Development Of Natural Science Learning Media Based on Interactive Multimedia Power Point in Blood Circulation System Material Humans at Primary 5th SDN 101928 Rantau Panjang Academic Year 2020/2021

Fahrur Rozi[1], Septian Prawijaya[2], Siti Arpah[3]
{rozipgsdunimed2015@gmail.com}

Faculty of Education, Universitas Negeri Medan-Indonesia123

Abstract. This research aims to 1) Develop interactive multimedia-based learning media power point, 2) know the feasibility of interactive multimedia-based learning media power point, and 3) know the effectiveness of interactive multimedia-based learning media power point in blood system materials in humans in Primary 5th SDN 101928 Rantau Panjang based on the results of field trials. Based on the results of research 1) interactive multimedia power points developed with 10 stages, namely potential problems, data collection, product design, design validation, design revision, product trials (small scale), product revisions, field trials (large scale), revisions, and mass products, 2) the results of expert validation of materials including excellent categories (3.7) the percentage of feasibility of 92.5% belongs to the category is very feasible, the average assessment of interactive multimedia-based learning media power points is declared "Very Good" (3.78) and "Very Decent" (94.6%).

Keywords: Research and Development, Interactive Learning Media, Power Point

1 Introduction

Education is any living situation that affects an individual's growth as a learning experience that takes place in all environments and throughout life. Education is a conscious effort, which is carried out in the form of learning where there are educators who serve their learners to conduct learning activities, and educators assess or measure the success rate of learning learners with prescribed procedures. Education itself is a teaching that is held generally in schools as a formal educational institution.

School as a formal educational institution is one of the educational institutions that are where the teaching and learning process takes place. Teaching and learning is an educational activity. However, during the Covid-19 pandemic educators cannot interact directly with learners. Interactions of educational value are not maximally accepted by learners because learning activities carried out by schools only use offline and online learning. The use of this technology encourages government efforts in learning during the Covid-19 pandemic.

Technology is growing very rapidly making the learning process no longer monopolized by the presence of learners in the classroom. Students can learn where and whenever. But due to the lack of school facilities and infrastructure, learners learn only using books received from

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the government. Educators who only sourced the teacher's book make learning less attractive to learners in receiving information provided by educators. Therefore, there needs to be the use of interactive multimedia-based learning media as a tool to clarify the information conveyed by educators. This is as stated by AECT (Association of education and communication technology) "media as a symptom of the form and channel used to convey messages or information".

Learning media is recognized as one of the success factors in learning. With interactive multimedia-based learning media learners can be motivated, engaged physically and psychologically actively, maximize all learners' senses in learning, make learning more meaningful, and learners get hands-on experience. In IPA learning using technology is very influential on learning outcomes, because IPA learning in high classes is abstract, therefore with the interactive multimedia-based learning media learners can see firsthand how the process of the process of the human body.

IPA lessons are expected to be a vehicle for learners to learn themselves and the environment, as well as the prospect of further development in applying them in everyday life so that they can adjust to phenomena and changes in the environment around him. In other words, IPA learning aims to develop the potential of learners through the provision of experience by exploring and understanding the environment scientifically. The development of learners' self-potential will run effectively if an educator is able to use the right teaching methods and media. In the time of the covid-19 pandemic learners cannot learn face-to-face, therefore technology-based media is needed to facilitate the online learning process. In the application of learning methods and media selected by educators in providing a subject matter is very decisive to the success of the learning process, especially what educators must pay attention to is in the selection and use of technology-based learning media.

The use of interactive multimedia-based learning media in elementary school learning is still very inadequate, because educators' knowledge of technology is also an obstacle in the online learning process. Based on observations made by researchers on Wednesday, September 23, 2020 at SD Negeri 101928 Rantau Panjang Kec.Labu Beach researchers see the interactive multimedia-based learning media Power Point is not adequate in SD Negeri Rantau Panjang. As per the results of the researcher's interview with the class V class guardian stated that during learning educators use passive learning media in the form of images in cardboard, and during the pandemic covid-19 learning is done online. Therefore, there needs to be an introduction in learning to use technology to educators and learners. And researchers saw low student learning outcomes in grade V of 101928 Rantau Panjang State Elementary School after carrying out observations to the school. This is evident from the results of the analysis of the daily value of IPA Theme 4 system material.

Human and animal blood circulation, the learning results of learners must meet the value of minimum completion criteria (KKM) that is by obtaining a value of 75.Students of class V of State Elementary School 101928 Rantau Panjang obtained a repeat value of IPA of circulatory system material in humans below an average of 55% (incomplete) from 22 learners who scored above 75 only 12 people and who scored less than 75 as many as 11 people. Low learning outcomes during the covid-19 pandemic, researchers saw from the absence of supporting media learning when delivering IPA material. Educators only provide tasks that are in the package book, so that the knowledge of learners is only obtained from the reading text contained in the student package book.

Limitations of learning support media result in the learning process of learners is not maximal. Media helps the delivery of messages, and the content of lessons and can increase the interest of learners in learning. The absence of learning media during the online learning process becomes an obstacle for educators in delivering subject matter. During the pandemic covid-19

the delivery of material is less than optimal because the learners do online learning. And before the pandemic covid 19 educators also have constraints that are time, in conveying the material of the circulatory system educators are constrained by time constraints, because when drawing the circulatory process a lot of time is used only to draw material on the board. So that educators have limited time in explaining the material.

2 Research Methods

This research uses research and development methods or often called Research and Development (R&D).Research and development is a research method for developing and testing products in the world of education. In addition to developing and testing research products, it is used to discover new knowledge about fundamental phenomena, as well as educational practices. Serves to find fundamental phenomena done through basic research (basic research). Then for research educational practices conducted applied research (applied research).

Sugiyono (2010, h.407) says that R&D research is a research method used to produce a particular product and test the effectiveness of the product. In order to produce a product then using research that is a needs analysis to test the effectiveness of the product in order to function for the wider community, research is needed to test the effectiveness of the product. In research and development this is longitudinal means that it is done gradually.

This research and development method research and development R&D in addition to being used in the natural sciences and engineering can also be used in other fields of science. This research is suitable for product development. In developing the R&D research method, researchers developed 10 steps of Borg and Gall development developed by Sugiyono.

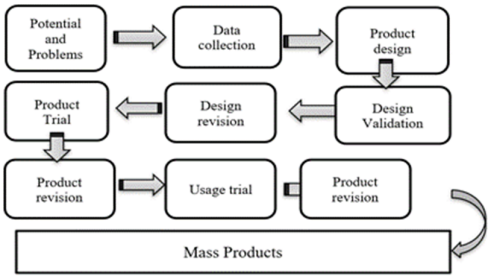

Fig 1. Steps of R&D Research (Research and Development)

According to Sugiyono (2010, p. 298) potential is "everything that when used will have added value". Potential and problems raised in a study must be demonstrated by empirical data. Data about potentials and problems do not have to be searched for yourself, but usually based on other research reports, or documentation of activity reports that are still up to date. The potential problems raised in the research must be demonstrated by empirical data. For example, the potential for wind energy on the coast must be able to put forward some data including the strength of the wind, where the wind direction is from, and wind speed. The wind data is then used to design windmills or other products to generate mechanical energy from the wind.

This study uses a development procedure that produces an interactive multimedia-based learning design. This interactive multimedia-based media was developed based on the research steps of Borg and Gall's development. The development procedure starts from the potential and problems to produce a final product design in the form of the development of interactive

multimedia-based learning media. Natural science subjects for the human circulatory system for fifth grade students at SD Negeri 101928 Rantau Panjang.

Thus, the researchers chose this research for the development of interactive multimedia-based media on the Human Circulatory System material for class V SD Negeri 101928 Rantau Panjang. The development of Borg and Gall in accordance with the steps that have been described, the researchers developed this research through 10 steps as follows:

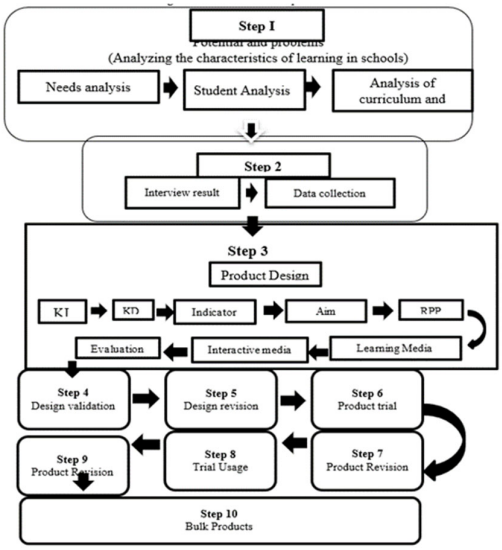

Fig 2. Research Development Procedure

Data collection techniques in this study used observation, interviews, questionnaires or questionnaires, pre-test, post-test and documentation.

a. Observation is a way of collecting data by observing directly the object of research. Researchers choose observation participant is a method of observation in which the researcher takes part of the activities carried out by the object under investigation.
b. Interview, used as a data collection technique when the researcher conducts a preliminary study to find the problem. Interviews were also conducted to find out the initial data in research and the information obtained is used as a input for developing learning media on the material of the circulatory system in humans in class V SD Negeri 101928 Rantau Panjang FY 2020/2021.
c. Questionnaire (Questionnaire) is a number of written questions that used to obtain information from respondents. Questionnaire used when evaluating and testing interactive multimedia-based learning media.
d. Pretest, learning outcomes test is used to measure learning outcomes before using interactive multimedia-based learning media Power Point. Pre-test is used to determine the initial ability of students.
e. Learning outcomes test (post-test), learning outcomes tests are used to measure student learning outcomes after studying the subject matter. The test used is a formative test, which is carried out to measure the level of student mastery of the material given.

f. Documentation, in the form of photos, images, and supporting data research conducted. Research results from observations and the interview will be stronger if it is supported by photos documentation.

The instrument was used to collect data during the process of developing interactive multimedia-based learning media on the material of the circulatory system in class V humans in the form of a questionnaire. Data collection in this study used an instrument that was divided based on the source of data acquisition consisting of a validation questionnaire from media experts, material experts, teachers and students during field trials. And researchers also collect data on student learning outcomes.

3 Results and Discussion

The research was conducted at SD Negeri 101928 Rantau Panjang which is located on Jl. Raya Rantau Panjang No. 3 District of Labu Beach, Deli Serdang Regency. The subjects in this study were fifth grade students of SD Negeri 101928 Rantau Panjang, one material expert, one expert on Power Point-based interactive multimedia learning media and one education practitioner, namely the fifth-grade teacher of SD Negeri 101928 Rantau Panjang. The first potential problem in this study is the ineffective use of technology by teachers in carrying out the teaching and learning process.

During the COVID-19 pandemic, technological advances really require teachers to be creative and innovative in the delivery of the teaching and learning process so that material is delivered according to learning objectives, especially in the field of technology. Observations made by researchers at SD Negeri 101928 Rantau Panjang were conducting interviews with homeroom teachers for class V, teachers at SD Negeri 101928 Rantau Panjang still using passive image media during the learning process. Other data obtained by the researcher shows the learning outcomes of students under the KKM.

In problems like this, teachers must be able to find solutions so that all potential students can develop well in the direct or indirect learning process. Based on the results of the study, the researchers concluded that it is necessary to develop learning media that can motivate students to learn to be effective and the material to be delivered as expected. Potential problems are the first step that must be done in this research. Seeing these problems, the researchers took the initiative to develop science learning media based on interactive multimedia Power Point on the material of the human circulatory system, with learning media that contained animated video explanations and evaluations related to the material and also aimed to reduce students' perceptions of the circulatory system material. which is considered so far difficult to be boring and understood.

Potential problems begin with the analysis phase in this study including needs analysis, student analysis, and curriculum and material analysis. The instrument for assessing learning media based on interactive multimedia Power Point is based on a questionnaire with a Likert scale. The questionnaire consists of 4 answer choices, namely 1, 2, 3, and 4, each of which states very not good, not good, good, very good which is used to assess the quality of the feasibility of the learning media developed by the researcher.

This questionnaire has been validated by Mrs. Masta Marselina Sembiring, S.Pd., M.Pd. as a lecturer at the Faculty of Education. There are three eligibilities in this questionnaire, namely: clarity, content accuracy, language accuracy. In this study, the researcher added and modified the questionnaire according to the needs of the researcher, namely by adding the feasibility

aspect according to the learning media developed. In addition, there are also learning outcomes to see the effectiveness of learning media and researchers also look at student response questionnaires to learning media developed by researchers which are also compiled based on a Likert scale to find out how students respond after learning using interactive multimedia-based learning media Power Point developed by researchers.

Table 1. Recapitulation of Material Expert Validation Results

Component	No	Indicator	Evaluation	Category
Aspects of Material Content	1.	The interactive Power Point multimedia developed is in accordance with the core competencies and basic competencies in the thematic learning of the 2013 curriculum.	3	Well
	2.	The interactive Power Point multimedia developed is in accordance with the learning indicators with basic competencies	3	Well
	3.	The interactive Power Point multimedia developed is in accordance with the learning materials with the indicators achieved	4	Very good
	Subtotal A		**10**	
Aspects of Material Presentation	4.	The material information presented in the Power Point-based science learning media is easily understood by fifth grade elementary school students.	4	Very good
	5.	The material presented in the science learning media based on interactive multimedia Power Point is arranged according to the experiences that exist in the students' environment	4	Very good
	6.	The explanation of the material is presented in the form of animated images and videos that make it easier for students to understand the material	4	Very good
	7.	The material in interactive multimedia Power Point is arranged systematically in order to stimulate students' ability to think scientifically.	3	Well
	Subtotal B		15	
	8.	Writing vocabulary on the material developed is in accordance with the level of students' thinking abilities	4	Very good
	9.	The suitability of sentences in multimedia is easy to understand and does not have multiple meanings	4	Very good
	10.	The writing of the material used is in accordance with the use of EYD (Enhanced Spelling), punctuation marks, and capital letters.	4	Very good
	Subtotal C		12	
	Total score obtained	= Subtotal A + Subtotal B + Subtotal C = 10 + 15 + 12 = 37		
	Total number of items	= 10		
	Average	$= \frac{jumlah\ skor\ keseluruhan}{jumlah\ item}$		

		= = 3.7 (Classification: Very Good)$\frac{37}{10}$

Based on table 4.5, it can be concluded that the results of the thematic material expert validation obtained an average of 3.7 and are included in the "Very Good" category. Based on table 4.5, it can be seen that the assessment of the results of material expert validation is in the following diagram:

Fig 3. Material Expert Validation Assessment Chart

4 Conclusion

Based on the results of research and discussion in Chapter IV, this research and development can be concluded that:

a. Power Point interactive multimedia-based learning media was developed by following the steps of Borg and Gall's research which included the stages of potential problems, data collection, product design, design validation, design revisions, product trials (small scale), product revisions, field trials (large scale).), revision, and mass product.
b. The feasibility of learning media based on interactive multimedia Power Point on the healthy theme is important in class V by expert validation of the science material for the circulatory system in humans, obtaining an average assessment of 3.7 and the percentage of feasibility of 92.5% belonging to the very good and very feasible categories. While the validation of the interactive multimedia-based learning media Power Point obtained an average rating of 3.66 and a feasibility percentage of 91.8% belonging to the very good and very decent category. And finally, the validation of education practitioners who are VC class teachers at SD Negeri 101928 Rantau Panjang obtained an average rating of 3.83 and an eligibility percentage of 95.8% which is included in the very good and very decent category.
c. The results of the small-scale student trial using 8 students with very good results. This can be seen from the responses of students and student learning outcomes after using the Power Point interactive multimedia learning media. The results of the students' responses to the Power Point interactive multimedia-based learning media obtained an average of 3.91 which was included in the very good category and the percentage of eligibility 97.5% was included in the very feasible category. And the learning outcomes of students in the early stages / small scale pre-tests obtained an average value of 39.37 and the percentage of effectiveness was 0 and the post-test results obtained an average value of 85 with an effectiveness percentage of 87.5% belonging to the effective category so that the learning media was feasible. to be tested at the next stage / on a large scale. While the field trial on a large scale used all 22 students of class VC SD Negeri 101928 Rantau Panjang. Student responses in the field test obtained an average of 3.83 in the "very good" category and the percentage of eligibility was 95.65%. While the results of the pre-test only got an average

of 38.18 with a percentage of 9.5% belonging to the ineffective category and after the researcher gave the subject matter using interactive multimedia Power Point, the post average score was 88.86 with a percentage86.36% which is classified as effective, so it is feasible to be used as a learning medium for students in the classroom.

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