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Article

Development of LaBuMi with a Game Approach to Increase Interest in Learning the Concept of the Structure of the Earth's Layer

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ABSTRACT

Learning in the classroom is less interactive if not with the help of learning media. With technological advances, teachers must be able to combine with learning, for example Smart Apps Creator which is useful for increasing student interest. The purpose of this development research is to determine the validity of the development of LaBuMi in increasing students' interest in learning the concept of the structure of earth's layer. The research method in developing the LaBuMi uses Thiagarajan's 4D development method but is modified into 3D, expert validation as a consideration of the feasibility of the application to determine students' interest in the LaBuMi application. Based on the validation results from 2 experts, the validation results are 96.85% of the material and language are in the very valid category, 93.75% of the design, media, and technology are in the very valid category. This number is very high to support that the LaBuMi application is worth using in learning. Easy-to-use and attractive features can increase students' interest in learning, and master the concept of the structure of the earth's layers, thereby creating an interactive classroom climate. Experts argue that LaBuMi is very good, it is better if it has a portrait layout.

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INTRODUCTION

In the ever-evolving digital era, the need for effective and interactive learning media is increasingly urgent. Many students face challenges in understanding the subject matter in depth due to the limitations of conventional learning methods that do not involve digital technology. In learning and teaching media must be seriously considered (Vebrianto & Osman, 2011) In order for learning to be in accordance with learning objectives, an educator must develop knowledge, critical thinking skills, and concepts in students to be implemented (Pradani, 2022)

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Tools to facilitate the course of learning so that it becomes effective and optimal are the meaning of learning media (Fadilah et al., 2023)

Students' interest in learning will increase further with the existence of a learning media. According to Olivia in(Nursyam, 2019) interest is an attitude of obedience when studying, it can be in the form of planning a study schedule or taking the initiative to do a business seriously. Interest in learning can motivate students to learn so that it affects student learning outcomes. Motivation according to Sadiman (2012) in (Magdalena et al., 2021) is something that is used as a driving force that appears in students to direct learning activities, ensure continuity in learning, and guidance in the learning process so that learning goals can be achieved.

The use of learning media is the implementation of tools or technology in the learning process to convey information about subject matter and facilitate communication between teachers and students. The existence of smart applications is a form of educational media innovation that provides more interesting, innovative, and effective learning in the learning process. Various types of learning media including Smart Apps are integral to the transformation of modern education. With attractive features and the presence of images and moving animations in it, it provides a more memorable and interesting learning experience and fosters a maximum understanding of concepts (Aprilia et al., 2024)

Presenting learning media that is in accordance with the development of the times is one of the efforts to increase students' interest in learning. Conventional learning with the use of LKPD, power point slides, image media, and textbooks makes students less enthusiastic to explore learning materials. On the other hand, students are now more interested in all digital content, where everything can be accessed through *smartphones*. This condition supports teachers to create modern technology-based learning media that is innovative and easily accessible to students (Amalia, 2022) The use of conventional media is considered less practical and monotonous due to the lack of interesting content in it.

The game approach is more effective in increasing students' interest in learning by arousing students' curiosity and experience to play smartly and carefully in an effective and motivating environment. For example, quizzes contained in the application are about general knowledge, so students are required to think critically in answering quizzes (Royani & Darusalam, 2022) Games used in a learning method are educational games with the aim of making learning easier and learning more interesting. In its use, educational games can be described in the form of applications that can be accessed with android devices (Aeni et al., 2024)

With the application of android-based learning media, science learning can be developed in supporting student learning success and student problem solving. Android-based learning media can be developed in the mathematics learning process to make it easier for students to support their learning success and improve students' mathematical problem-solving skills, especially in the midst of today's online learning. Android applications that are accompanied by video, audio, animation with text and images can increase students' experience, understanding, interest and attention to the material (Mahuda et al., 2021) The creation of innovative learning media from Smart Apps Creator creates applicable and interactive media. Researchers using Smart Apps Creator have been carried out by several researchers, with results stating that the applied learning is interactive and develops well, resulting in maximum understanding and increasing student learning motivation (Sitrait & Apriyani, 2024) The development of interactive learning media has a major challenge, namely the use of sophisticated technology. Learning objectives must be supported by interactive elements in learning media (Utomo, 2023)

The structure of the earth's layer is a material concept taught in junior high school. The concept of material in the earth's layers presents the concept of the structure of the earth's constituent layers (Wahyuni et al., 2023) Not only that, the concept of material structure of the

earth's layer also explains the shift that causes disasters, namely in the lithosphere. This is in accordance with the theory of plate tectonics, which causes changes in the dynamics, functions, and history of the earth and integrates several new earth sciences (Chakour et al., 2022) Based on this, we can learn material about the movement of the lithosphere layer.

The development of learning media improves the quality of education in schools, one of the learning media encourages researchers to review research on application development with Smart Apps Creator called "LaBuMi" with a game approach to increase students' interest in the concept of the structure of the earth's layers. The "LaBuMi" app is made with various elements in it. There is material content, videos linked from youtube, there are games that are directly contained in the application with direct assessment after working, and online LKPD made directly by researchers. The novelty of the development of the LaBuMi application is that there is a connection between the online LKPD and one of the Live Worksheet online media created directly by the researcher. The purpose of this development research is to determine the validity of the development of LaBuMi in increasing students' interest in learning. This research is expected to contribute to increasing students' interest in the concept of the structure of the earth's layers.

METHODS

The research method in developing the LaBuMi application innovation uses Thiagarajan's 4D development method but is modified into 3D development with the definition, design and development stages (Hija et al., 2023). First stage definition namely determining the material concept used for the creation of the "LaBuMi" application, the material concept in the selected application is the concept of the structure of the earth's layers. The second stage of design in this stage is the selection of media that will be used for the creation of learning media, namely with Smart Apps Creator. The third stage is development, developing "LaBuMi" using Smart Apps Creator with the concept of the structure of the earth's layers, then validated to experts in materials, language, media, technology, and design to determine the feasibility of the application for students' interest in learning.

Calculation of the assessment of validation score criteria to determine validity with the following formula:

$$\text{Validation score assessment (\%)} = \text{validation result score} / \text{maximum validation score} \times 100\%$$

Source: (Taufiqurrahman et al., 2018)

After validation from validators or experts, the following is a table of validity criteria that have been assessed on the LaBuMi application:

Tab1e 1. Validity assessment criteria

No	Value Range	Interpretation
1	0-50%	Very Invalid
2	51-60 %	Less Valid
3	61%-70%	Quite Valid
4	71-80%	Valid
5	81-100%	Very Valid

Source: (Lukman et al., 2023)

RESULTS AND DISCUSSION

The development of this application consists of three stages, namely: 1) Definition in this stage analyzes the material used in accordance with the learning outcomes in accordance with the curriculum used today and analyzes the learning objectives so that the development of the "LaBuMi" application is in accordance with the needs of students and in accordance with learning objectives. At this stage has determined the concept of the structure of the earth's layers for the main material in making applications. 2) Design, at this stage choosing the use of applications as output and choosing Smart Apps Creator as the "LaBuMi" development application and designing updates in the application rather than applications made by previous researchers, in the "LaBuMi" application the selected update is to add student worksheets that can be pressed and done directly after accessing the application where student worksheets are made directly by researchers with attractive images using the liveworksheet website. 3) Development, at this stage the researcher develops the "LaBuMi" application with the Smart Apps Creator assistance application to develop the application and also adds several elements in the "LaBuMi" application such as learning objectives, material or concepts to be learned, online learning videos from Youtube, games about the structure of the earth's layers, online student worksheets, absebsi, and the profile of the "LaBuMi" application maker. Expert validation is also used to determine the validity of the "LaBuMi" application to increase student interest in the concept of the structure of the earth's layers. So that the results of expert validation researchers know the feasibility of the "LaBuMi" application to be taught to students in order to increase student interest in learning. The following is an image of the "LaBuMi" application that has been made by researchers:

Figure 1 app home page

Figure 2 material concept

Figure 3 online student worksheet

Expert validation results 2 on Development of LaBuMi with a Game Approach to Increase Interest in Learning the Concept of the Structure of the Earth's Layer presented in table 2

Table 2. Validation results

Aspects	Presentage	Category
Material	96.85%	Very Valid
Languages	96.85%	Very Valid
Learning Media	93.75%	Very Valid
Technology	93.75%	Very Valid
Design	93.75%	Very Valid

Based on table 2. The validation results regarding the material aspects in the "LaBuMi" application are 96.85% with a very valid category. The validation results regarding the language aspect used in the "LaBuMi" application were 96.85% with a very valid category. The score for the media aspect is 93.75% with a very valid category. The technology aspect with a validation score of 93.75% with a very valid category. The category is very valid in the design aspect of 93.75%. Expert validation is very valid for all aspects so that the "LaBuMi" application is very feasible as a learning medium to increase student interest. One of the experts thinks that if the "LaBuMi" application is made in a portrait layout, it will be better. The results of the validation of all aspects of the validity assessment are very feasible and can be used without revision. Based on the results of the validation, the material and language aspects are among the highest and the technology, media, and design aspects are the lowest.

The validity aspect of this product is essentially contained in the material carried, the material can be interpreted as a teaching material in an education and is an influence given in learning guidance. Good learning materials are learning materials that are integrated with learning videos and practice questions in the application. So that students have an interest in learning and are more interested in understanding the teaching material (Sirait & Apriyani, 2024) Judging from the material aspect in the product, it occupies the highest score based on the validity results. The material is presented by integrating with videos and powerpoints which has an impact on significant and substantial improvements in all conditions (Zhang et al., 2024) This is because according to validators, the material contained in the relevant product is used in learning, as evidenced by the average percentage of validation results in the material aspect of 96.85% with very valid criteria.

Another aspect of language validation, where language can be interpreted as a communication tool used in life. A good linguistic element is by using language that is clear, concise and easy to understand by junior high school students (Branchais & Achmadi, 2019) This media has applied a good linguistic element as evidenced by the average percentage of validation results in the linguistic aspect of 96.85% with very valid criteria. Good media is not only seen from the material elements and language, but also from the processes that occur in the system and the display that supports the user's interest in the product. Good media is not only seen from the material elements and language, but also from the processes that occur in the system and the display that supports the user's interest in the product. The language aspect is very important in the preparation of learning media, especially in the context of internet media. This application-based media increases participation and use of language and changes the learning process to be student-centered (Zamari et al., 2012)

Based on table 2, learning media is included in the lowest order with a validation percentage of 93.75% with a very valid category. One of the means of distributing messages or learning information that will be conveyed by the source of the message to the target or recipient of the message is called learning media (Mahnun, 2012) The criteria for selecting good learning media based on Hilman & Dewi (2021) in (Miftah & Nur Rokhman, 2022) are 7 things, namely (1) the goals to be achieved, (2) the personality of the student, (3) the type of media that wants to be made, for example audio or visuals that must be in accordance with the

environment, (4) local sources, (5) ready-to-use media, (6) practicality and resilience of the media, (7) effectiveness and cost over a long period of time. The results of the validation of the media aspect are low compared to the material aspect and the language aspect because the media requires extra observation (Adam, 2021) Based on Rahman & Putri (2020) in (Lubis et al., 2024) the increase in student learning preferences is supported by the use of interactive media. Interactive learning media that students commonly use makes students tend to be interested or interested and motivated in learning, and will also have an impact on learning outcomes. Based on the results of the validation, the media aspect must be improved in a more effective video section.

A result of knowledge aimed at creating a tool or action to manage, and castration of objects is the definition of technology (Zahwa & Syafi'i, 2022) Technology that can be said to be good if it can attract students' attention, having something interesting in packaging learning content that has the weight of the results will feel meaningful for students (Widianto, 2021) Technology can also affect students' interest in learning, with technology students can access the information that occurs, so that students become motivated to learn and learning is not monotonous (Ahmad et al., 2020) The technological aspect based on the validity results is among the lowest, this is because according to the application validator it is a little difficult for students to access. This may happen because the final product is an application that is accessed with an html 5 web browser, ios, desktop, application (Rozi & Rohman, 2024) Installation difficulties also occur in some students because the results of the SAC application can only be used for android users(Lestari et al., 2024)

The process of arranging elements into a whole and consistent is the definition of design (Novanto & Rizqi, 2023) The attractive design display in terms of the color of the images, text, or animations in it makes it easier for students to use it by pressing the buttons in it, which makes students not easily bored and increases student interest (Siti Deti Nurhamidah et al., 2022) The choice of colors is very important to communicate the message, theme and atmosphere to be conveyed can be strengthened, if the accuracy in use (Rafif & Patria, 2021) Based on zaki dalam (Susilo et al., 2023) designs that are able to provide a good experience and strong interactivity can motivate and develop user skills. The design is included in the low validation compared to other aspects because the animation illustrations are not supportive of the image of the earth's layers. The use of illustrations or images that are less interactive causes students to feel sleepy easily, and lack enthusiasm (Riana Aprianti et al., 2023)

CONCLUSION

The conclusion of this study is that the validation results are used to test the feasibility of the product Development of LaBuMi with a Game Approach to Increase Interest in Learning the Concept of the Structure of the Earth's Layer. The validation results from two experts, namely the material and language aspects with the highest percentage of 96.85% are included in the very valid category. For the aspects of learning media, technology, and design with the lowest order of percentage of 93.75% in the Very Valid category. Based on the results of this validation, the "LaBuMi" application is very feasible as a learning medium to increase students' interest in learning.

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