Development of Powtoon-based SCEMA Learning Media for Science Subjects in Class V Elementary School

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Abstract— This research is motivated by the lack of students' understanding of the science subject matter of the human digestive system because the teacher only uses the media in the student worksheet. This study aims to develop a powtoon-based SCEMA media. This research is an R&D (Research and Development) research or development research in this study the model used is ADDIE which consists of Analysis, Design, Development, Implementation, and Evaluation. The data collection technique used in this study used descriptive analysis techniques for observation and interview data while calculating the score results from validation, practicality, and effectiveness in the form of numbers using statistical analysis. The results of the validation of media experts obtained data of 88.75% very feasible category, and material experts got an average of 87.5% very feasible category, the results of media practicality obtained a score of 86.25% by practitioners with very practical categories and 93.75% by student responses with very practical categories, data related to effectiveness seen from pre-test and post-test obtained 55% before and 81.25% after using learning media, based on these data there was a significant increase in pretest and posttest scores. From the results of the research that has been carried out, it can be concluded that the Learning Media in the Powtoon-based SCEMA in the fifth-grade science subjects in elementary schools is declared suitable for use as science learning media. Learning media with Powtoon-based SCEMA in the fifth-grade science subject at Musirlor Elementary School succeeded in increasing student interest and understanding.

Keywords—Powtoon**;** Science; SCEMA; Learning Media

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I. INTRODUCTION

Education is an activity of the learning process to acquire knowledge and learning skills. Education is a conscious and planned effort to create a learning atmosphere and learning process so that students can actively develop their potential, and have spiritual strength, self-control, and character. and country [1]. The function of education is to prepare students. "Prepare" means that students are basically not ready but need to prepare and they are preparing [2].

Science education is a science that emphasizes direct and practical giving, not just rote learning [3,4]. Science learning is to understand the universe through observations that are part of the product, process, and attitude as a learning activity [5,6]. In the science learning process, it is not only carried out in the classroom like other lessons but in science learning, practice is also carried out outside the classroom in order to get results that are balanced with the material [7,8].In particular, science learning is more fun and understandable if students experience or gain practical experience related to learning material. Science learning tends to be difficult to understand if you only use books, in other words, you don't use infrastructure, especially on the Human Digestive System material because the processes that occur are invisible or occur in the body, therefore a supporting tool is needed to make it easier for students to understand the learning material science learning, the tool is media.

Based on the results of observations made by researchers at SDN Musirlor, it is known that science learning has not been going well, it can be proven that there are learning problems in class V, namely in science subjects, the Human Digestive System material still has many shortcomings based on interviews conducted by teachers. The class and students of SDN Musirlor obtained information that the teacher only used picture media in the student worksheet, it made students feel bored and not interested in the material, causing their learning outcomes to be lacking so many did not pass the minimum completeness criteria.

To overcome this, it is necessary to develop more diverse learning to attract students' attention so that they participate more actively in the learning process, for example, the use of learning media. Media can be interpreted as anything that can be used by the resource person for sending the message content to be forwarded to the person being conveyed or the audience of the message to create a conducive learning environment where the recipient can carry out the learning process efficiently and effectively [9,10,11].

With the use of learning media, the learning material delivered can be uniform, so that the learning process runs more interestingly, students are more interactive, learning time becomes more efficient, and improves the quality of learning [12,13]. The media can give the effect of clarity of the object or material being studied so that it attracts the attention of students [14,15].

Over time the learning media is very diverse. For this reason, teachers must be able to follow the impact of these technological advances.

One of the uses of information and communication technology in education is to create innovative and interesting learning media, interactive multimedia is one of the learning media that utilizes technology and can help all types of student learning styles [16]. Interactive multimedia is a combination of several media such as images, videos, animations, graphics, sound, and text as well as the way the media is delivered is interactive so that it can create a learning experience for students like real life in the surrounding environment [17,18].

Interactive multimedia usually has buttons or controllers that can be operated by teachers and students, so users can set what they want for the next process [19,20]. One of the interactive media chosen by the author is the Powtoon-based SCEMA (Sistem Pencernaan Manusia) media. Powtoon is an IT-based web application that can be used as a learning medium in which there are interesting features such as features for making presentations or animated videos that can be used easily and attractively [21]. Powtoon has several advantages, namely, there are animated video, pictorial, and audio so that Powtoon is expected to attract the attention of students so that the learning process becomes fun.

Powtoon can have a very good effect on students' enthusiasm in the teaching and learning process and can attract students' interest in learning. Powtoon can provide understanding to students because it provides an illustration related to the material [22]. This is in accordance with previous research that video learning media on pollution and environmental damage based on the Powtoon application is effective and feasible to be used as a media for students in their learning [23]. The use of Powtoon learning media can make students understand the lesson better and can generate enthusiasm for learning. With an interesting learning atmosphere, students can influence students to interest in learning [24].

Based on the description of the previous powtoon research entitled Development of Powtoon Learning Media based on Problem Based Learning in Elementary School Class V Science Content Ecosystem Materials, shows that powtoon media is very feasible to be applied to improve student learning outcomes [25]. Based on needs analysis and analysis of previous research, researchers are interested in conducting research with the title of Developing Powtoon-based SCEMA Learning Media in Science Subjects for Class V Elementary Schools.

II. RESEARCH METHOD

This research is an R&D (Research and Development) research or development research in this study the model used is ADDIE (Analysis, Design, Development, Implementation, and Evaluation). The method of collecting data collected in this study is descriptive data to analyze

observation and interview data and input suggestions based on a questionnaire given by practitioners while the validation scores and student learning outcomes by pretest and posttest will be analyzed using quantitative data. The subjects in this study were 8th graders for the limited trial and 30 students for the wide trial conducted at SDN Musirlor. Instruments for media experts relate to language, benefits, media functions, and appearance (writing & pictures). Instruments for material experts that contain material depth, material breadth, completeness, and language. For the second data collection, the pre-test and post-test methods were used to measure student interest in learning before and after receiving the Human Digestive System material in science subjects.

A. Calculate the percentage of each sub variable using the following formula

$$NP = \frac{S}{SR} \times 100\%$$

Information:

NP = Result value

S   = Value obtained

SR = Maximum value

Research criteria in learning media can be seen in the following table.

B. Assessment criteria table

Table 1. Assessment criteria table [26]

No	Interval	Eligibility Criteria
1	80% - 100%	Very Eligible/Very Good/Strongly Agree
2	66% - 79%	Eligible/Good/Agree
3	56% - 65%	Less Eligible/Not Good/Not Agree
4	0% - 55%	Inappropriate/Not Good/Disagree

III. RESULT AND DISCUSSION

Based on the results of observations obtained data that there are learning problems in class V, namely in science subjects the Human Digestive System material still has many shortcomings. make students feel bored and not interested in the material, causing their learning outcomes to be less so that many do not pass the minimum completeness criteria. To overcome this we need a media. Based on the results of observations/interviews, one type of media will be developed to overcome this problem, namely Powtoon-based SCEMA media.

This media contains Human Digestive System material which is explained by animation and designed as attractive as possible by making animations that are in accordance with the

preferences of elementary school children, clear and solid language display, appropriate material and appropriate audio settings so that students can be active and understand the subject material. This media has the advantage of being technology-based and made as attractive as possible so that it can attract the attention of students, the finished media will be tested for validity.

Based on the results of research and development that have been carried out, three types of research data can be described, the first data being data on the validity, effectiveness, and practicality of the product. Product validity is seen from the results of expert validation carried out to 4 experts with categories of 2 media experts and 2 material experts, the results of expert validation will be analyzed to see the value of the validity of the product being developed, expert validation is also obtained input and suggestions that are used to revise the product developed. The results of the expert validation carried out will be presented in the following diagram.
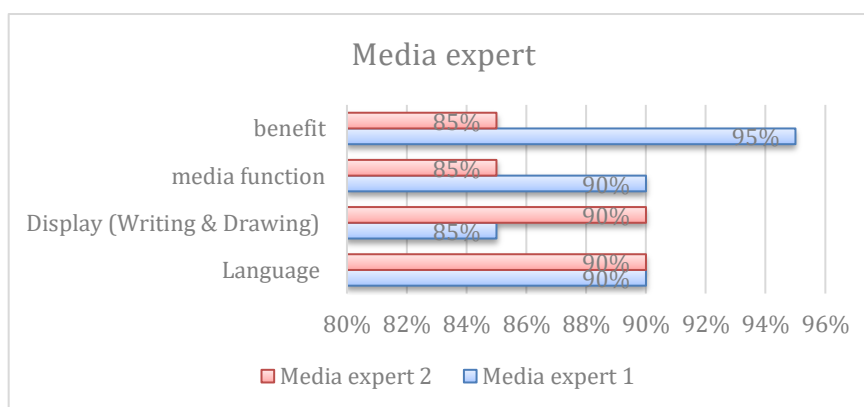
Media Validity Results

Figure 1. Media Rating by Media Expert

Figure 1 above is the result of data obtained from 2 expert validations, Based on the validation results of 2 media experts on aspects of benefits, functions, appearance, and language. Media expert 1 obtained an average score of 90%. Media expert 2 obtained an average score of 87.5%. Based on the data of the two validators, an average score of 88.75% was obtained. Based on the analysis of media experts, this media is very suitable to be used to help the learning process of the Human Digestive System. In addition to data from media experts, there is also data from material experts whose results can be seen in figure 2 as follows.
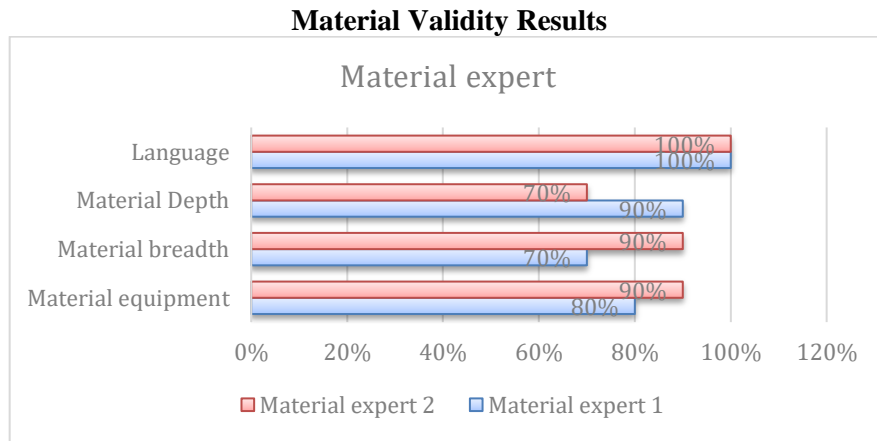
Material Validity Results

Figure 2. Assessment of media by Material Expert

Based on the validation results of 2 material experts which can be seen in diagram 3.2 with aspects of language, material depth, material breadth, and material completeness. Material expert 1 obtained a score of 85%. Material expert 2 obtained a score of 87.5%. As the results of the two validators obtained an average score of 86.25%. Based on the analysis of material experts, the learning media is very suitable to be used to help the learning process of the Human Digestive System. In addition to the validity of the product in this study, practicality data obtained from teachers who implement it in the classroom will also be obtained, in more detail, the results of the practicality test based on the assessment of practitioners or teachers can be seen in diagram 3.3 below.
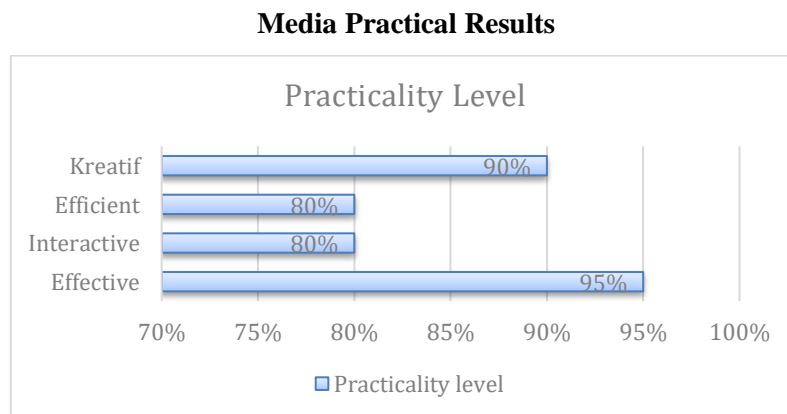
Media Practical Results

Figure 3 Practical assessment by class V teacher

Based on the diagram, it is known that the level of practicality with details of creative, efficient, interactive, and effective aspects obtained an average score of 86.25%. Based on the results of the teacher's response analysis, the developed learning media got responses in the very practical category used to help the learning process of the Human Digestive System learning process. Data was also obtained from student responses which obtained data from a questionnaire given to students and the results can be seen in the diagram shown in diagram 3.4 below.
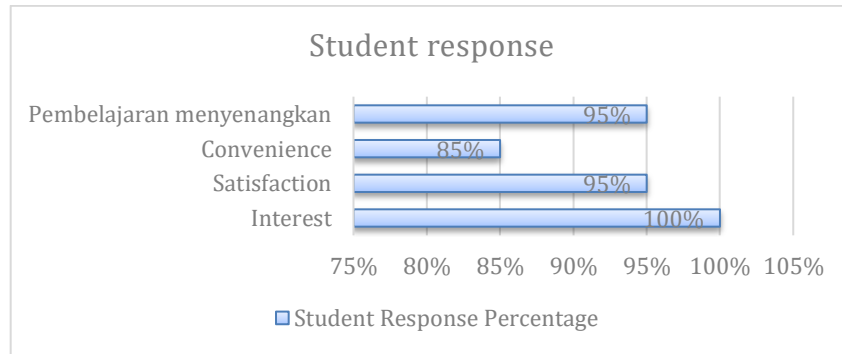
Figure 4 student response data

Based on the diagram on the aspects of interest, satisfaction, convenience, and fun learning, an average score of 93.75% was obtained in the very good category. In addition to practicality, there is also data on the effectiveness of the media with the following diagram.
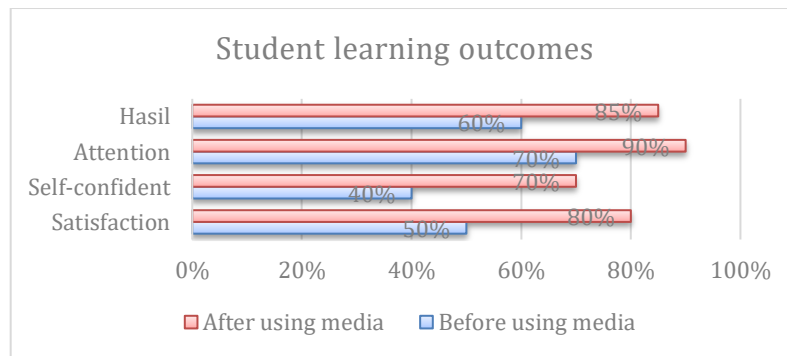
Media Effectiveness Results

Figure 5. Results of data analysis of student learning outcomes

Based on the results of research that has been done with pretest and posttest which can be seen in Diagram 3.4 with details on aspects of results, attention, self-confidence, and satisfaction. Data related to the effectiveness seen from the results of the pre-test and post-test obtained 55% before and 81.25% after using learning media, based on these data there was a significant increase in the pretest and post-test scores so that the comparison between the pretest and posttest media could significantly improve students' ability to support student learning outcomes.

IV. CONCLUSION

From the results of the research that has been carried out, it can be concluded that the Learning Media in the Powtoon-based SCEMA in the fifth-grade science subjects in elementary schools is declared suitable for use as science learning media. This can be seen from the results of media expert validation, a score of 88.75% was obtained, and material experts got an average of 87.5%, the results of the practicality of the media obtained a score of 86.25% by practitioners and 93.75%

by student responses, data related to effectiveness seen from the pre-test and post-test results obtained 55% before and 81.25% after using learning media, based on these data there is a significant increase in pretest and posttest scores so that the comparison between pretest and posttest media can significantly improve students' abilities to support learning outcomes student. Learning media with Powtoon-based SCEMA in the fifth-grade science subject at Musirlor Elementary School succeeded in increasing student interest and understanding.

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