

## **Development of Audio-Visual Learning Media for Science Subjects of Digestive Organs and Their Functions**

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### **Abstract**

The aim of the research is to develop learning media the audio visual This research uses the R&D (Research and Development) method. The research consists of several stages, namely identifying potential and problems, data collection, product design, design validation, design revision, and initial trials. The validation stage was carried out by media experts, material experts and language experts. The results of this research are that the media developed is said to be suitable for testing after being validated by experts. The results of material expert validation are an average of 4 or 80% with the appropriate category. Media expert validation is an average of 3.1 or 62% with the appropriate category. Linguist validation is an overall average of 4 and a percentage of 86% with a very appropriate category. Media practicality trial on 30 students with an average of 4 or 86% in the very feasible category. Based on the research results obtained, it can be concluded that audio visual media is suitable and practical for use with elementary school students with material on human digestive organs and their functions. To test the effectiveness of the media, further trials need to be carried out.

Keywords: Development, Learning Media, Audio Visual Media, Science

## **1 INTRODUCTION**

In the learning process, there are many factors that influence the achievement of learning objectives including educators, students, the environment, methods/techniques, and learning media. Researchers observe that learning often does not run effectively, therefore there are still many problems in learning.

Natural science or IPA is one of the subjects taught in elementary schools. The teaching of science subjects as a forum for students to understand natural phenomena through observations obtained from observations during the learning process that can be applied and utilized in everyday life. It can be concluded that science subjects are the study of phenomena that occur in the universe through observation and reasoning so that they can be applied in everyday life. With the existence of learning media, it can support an effective and efficient learning process, especially in helping and facilitating teachers in achieving learning goals.

Based on the observations made by the researchers, most teachers have not been able to take advantage of the learning support facilities that are already available, namely in the form of projectors, besides that also in learning the material of digestive organs and their functions, when delivering material the teacher only uses printed media in the form of textbooks, students feel bored and lack enthusiasm in the learning process. When conducting interviews.

In learning Natural Sciences (IPA), this has utilized the media, namely the media used in ongoing learning still uses images located in the package book, because there are no learning media providers and teacher skills to develop learning media. Teacher skills in

teaching are the most dominant factor in efforts to transfer knowledge to students, because this can overcome the boredom of students in the learning process.

Science learning requires visualization power and also a large imagination of students, because basically the material in science lessons uses abstract concepts. Piaget's cognitive development theory in Susanto states that children aged 7-11 years or children who are at the elementary school level are included in the concrete operational stage. With this, there is a need for action such as the use of learning media in the form of audio-visual media so that in the delivery of material students no longer tend to fantasize in learning the material of digestive organs and their functions. The purpose of this research is to produce science learning media products on the material of digestive organs and their functions in class V SDN Kubang 01. Therefore, it is necessary to develop learning media in the form of audio visual.

## 2 RESEARCH METHODS

This research method is research and development, Research and Development (R&D), where this research and development is research used to produce certain products, and test the practicality of the product.

There are several research steps regarding development that have been put forward by several experts. Namely, one of the experts who put forward the steps of this development research is Borg & Gall (Sugiyono). Therefore, this development research will refer to the steps of development research according to Borg & Gall in Sugiyono's book which will be adjusted to the needs of researchers. This research method is research and development, Research and Development (R&D), where this research and development is research used to produce certain products, and test the practicality of the product.

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There are ten research steps. However, these steps are not standard things that must be followed, the steps taken can be adjusted to the needs of researchers, with necessary changes in this research and development. Therefore, in this research, researchers will adapt the development procedure steps to the limitations of the current conditions and conditions of researchers which do not allow for direct trials and also due to time constraints in completing this research. Therefore, the procedures carried out in this development research include six research stages according to Sugiyono's book which have been modified according to the current conditions and circumstances of the research. Among them are: 1) potential and problems, 2) data collection, 3) product design, 4) design validation, 5) design revision, 6) trial use of limited products.

This development research includes several stages, including the first stage, conducting research for product design and validation by experts, and the second stage, namely conducting research by carrying out limited product trials. The sample population for the data source in this study was fifth grade students at SDN Kubang 01 for the 2023/2024 academic year, which consisted of 30 students.

Quantitative data in this development research was obtained from the validation results of experts and class V teachers at SDN Kubang 01. The assessment scale used was using a Likert scale, namely (5) Very Good, (4) Good, (3) Fairly Good, (2) ) Not Good, (1) Very Poor. In this quantitative data analysis technique, quantitative descriptive analysis techniques are used by means of averaging. Namely calculating the average total score of each component using the formula:

The quantitative data is converted into qualitative data with reference to the score conversion formula to a score on a scale of five proposed by Sukardjo in a journal written (Wahyu Adi, 2015) as follows:

Tabel 1. Konversi data kuantitatif ke data kualitatif

| Nilai | Skor                                         | Kriteria      |
|-------|----------------------------------------------|---------------|
| A     | $X > X_i + 1,8 S_{Bi}$                       | Very good     |
| B     | $X_i + 0,6 S_{Bi} < X \leq X_i + 1,8 S_{Bi}$ | Good          |
| C     | $X_i - 0,6 S_{Bi} < X \leq X_i + 0,6 S_{Bi}$ | Pretty good   |
| D     | $X_i - 1,8 S_{Bi} < X \leq X_i - 0,6 S_{Bi}$ | Not good      |
| E     | $X \leq X_i - 1,8 S_{Bi}$                    | Very not good |

Information:

Average ideal score ( $X_i$ ):  $\frac{1}{2}$  (ideal maximum score + ideal minimum score).

Standard Deviation of ideal score ( $S_{Bi}$ ):  $\frac{1}{6}$ (ideal maximum score-ideal minimum score).  $X$  ideal: empirical score

Then it can be converted from quantitative data to qualitative data using a Likert scale and can be simplified as in the table below:

Tabel 2. Converting quantitative data to qualitative data with a Like scale

| kor | Interval Skor     | Kriteria        |
|-----|-------------------|-----------------|
| 5   | $X > 4.21$        | Very Worth it   |
| 4   | $3.40 < X < 4.21$ | Worth it        |
| 3   | $2.60 < X < 3.40$ | Decent Enough   |
| 2   | $1.79 < X < 2.60$ | Less Eligible   |
| 1   | $X < 1.79$        | Very Inadequate |

Then the eligibility category is based on the following percentage formula criteria:

Table 3. Eligibility Criteria Category with percentage formula

| Shore | Score in Percent (%) | Category         |
|-------|----------------------|------------------|
| 1     | $< 21 \%$            | Very less Decent |
| 2     | $21 - 40 \%$         | Less Decent      |
| 3     | $41 - 60 \%$         | Fairly Decent    |
| 4     | $61 - 80 \%$         | Decent           |
| 5     | $81 - 100 \%$        | Very Worth It    |

### 3 RESULT AND DISCUSSION

The results of this study are explained from the media development process which was carried out in accordance with research procedures according to Sugiyono, namely Research and Development (R&D).

The initial step of this development is to conduct a needs analysis by exploring the potential and problems that occur in the school that the researcher is conducting research at SDN Kubang 01 by means of observation and interviews so as to produce a product based on a needs analysis of the problems found by the researcher.

In this research, the audio visual media that will be created needs to have stages and a plan. The plan carried out is as follows:

1. Determine the application that will be used to create media.
2. Search for and organize the material to be presented.
3. Create media designs.
4. Creating character designs and others, character designs made using teacher figures which are none other than photos of the researcher himself.
5. Determine a team of experts to validate the media that has been created.

### 3.1 EXPERT VALIDATION TESTING RESULTS

The test results in this research were media validation, material validation and language validation by experts. First, validation from material experts is obtained from an assessment of the product design that has been adjusted to the aspects specified in the questionnaire. Based on the results of the material validation questionnaire assessment that has been carried out, the following is the overall data analysis, namely :

Tabel 4. Hasil validasi ahli materi

| Assessment Aspects       | Total score | Average Score |
|--------------------------|-------------|---------------|
| Material                 | 13          | 4,3           |
| Language                 | 7           | 3,5           |
| Presentation of material | 12          | 4             |
| Material                 | 8           | 4             |
| Total                    | 40          |               |
| Average                  | 4           |               |
| Percentage               | 80%         |               |
| Criteria                 | Worthy      |               |

Based on the overall data from the results of the material expert validation, it can be concluded that the results of the material expert validation are 4 and with a percentage of the total, namely 80%. After being converted into the category of eligibility criteria, very feasible criteria are obtained. As well as based on the information from the material expert validator provided that the material presented is feasible to be tested with revisions in accordance with the directions. Based on the results of the media validation questionnaire assessment that has been carried out, the following is an analysis of the data from the whole, namely:

Tabel 5. Media expert validation results

| Assessment Aspects | Amount Score | Average Score |
|--------------------|--------------|---------------|
| Appearance         | 16           | 3,5           |
| use                | 8            | 4             |
| Benefit            | 7            | 3,5           |
| Total              | 36           |               |
| Average score      | 36           |               |
| Percentage         | 82,50%       |               |
| Criteria           | Worthy       |               |

Based on the overall data from the media expert validation results, it can be concluded that the media validation results are with an average score of 36 and the percentage of the total score is 82.50%. after being converted in the category of eligibility criteria obtained with feasible criteria. And based on the information provided by the media expert validator, the media presented is suitable for testing with revisions according to directions. Based on the results of the language validation questionnaire assessment that has been carried out, the following is an analysis of the data from the whole, namely:

Tabel 6. The results of the linguist validation

| Assessment Aspects                                                                                                                                                                             | Score |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| The terms used use standard language                                                                                                                                                           | 4     |
| The language in the audio visual media guide includes spelling, words, sentences and paragraphs ( precise, straightforward, communicative and clear so that students can easily understand it) | 4     |
| Punctuation is appropriate                                                                                                                                                                     | 4     |
| Total skor                                                                                                                                                                                     | 12    |
| Average score                                                                                                                                                                                  | 4,0   |
| Percentage criteria                                                                                                                                                                            | 80%   |

Based on the overall data from the media expert validation results, it can be concluded that the media validation results are with an average score of 12 and the percentage of the total score is 80%. after being converted in the category of eligibility criteria obtained with feasible criteria. And based on the information provided by the media expert validator, the media presented is suitable for testing with revisions according to directions.

### 3.2 PRODUCT TRIAL RESULTS

The trial in this research was that the product was tested on class V students at SDN Kubang 01. This test was carried out by giving treatment to the students using a validated audio visual product. After that, students were asked to provide an assessment of the use of audio-visual media. This product trial was carried out directly in the classroom. This testing was carried out with a sample of 30 students. Following are the results of the student questionnaire assessment based on the assessment aspect of limited product testing, so the analysis results of the entire student questionnaire assessment are obtained, namely:

Tabel 6. Product trial results

| Assessment Aspects       | Total score   | Average Skor |
|--------------------------|---------------|--------------|
| Appearance               | 785           | 4            |
| Presentation of material | 415           | 4            |
| Clarity                  | 762           | 4            |
| Benefit                  | 630           | 4            |
| Total                    | 2592          |              |
| Average overall score    | 4             |              |
| Percentage               | 86%           |              |
| Criteria                 | Very Worth it |              |

## 4 CONCLUSION

1. This audio visual learning media was developed using the research stages (R&) according to Sugiyono with six research stages, development research stages that have been modified or simplified. These six stages are potential and problems, data collection, product design, design validation, design revision, and limited trials.
2. Based on validation assessments obtained by media experts with three aspects, namely appearance, use and benefits. So the overall average score is 3.5 and the percentage score is 82.50%. Thus, audio visual media regarding digestive organs and their functions, based on validation from media experts, can be categorized under the appropriate criteria.
3. Based on the validation assessment obtained by material experts with four assessment aspects, namely material, language, material presentation and benefits. So the overall average score is 4 and the percentage score is 80%. Thus, audio visual media regarding digestive organs and their functions, based on material expert validation, can be categorized as appropriate.
4. Based on validation assessments obtained by language experts. So the average overall score is 4 and the percentage score is 82%. Thus, audio visual media regarding digestive organs and their functions, based on validation from media experts, can be categorized under the appropriate criteria.
5. Based on the results of product trials using assessments on 30 students with four assessment aspects, namely aspects of appearance, presentation of material, clarity and benefits. So the overall average is 4.3 and the percentage score is 86%. Thus, audio visual media regarding digestive organs and their functions, based on the results of product trials, can be categorized as Very Eligible.

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