative and innovative learning so that it is not boring (Angraini et al., 2023). The aim of incorporating learning media into the teaching and learning process is to make information easier for students to understand. Flip Chart media is a type of learning resource that can be used in educational activities. An alternative type of learning resource that can be used to improve science learning activities in the classroom is Flip Chart media. (Rifai et al., n.d.2023) Explaining that Flipchart Media is a collection of summaries of information on sheets of paper that are attached to them and opened sequentially by turning the pages according to the subject matter of the learning material. Based on the results of the divine analysis carried out at SMA Negeri 8 Mataram City, it shows that there is still a lack of availability of projectors owned by the school, so that in the teaching and learning process teachers tend to use textbooks to convey lesson material. Apart from that, the appeal of students using textbooks is still lacking in the biology learning process, whereas textbooks are the main learning resource at the school. Based on the results of interviews conducted with biology teachers at the school, it is known that there are still student test scores that are below the Minimum Completeness Criteria (KKM), one of which is the test score on kingdom plantae material. The low-test scores of students can be used as a reason that kingdom plantae material is a difficult material category for students. The difficulties faced by female students include the difficulty of identifying, finding and memorizing the scientific names of these plants and apart from that, the Flip Chart media has never been used as a learning medium at the school. To help students understand biology lesson material, especially kingdom plantae material, researchers developed flip chart media in the hope of solving the problems faced by these students.

Based on the background description above, researchers feel it is necessary to develop learning media in the form of Flip Charts in research entitled: "Development of Flip Chart-Based Biology Learning Media on Rhizophora Material for Class X High School Students".

2. RESEARCH METHOD

This research is development research or what is usually called Research and Development. According to (Purnama 2013), development research or Research and Development (R&D) is a research method used to produce certain products, and test the effectiveness of the product, at the end of the research implementation a product is produced. The product in question is biology learning media in the form of Flip Chart print media using Kingdom Plantae material. The development model used is the ADDIE model, with the following procedure (Lee & Owens, 2004:3). 1). The analysis stages carried out are needs analysis, student characteristics analysis and lesson material analysis. 2). In the design stage, what is done is to prepare a Media Creation Plan and determine the presentation method to be used. 3). The development stage is a process carried out to realize the design that has been designed into a product. The product developed in this research is learning media in the form of a Flip Chart for mushroom material. The development stage requires a work team consisting of researchers, thesis supervisors, media validators and material validators. At this stage, what is done is validation of the product being developed. Validation of the Flip Chart media design is carried out by media expert validators, while validation of learning materials is carried out by material expert validators. The validation results are then revised according to suggestions and comments from each validator team, resulting in a final product that is suitable for use and can be tested. 4). In the implementation stage, the most important thing to do is testing products that have been developed previously. The product was then introduced to the test subjects and given an assessment

questionnaire on the Flip Chart media. 5). After testing, an evaluation was carried out on the subsequent application of Flip Chart media. The evaluation process is carried out to show that the product being developed is successful and in accordance with what was targeted at the analysis stage. The results of this evaluation certainly play a role in improving the product being developed, resulting in a final product that is suitable for use.

3. RESEARCH RESULTS AND DISCUSSION (12 Pt)

The results of this development research are in the form of Shaped Biology Learning Media *Flip Chart* on Kingdom plantae material for Class X High School Students which aims to obtain media good learning. The media developed is expected to become a reference for teachers in delivering biology learning material, especially Kingdom plantae material. The media preparation procedure is in accordance with the stages of the ADDIE development model. The results obtained from this development research include assessments of media validators, mushroom material validators, trials (students) in small groups and teacher perceptions. The data from the results of this research are as follows:

Table 1. Quantitative Data from Media Expert Tests

Media	Validation	Score	%
	1	46	57,5
	2	62	77,5

Table 2. Quantitative Data from Material Expert Tests

Validation	Score	%
1	37	57,8
2	42	65,6
3	57	89,1

Table 3. Quantitative Data on Biology Teacher Perceptions

Product	Assessment	Rate-rate	Category
Media Flip Chart	117	91,4	Very good

Table 4. Quantitative Data from Small Group Trials

Product	Assessment	Rate-rate	Category
Media Flip Chart	547	95	Very good

Based on research results, the development of biology learning media in the form of a flip chart on Kingdom plantae material for Class X high school students has gone through the ADDIE development model stage procedure. The first procedure for the ADDIE development model is the Analysis Stage (Analysis), which is the initial step in the development procedure to obtain a needs analysis, analysis of student characteristics and analysis of learning materials. The three analyzes above were obtained by researchers conducting direct observations at SMA Negeri 8 Mataram. From these results it is known that learning resources such as learning media have not been widely used, where teachers only use textbooks more often to convey lesson material in class. Apart from that, learning support facilities such as in focus are still very minimal in number so teachers only use

textbooks to teach. The second stage is Design, at this stage the researcher determines the schedule for creating learning media, prepares the tools and materials used for collecting learning materials and validates the media design and validates the material (media content) to product revision and at this stage a development team is formed to create media. The third stage is development. After the initial media product is created, a series of validations are carried out by a team of validators. The assessment of the learning media design was carried out 2 times by a team of media experts, and the assessment of the learning material was carried out 3 times by a team of material experts. The fourth stage is Implementation. At this stage, the learning media product that has been developed and has been validated by the validator team with the category suitable for use is then tested. Media product trials were carried out to see students' and teachers' perceptions of the products being developed. Small group trials were carried out on 9 class X high school students at SMA Negeri 8 Mataram City. The fifth stage is Evaluation. The evaluation stage is a stage to see whether the biology learning media in the form of mushroom Flip Charts that has been developed is feasible and in line with expectations at the analysis stage, and can be used as learning media in the classroom. Based on a series of validation, revision and testing processes that have been carried out, the Flip Chart media is declared suitable for use as a biology learning media and can be used in classroom learning activities.

The results were obtained from media validation twice with a final score of 62 or 77.5% in the "Very Good" category. With a statement that the media is suitable for use and can be tested. The Material Expert Test on the media was carried out 3 times with a final score of 57 or 89.1% in the "Very Good" category. From the validation results, the Media Flipchart was declared "Suitable for use" and can be tested. The results of the teacher's perception obtained a score of 117 or 94.1% which was classified into the "Very Good" category with the comment "Very innovative and can be used in classroom learning". In this way, the mushroom Flip Chart media is declared acceptable by teachers and can help learning in the classroom. The results of the small group trial obtained a score of 547 or 95% in the "Very Good" category. In this way, the mushroom Flip Chart media can be accepted by students and can be used in classroom learning, can be used as a guide for independent learning and can motivate students to study harder.

4. CONCLUSION

Based on data analysis and discussion, it was concluded that this development resulted in biology learning media in the form of a Flip Chart on mushroom material for Class X high school students with steps for developing an ADDIE model that is suitable for use. The average suitability score from media experts was 77.5% in the "Very Good" category. The average validation score from material experts was 89.1% in the "Very Good" category. The teacher's perception score was 94.1% in the "Very Good" category. The results of the small group trial obtained a score of 95% in the "Very Good" category. In this way, the learning media developed is declared suitable for use

Based on data analysis and discussion, it was concluded that this development produced a Problem Based Learning-based SMP/MTs mathematics learning module for SMP/MTs. SMP/MTs mathematics learning module with a Problem Based Learning approach that is suitable for use. with an average feasibility score from experts of 82.73% in the very feasible category. The average validation score is 92.85% with a very feasible

category. Meanwhile, the average score of the limited group trial results was 80.89% in the very feasible category. Thus, the learning module developed is declared suitable for use.

5. SUGGESTION

Based on the results of the flip chart media research that was developed, there are several suggestions that can be made. First, it can be used as input and reference for subsequent relevant research and development. Second, the flip chart media was further developed using different materials. The three flip chart media that researchers are currently developing are only on mushroom material and the testing stage is still in small groups, so that further researchers can still carry out large group tests with different media or material designs.

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