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Article

Development of Pop-up Book Learning Media on the Topic "Human Respiratory System" to Enhance Decision Making

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ABSTRACT

Instructional media are vital for effective student learning in the classroom, and the Pop Up Book serves as a modern alternative. This study developed a Pop Up Book to enhance science learning by incorporating a fourth syntax focused on determining responses. The book aims to improve understanding, critical thinking, and motivation through interactive visuals. Created using Canva and printed on A3 paper, the Pop Up Book is designed to captivate students' interest. The ADDIE model, with its five stages (Analysis, Design, Development, Implementation, and Evaluation), guided the development process. Data were analyzed using percentage formulas to assess the media's suitability based on expert validation. The validation test yielded an overall score of 54, equating to 96%, categorized as "very appropriate." The test included four criteria: learning (93%), content (100%), media appearance (88%), and language suitability (100%). These results confirm the Pop Up Book's effectiveness as an instructional tool for classroom use.

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INTRODUCTION

The use of learning media is one way for teachers to improve the quality of student learning. Learning media can be defined as everything that can be used to convey messages and encourage the learning process in students (Suryani et al., 2018: 4). Learning media is a tool in the teaching and learning process that can stimulate students' thoughts, feelings, attention, and cognitive abilities. In addition, learning media can make learning more interesting and fun (Tafonao, 2018:105). Learning media, according to (Dula 2017:37), is a tool that can help the teaching and learning process and functions to clarify the meaning of the message conveyed, allowing for better and optimal achievement of learning goals.

Teachers often use the lecture method when explaining the material, making it passive and difficult for students to understand. Teachers can use learning media that can help them understand the material. help students understand the information conveyed. Today's teachers must be more creative and innovative in teaching their students so that learning becomes comfortable and enjoyable. They can use their innovation and creativity when creating Pop up Book learning media.

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Pop up Book is a type of learning media that can be used for science subjects. Pop up Book is a book with movable parts or three-dimensional elements that can move when the pages are opened (Kurniawati, 2016:69). One of the advantages of pop-up books is that they can provide interaction to students when each page is opened, thereby increasing students' enthusiasm for learning. Pop-up book pages can be in accordance with the selected teaching materials and created with the teacher's creativity. The uses of pop-up books are: a) increasing children's interest in books and reading; b) assists in developing critical thinking skills and stimulates creativity, c) engaging illustrations to attract attention and facilitate comprehension of the text. In Aeni's research (2018), it was stated that the use of pop-up book media in learning can improve students' critical thinking skills. The results of Lestari's (2020) research support the statement that pop-up books contribute to students' critical thinking skills. From this explanation, the conclusion drawn by the researcher is that pop-up book media has advantages related to students' critical thinking skills.

One of the science materials is the Human Respiratory System material, which discusses the human respiratory organs, functions, respiratory processes, and disorders or abnormalities in the human respiratory system which are taught during the even semester in junior high school grade VIII. In accordance with the basic competencies of respiratory system material, 3.9 Analyze the respiratory system and efforts to maintain the health of the respiratory system, 4.9 Describe the respiratory system in humans and its relationship with health. Solutions to these problems are needed to improve the learning process so that students can learn better. The development of Pop up book media is one of the efforts that can be made. This Respiratory System material shows how the respiration process occurs, what organs are in the Respiratory System. The use of Pop up Books that use 2D visual images raises students' interest in learning to get to know various types of respiratory organs and disorders that can occur in the respiratory organs as well as easy-to-understand explanations.

In its application, the research conducted by A. Safitri et al. (2023) with the title "Development of Pop Up Book Media on Class V Human Respiratory System Materials in Elementary Schools" stated that the overall research results were 92% with the criteria of "very valid", so this media is very suitable for use in learning. Research conducted by A. Safitri et al. (2023) with the title "Development of Pop Up Book Media on Human Respiratory System Materials Class V Elementary School" stated that the results of the validity of learning media were declared valid from media expert reviews obtained 90% (very good), the results of material expert validation were obtained 95% (very good), and finally the results obtained from student response questionnaires were obtained by 94%. Therefore, this media is very suitable for use in science subjects in respiratory system materials.

The use of learning media, especially Pop up Books in science learning that uses the Decision Making learning model. Human respiratory system materials have enormous potential to improve the quality of student learning. Pop Up Book was chosen because it has several advantages, including being easy to use, easy to carry, and can increase students' enthusiasm. By using this media, the material delivered by the teacher can be well received by students, and children will be more enthusiastic to participate in the learning process. This is the basis for researchers to choose Pop Up Book media because they want to display media that can show the shape of human respiratory organs, human breathing processes, causes of disorders in human breathing, and disorders in human breathing.

Referring to the problems that have been listed, there are several problem formulations from this study, namely 1) How to create interesting 2D learning media that can increase students' understanding and participation in learning? 2) How can the 2D Pop Up book learning media develop and complement the 4 syntac decision making, especially in determining responses? 3) How to develop interactive 2D learning media designed to

improve students' understanding of decision making syntax through determining accurate and useful responses to student interactions?

METODE

According to DDA Lestari (2021), the ADDIE model is one of the systematic learning design models and can be used in developing various products. This model is systematically arranged to solve learning problems related to learning resources. Each stage in the ADDIE model is easy to understand and apply in product development, such as teaching media, learning modules, learning videos, and teaching materials.

Theresearch uses the stages of needs analysis, design process, product manufacturing, and validation tests. Needs analysis involves identifying the needs of students and teachers, as well as analyzing relevant core competencies and basic competencies so that indicators of competency achievement and learning objectives can be clearly established. The design process involves creating a visual representation of the product, which includes elements such as design, typography, illustrations, and color selection. Development research aims to develop and evaluate the effectiveness of a particular product. One of the results of this study is a pop-up book media with material on the human respiratory system.

Akbar (2013:155) argues that validity tests are carried out to determine the level of validity of the products developed. To manage the validation data, certain formulas and validity test sheets made by the researcher are used, then analyzed using validity criteria. In this context, the validation of the pop-up book of respiratory system material in humans involves testing the content, design, and relevance to local wisdom, as well as its effectiveness in helping students understand the concept of the respiratory system. The validation test was carried out by involving experts in the field of education and learning media design with 4 assessment criteria: Learning, Material, Media Display, Language Suitability. The validation process aims to ensure that the media developed meets quality standards and effectiveness in achieving learning objectives. (Branch, 2009; Wati et al., 2021). The validation results are calculated as a percentage using the formula:$P = \frac{F}{N} \times 100\%$ (P= Response percentage; F = Frequency achieved for the percentage or score of the validity of the answer; N = Number of cases) and adjusted to the table of criteria to draw the following conclusions.

Tabel 1. Cretiria Assessment Scale

Percentage Range	Qualitative Criteria
86 – 100	Perfect Fit
71 – 85	Appropriate
41 – 55	Quite Suitable
< 41	Not suitable

(Source: Arikunto, 2002)

RESULTS AND DISCUSSION

The results of the validity test of pop-up books based on decision making by experts in po-up book development, material experts and learning media development are presented in the table.

Tabel 2. Results of the Pop up Book Learning Media Validation Test

No.	Validation Aspects	Percentage	Feasibility
1	Material	100 %	Perfect Fit
2	Language Compatibility	100 %	Perfect Fit
3	Learning	93 %	Perfect Fit
4	Media Display	88 %	Perfect Fit

Expert validation is carried out to get input and suggestions and provide an assessment of the pop-up book media that has been compiled and designed. Validation is carried out by two experts: Media experts, and material experts. Validators are given a validation sheet to get input and suggestions. Validation uses the Likert scale, namely scores 1 to 4 with the description, very appropriate (4), appropriate (3), fairly appropriate (2), not appropriate (1).

The percentage of feasibility reviewed from the aspect of validity resulted in the percentage of feasibility of pop-up book learning media from the aspect of the material getting 100% results, so that it got a category that was very feasible to use. These results show that this pop-up book media is very appropriate and effective in achieving the learning goals that have been set. From the aspect of language suitability validation, the percentage of results is 100%, so it can be concluded that it is categorized as very suitable for use without any revision or improvement from the Pop up book learning media. The suitability of the language used in the media shows that the language used in the Pop up Book media is not ambiguous, so it is easy for students to understand and understand. Furthermore, the validity aspect that is assessed is Learning and results that tend to be lower than the other percentage of results, namely getting a result of 93%, so that it can be categorized as suitable for use. Aspects need to be improved in terms of student cognitive assessment, to provide a more comprehensive evaluation and there needs to be consideration in aspects of student cognitive development.

Furthermore, the validity aspect that is assessed is Learning and results that tend to be low from the other percentage of results, namely getting a result of 93%, so that it can be categorized as suitable for use. However, this aspect needs to be improved in terms of student cognitive assessment, to provide a more comprehensive evaluation and there needs to be consideration in the aspect of student cognitive development. For example, more in-depth questions or exercises can be added that can stimulate students' critical thinking.

The last aspect that is assessed is in terms of media display, which is to get a feasibility percentage of 88% which is the lowest percentage of other validity. The advice given by the validator is to improve the appearance of the media from various kinds of decorations in the Pop up Book, and also the neatness in the display of the media. This is important because an attractive and well-structured display can increase students' interest in learning and make it easier for them to focus on the material presented.

The pop-up book learning media that has been developed has excellent potential to be used in the learning process. Overall, the criteria are already in the feasible category, but by making some improvements to the learning aspect and the appearance of the media, this Pop up Book learning media can be an effective tool to improve students' understanding of the material and also in improving Decision Making. In addition, by improving these aspects, this media can be more easily accepted by students and teachers, and can be used as an effective learning tool in the classroom.

The highest validity test results produced were in the criteria for assessing material and language suitability. The pop-up book learning media developed has been designed very well in meeting the learning objectives, and the learning objectives are achieved because of the ease with which the language is understood by students.

The percentage of feasibility reviewed from the aspect of validity resulted in the percentage of module feasibility from the aspect of material getting high validity results, so

that it got a category that was very feasible to use. These results show that this pop-up book media is very appropriate and effective in achieving the learning goals that have been set. From the aspect of language suitability validation, it gets a high percentage of validity, so it can be concluded that it is categorized as very suitable for use without any revision or improvement from the Pop up book learning media. The suitability of the language used in the media shows that the language used in the Pop up Book media is not ambiguous, so it is easy for students to understand and understand.

Of the several aspects that have been validated, the learning aspect has a sufficient percentage but is relatively low from some of the percentages that have been processed. In this aspect, there is a need for an evaluation of students' cognitive development. The assessment results showed that the pop-up book media had been assessed as appropriate to support the learning process, but the evaluation results showed that there was a potential for improvement in the cognitive development aspect of students. To achieve this, it is necessary to further evaluate the design and content of the media, especially in terms of stimulating students' critical thinking, analysis, and problem-solving skills. For example, open-ended questions or activities that require students to relate the information presented in the pop-up book to previous knowledge can be added.

The lowest aspect of media validity results is in the aspect of media display. The assessment results showed that the lack of neatness in the stickers in the Pop up Book media could reduce visual appeal and interfere with the student learning process. An uncluttered display can diminish the aesthetic impression and reduce students' interest in interacting with the media. Referring to learning, an attractive display is very important to stimulate learning motivation. Therefore, it is recommended that the entire patch be glued neatly and precisely using strong glue and proper attachment techniques. In addition, the use of quality materials can also increase the durability of the media and keep its appearance attractive for a short period of time. old.

The advantage of developing this pop-up book media is its ability to present material visually and interactively, which can make it easier for students to understand abstract concepts. In addition, the use of easy-to-understand language is also one of the main advantages. However, the disadvantage of this media is the need to improve the appearance aspect and the need to prioritize students' cognitive development. By overcoming this shortcoming, pop-up book media can become more effective in supporting the student learning process.

The success of each aspect is closely related to the good implementation of the initial 4 stages in decision-making, namely classifying problems, identifying problems, prioritizing problems, and determining responses (Gomulya B. 2015). In the application of classifying problems, the pop-up book media succeeded in identifying students' difficulties in understanding abstract concepts related to the respiratory system and presenting material visually and interactively to overcome the problem. Identifying problems, this media also succeeded in identifying students' difficulties in understanding technical terms by simplifying concepts and using easy-to-understand language. Prioritizing problems, pop-up book media has successfully focused on conveying information visually and interactively. By emphasizing three-dimensional visualization and interactive elements, this medium allows students to more easily understand abstract concepts related to the respiratory system. Determining the response, this medium allows students to actively engage in the learning process by seeing, touching, and manipulating three-dimensional models. The attractive and interactive media design also succeeded in creating a fun learning experience for students.

Based on the results of the validation test, the pop-up book learning media developed has shown excellent potential as a learning aid. The highest success was achieved in the material aspect and language suitability, showing that this media is able to present

information clearly and easily understood by students. However, there are still some areas that need to be improved. The learning aspect, although it is good enough, still has the potential to be further developed in order to stimulate students' critical thinking and analytical skills. Meanwhile, the aspect of media display needs to be improved to increase the visual appeal and learning interest of students. The success of this pop-up book media cannot be separated from good application in the early stages of decision-making syntax. This media has succeeded in identifying learning problems, prioritizing the right solutions, and determining effective responses. Overall, this pop-up book media is a good first step in the development of innovative and interesting learning media. By making several improvements to the learning and display aspects, this media has the potential to be a very effective tool in improving the quality of student learning.

CONCLUSION

Based on the validity table, the highest results were obtained in the material criteria with a percentage of 100% and the material suitability criteria with a percentage of 100% in the category were very appropriate. While the lowest results were obtained from the learning criteria with a percentage of 93% and in the media display criteria with a percentage of 88% in the very appropriate category. Validators suggested improvement materials for Pop up Book learning media, respiratory system material in humans to improve decision making with information on the pastels that were compiled on the Pop up Book learning media were not neat. And improvements are needed in terms of student cognition, to provide a more comprehensive evaluation and there needs to be consideration in aspects of student cognitive development. So this research can be continued to field tests after making improvements according to the suggestions of the validators.

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