

THE DEVELOPMENT OF FLASHCARD LEARNING MEDIA BASED ON THE DIVERSITY OF FRESHWATER FISH IN SAKTI BUANA RIVER

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ABSTRACT

The results of the pre-survey at MA Ma'arif 03 Seputih Banyak shows that there was a problem found, which was the lack of use of learning media when teaching biology material, including biodiversity material. In the learning process, the learning resources used only focus on student worksheets and students have not directly interacted with their surroundings. This causes some students to find it difficult to understand the material presented. Therefore, it is necessary to develop biodiversity-based learning media. This study aims to develop a flashcard based on the diversity of freshwater fish in the Sakti Buana River as a learning medium for students in Senior High School/Islamic Senior High School (MA). This research is included in the type of Research and Development (R&D) research using the ADDIE development model which consists of five stages, namely Analysis, Design, Development, Implementation, and Evaluation. From the results of product validation and testing, the percentage number of each respondent includes by media experts is 91.67%, by material experts is 90%, by teacher responses is 90%, by student responses is 91.25%, and all the results belong to the category "very feasible." Based on the validation by both validators and the product test results, it is shown that the flashcard based on the freshwater fish diversity in the Sakti Buana River as a learning medium for Islamic Senior High School (MA) students is very feasible to use.

Keywords: Learning Media, Flashcard, Freshwater, Fish Diversity

INTRODUCTION

Biodiversity is one of the such as plants, animals, and subject materials in Biology for class X microorganisms that live on land and in Senior High School (SMA)/Islamic water, starting from the level of genes, Senior High School (MA), which species, to ecosystems [1]. The sub-studies the diversity of living things material of biodiversity is contained in

Basic Competencies (KD) 3.2 and 4.2 in odd semester.

According to the direct interview with biology teachers and online questionnaires given to class X Mathematics and Natural Science (MIA) students at MA Ma'arif 3 Seputih Banyak, the information was obtained that during the teaching and learning process so far, the method that is used mostly by the teacher is *Teacher Center Learning* model and the learning process is only limited to LKS (student worksheet) that causes some of the students find it difficult to understand the material on Biodiversity. This is due to some other factors, such as (1) the use of learning media is relatively low including learning on biodiversity material, (2) the development of learning media in learning biodiversity at MA Ma'arif 03 Seputih Banyak has not been improved, (3) when learning material on biodiversity, students have not been directly connected to their surroundings.

Based on these problems, therefore, it is necessary to develop learning media that are directly connected to their natural surroundings.

This is in accordance with the results of the questionnaire which showed that nine out of ten students stated that the existence of learning media on biodiversity material is needed. Students hope that by the developed learning media, the concepts are presented clearly and images are added to make it easier to understand the material.

Meanwhile, in terms of regional potential, Seputih Banyak District has a lot of biodiversity, especially the diversity of freshwater fish species. One of these fish diversity is found in the Sakti Buana River which has abundant fish resources. However, based on the interviews with fishermen and observations of researchers, the results showed that despite of the abundance of freshwater fish species in the river, there has been no studies done by any researcher, let alone used as a learning resource. According to Natalia et al, the use of local potential in, this case the surrounding environment can train students' critical thinking and improve students' ability to classify the types of potential that exist according to their group [2]. The basic competencies in biodiversity

material can be realized through this research by using research results as observational data which is processed into learning media.

Flashcards is the developed learning media, which are presented contextually, containing regional potential in the form of freshwater fish diversity in the Sakti Buana River. Flashcards are small cards that consist of pictures, writings, or signs in the form of symbols, contain messages that direct students' memories to the instructions [3]. Flashcards were chosen for their advantages in attracting students' interest in learning and have simple forms, clear concepts, and the use of flashcards is able to train students' memory [4] (Rahel et al, 2018). In addition, the characteristics of flashcards is containing images, meaning that flashcards are part of

visual imagery that allows the brain to work effectively in recalling memories. Because pictures are usually easier to remember by the students rather than writing [5].

This research was conducted to develop a flashcard based on the freshwater fish diversity fish in the Sakti Buana River as a learning medium for high school/Islamic High School (MA) students. Therefore, from the results of this study, we can determine the feasibility of the product developed based on the assessment of the validator, they are material and media experts, as well as user responses gotten from teachers and small groups of students. The developed flashcard media can be used as an alternative learning media for teachers and students.

RESEARCH METHOD

This research is included in the type of Research and Development (R&D) research, which means the research method used to create a product as well as assess the feasibility of the output/product created [6]. This research was conducted from June to

November 2021. The product produced in this study was a flashcard based on the freshwater fish diversity in the Sakti Buana River as a learning medium for high school/Islamic High School (MA) students. The research subjects consisted of two validators,

they are media and material experts, one biology teacher, and a small group of ten students.

The research and development procedures carried out refer to the ADDIE development model (Analysis, Design, Development, Implementation, and Evaluation) which was pioneered by Dick and Carry [7]. Data were collected through interviews and giving a questionnaire. There were two types of data obtained in this study, which are qualitative data and quantitative data [8]. Qualitative data were obtained in the form of input and suggestions from validators, biology teachers and students. Meanwhile, quantitative data were obtained from the results of validation and product assessment questionnaires. Then the data is calculated and processed using a Likert scale. According to Dryon, the Likert scale is a psychometric scale that is often used to measure the results of a questionnaire or questionnaire in a survey [9].

The assessment data obtained from the validation results and user responses to the feasibility of flashcard media based on the freshwater fish

diversity in the Sakti Buana River were then analyzed using a descriptive percentage test. The formula used is as follows [10].

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

*NP = Number of Percentage

*R = Raw Score

*SM = Maximum score

Meanwhile, the interval distance (i) is determined using the following formula [11].

$$i = \frac{\text{Highest Score} - \text{Lowest Score}}{\text{Class Interval Sum}}$$

So, the interval distance is:

$$= \frac{100\% - 0\%}{4} \\ = 25 \%$$

The level of the media rating category can be converted in the following table 3.1.

Table 3.1. Media Assessment Criteria

| No | Percentage | Criteria |
|----|------------|----------------|
| 1 | 76% – 100% | Very Feasible |
| 2 | 51% – 75% | Feasible |
| 3 | 26% – 50% | Quite Feasible |
| 4 | 0% – 25% | Less Feasible |

RESULTS AND DISCUSSION

Results

1) Flashcard Design Display

The product produced in this study is a flashcard based on the freshwater fish diversity in the Sakti Buana River as a learning medium for

Senior High School/Islamic High School (MA) students. The following pictures shows the design of the card and flashcard box that was developed.



Flashcard Display Front and Back View Flashcard Box Display Front and Back View

Figure 1. Display of Flashcard Card and Box Design

2) Media Eligibility Results

Validation is an assessment stage to determine the feasibility and shortcomings of the product that is being developed. There are two aspects

that are validated, which is in terms of media and material content. The following picture is the results explanations of the validation of media experts and material experts.

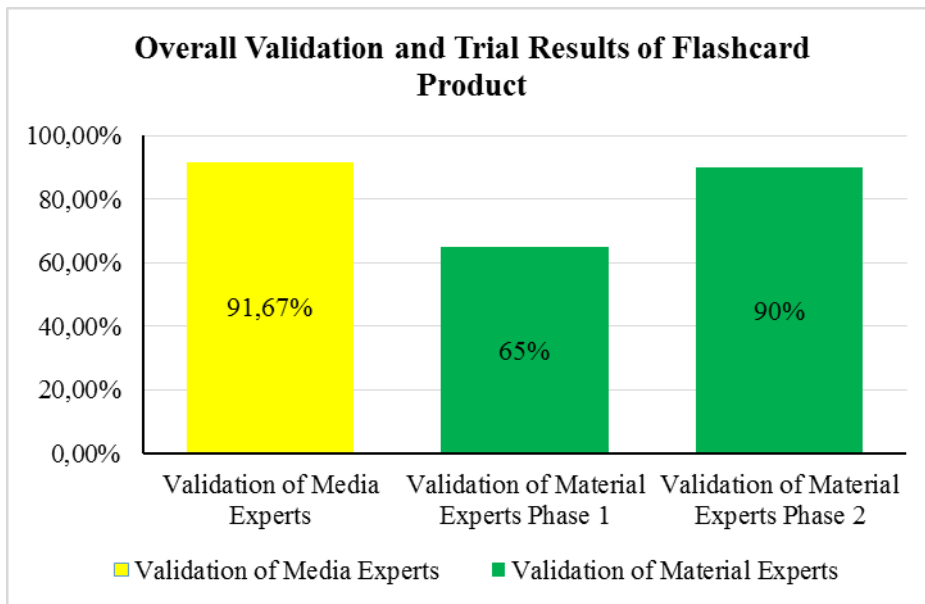


Figure 2. Graph of Validation Results of Media Experts and Material Experts

3) Results of Teacher and Student Responses to Developed Media

The product trial phase was carried out after the developed flashcard media was declared feasible by media experts and material experts. Furthermore, the product was tested to one biology

teacher and a small group of ten students of class X in Mathematics and Natural Science (MIA) at MA Ma'arif 03 Seputih Banyak. The following figure 3 explains the results of teacher and student responses to the developed media.

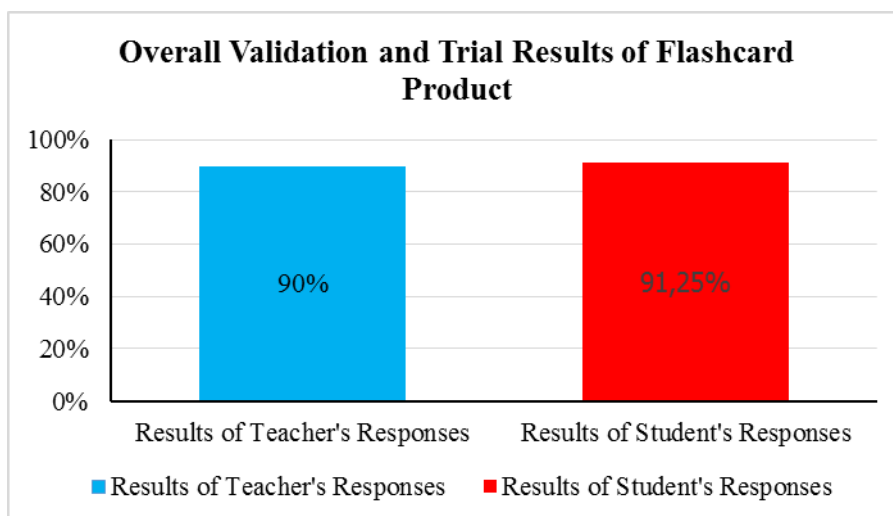


Figure 3. Results of Teacher and Student Responses to Developed Media

b. Discussion

The product produced in this research and development is a flashcard based on the freshwater fish diversity in the Sakti Buana River as a learning medium for high school/Islamic High School (MA) students. This product is developed through stages that refer to the ADDIE approach, namely Analysis, Design, Development, Implementation, and Evaluation. The results obtained at the analysis stage show that there are some of the students who find it difficult to understand the material on biodiversity. The factor is because the learning model applied tends to be teacher-centered and the use of learning media is still very less. In fact, according to Sukiman, the use of learning media can increase students' desire and motivation to learn when teaching and learning activities take place, and even provide a positive role in student psychology [12].

In addition, another factor is that so far students have not been directly connected to their surroundings because learning resources are only limited to student worksheets. Savitri and Sudarmin stated that learning that

interacts directly with the surrounding nature can add insight because in the learning process students apply the concepts that have been taught in class with natural phenomena around such as local potential [13]. Thus, a learning media in the form of flashcards based on the diversity of freshwater fish in the Sakti Buana River was developed for Senior High School/Islamic Senior High School (MA) students.

Next, the researcher made a product design using Adobe Photoshop CS6 software. The flashcard was developed by being printed using art paper with a larger size than usual, which is for its width 11 cm and height 16.5 cm. Arsyad stated that the size of flashcards is commonly 8 x 12 cm or are adjusted to the needs, such as the size of the group that is being taught. In table 2, it can be seen that the developed flashcard consists of two sides, which are the front as a guide and the back contains information. The front card contains the flashcard title, serial number, picture of fish species, national name (Indonesian), and scientific name. Whereas, on the back of the card which functions as the information side, it consists of

classification, number, morphological characteristics, and benefits. In the other hand, the flashcard box has the shape of a cube containing a picture of a fish, brief identification information of the compiler, and information on how to use it.

After finishing, the developed flashcard product was further validated by media and material experts. In this study, the media expert was Mr. Tri Andri Setiawan, M. Pd. While, the material expert to validate the developed flashcard media is Mr. Nasrul Hakim, M. Pd. These two validators are lecturers of the Biology Education Study Program at Metro State Islamic Institute (IAIN Metro).

Based on Figure 2, it can be seen that the validation stage for media experts was only carried out once and obtained a percentage value of 91.67% and was included in the "very feasible" category. While the material expert validation stage was carried out twice.

The first phase of material validation obtained a percentage value of 65% and was included in the "quite feasible" category. Although the results of the assessment are in the appropriate category, there are still many

suggestions and inputs on several aspects of the developed flashcard product. Furthermore, in the second stage, the percentage value is 90% and is included in the "very feasible" category. Thus, the flashcard media based on the freshwater fish diversity in the Sakti Buana River is declared to be suitable for use without revision. So that this research can be continued to the next stage, which is the product trial stage.

Furthermore, the product was tested to one biology teacher and a small group of ten students of class X Mathematics and Natural Science (MIA) at MA Ma'arif 03 Seputih Banyak. This stage is carried out in the aim knowing the responses of teachers and students as users. Based on Figure 3, it shows that the results of the biology teacher's response obtained a percentage value of 90% and included in the "very feasible" category. The teacher suggests for the future if there are new fish species found, then they can be added. Despite getting suggestions, the teacher stated that the product developed was very feasible to be tested on students. Meanwhile, the results of student responses to the

developed media obtained a percentage of 91.25% and included in the "very feasible" category. From the trial results, the flashcard media based on the freshwater fish diversity in the Sakti Buana River is interesting, the information presented can be read

clearly, and is easy to understand so there is no need to repeat the experiment. After that, the developed flashcard media can be used as learning media for teachers and students of class X Mathematics and Natural Science (MIA).

CONCLUSION

Flashcard based on the diversity of freshwater fish in the Sakti Buana River as a learning medium for SMA/MA students was developed using the ADDIE model which consists of five stages, namely analysis, design, development, implementation, and evaluation. The results of the validation by the validator and the product test show that the flashcard based on the diversity of freshwater fish in the Sakti Buana River as a learning medium for Senior High School/Islamic Senior High School (MA) students is very Feasible to use. This is obtained based on the percentage of product validation

and testing results. The percentage results obtained by each of the validators, media experts 91.67%, material experts 90%, teacher responses 90%, student responses 91.25%, and all the results are in the "very feasible" category.

The researcher suggest that it is important to conduct further research related to the effectiveness of the media developed in the teaching and learning process in the classroom. Researchers also suggest that they can develop flashcard media on other biological subject materials.

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