

Development of MEHARUN Game Media "Looking for Treasure" Flora and Fauna Distribution Material for Elementary School Students

Maulidiana A'yunin, Khusnul Khotimah*, Arda Purnama Putra

State University of Malang, Jl. Semarang No. 5 Malang, East Java, Indonesia

*Author of correspondence, Email: khusnul.khotimah.fip@um.ac.id

Abstract

Based on preliminary data collection at SDN Lecari, SDN Kalirejo 1, and SDN Kalirejo 2, learning media is needed for elementary school students to support teaching and learning activities, especially for social studies subjects. This research was conducted to develop educational game media MEHARUN "Look for Treasure" on Android-based flora and fauna distribution material. This type of development research uses the R&D method using the ADDIE model. The Meharun educational game validation by media experts resulted in a validity level of 95.31% with a very valid category. And the validation test by material experts obtained a validity level of 96.87% with a very valid category. The practicality test aimed at teachers as users obtained a practicality level of 100%. The practicality test in the small group and large group trials had an average of 99.4%. The results of the practicality test are included in the very practical category so that MEHARUN educational game media can be used in social studies learning in grade V elementary school.

Keywords: educational game; flora and fauna distribution; elementary school

1. Introduction

Education in the 5.0 era emphasizes the importance of using sophisticated technology by adjusting to the times because it can have a significant impact on social life (Heryani et al.). In particular, the use of technology can be utilized in learning activities, to be in line with the times. One of them is the application of learning media and applications that are combined with technology so that they can be easily learned and utilized in learning (Mulyani and 2021). This massive technological advancement can not only help teachers in school administration activities but can also be utilized as teaching aids that can help teachers present learning more easily, fun, interesting, and more contemporary (A Aspar). A teaching aid is a tool that is used as an intermediary to help educators convey information to students.

Learning media is a tool that can be visual, audio, and audiovisual which aims to support teaching and learning activities because it can train student focus. This learning media has the benefit that it can be used as a learning resource, assisting teachers in increasing student insight, as well as materials in transferring knowledge to students with a variety of learning media that have been designed (T Nurrita 2018). Especially with the presence of audio and visuals that support the design of learning media. Another advantage of learning media is that teachers will be helped in the learning process because it can stimulate the mind to focus and minimize the occurrence of misconceptions in students (Nursyah and Arifin 2020). Learning media is designed according to student needs and related classroom conditions. One of the subjects that require learning media is social studies (Social Studies). In social studies subjects teachers need to strive to provide an understanding of the material so that it can be conveyed

properly. However, it is still experiencing some obstacles in the process. The obstacle is the limited provision of learning media (Narmi et al. 2021).

Based on interviews conducted at several schools, namely SDN Lecari, SDN Kalirejo I, and SDN Kalirejo II on May 31, 2023, with grade 5 teachers as resource persons, data were obtained that the cause of the difficulty of learning social studies in grade 5 is due to limited learning media, namely image media. The image media is used on the topic of Indonesian history, cultural diversity, environmental problems, and characteristics of flora and fauna. In interviews aimed at grade V students, they only understand the physical form of some fauna, so students do not fully know the diversity of flora and fauna such as physical form and distribution areas in Indonesia. This lack of knowledge is feared to hinder the learning process if it is carried out on an ongoing basis. Learning media as a tool to facilitate the delivery of material has not been used as much as possible in the learning process. The 5th-grade teacher said that the use of media will delay teaching and learning activities because it takes time to design it. Monotonous activities without learning media that attract students' attention can make students feel bored and less focused on doing assignments which have an impact on the crowded classroom situation (Tanjung and D Namora 2022).

The results of the interview above were strengthened by observing classroom conditions on May 31, 2023, to June 4, 2023, at the same school. Based on these observations, the data obtained that during the learning process, the teacher has not developed media for flora and fauna distribution material. Teachers also do not always use media during teaching and learning activities. The data is also supported by the results of research by Pratiwi, which is rooted in the problem of lack of development in applying learning media and only using textbooks. The distribution of questionnaires to students was also carried out to find out about the needs of learning media in social studies subjects. The data obtained is that students still do not understand social studies subject matter and the lack of use of learning media. From the results of the questionnaire given, students need media that has interesting visuals, is related to technology, and does not make students feel bored.

From the existing needs, media is needed to encourage the right quality of learning so that learning objectives can be achieved. Learning media that are by these problems are games. A game is an activity that is structured or semi-structured with the aim of entertainment or education (Yunus et al. 2015). The game in question is to educate students. So the game created seeks to provide information and train an attitude of independence. Based on the results of the study, it was found that educational games have elements of accuracy, reasoning power, ethics, and challenges which can influence students by capturing visuals and storing them in long-term memory longer than conventional media (Vitianingsih A Vega 2016). The durability factor of educational games is also superior and can be used sustainably. This is because, in the evaluation of learning multimedia, one important component is the robustness or resilience of the product designed not to experience errors for a long period until it does not experience errors at all (Zuhdi). Therefore, the educational game will be developed into a game with the realm of adventure in carrying out the mission of finding answers. The game is student-centered, able to interactively develop physical-motor, language, intellectual, moral, social, and emotional (Sari AK).

The material developed in the educational game media is the distribution of flora and fauna. The material was chosen because students can only understand the physical form of

some fauna. The development of Meharun educational games aims to produce products that are valid according to experts and practical for users. This development is also tailored to the needs of students so that it is hoped that learning will be more meaningful. The benefits obtained from the development of educational games are increasing student understanding, providing interactive learning experiences, increasing student involvement, and realizing students' independent character. In addition, educational games will be useful for teachers because they will save time for learning preparation and improve the quality of learning integrated with technology.

2. Method

This research is a type of Research and Development (R&D) research with the model used, namely the ADDIE model. The research stages in the ADDIE model, namely the analysis, design, development, implementation, and evaluation stages. The analysis stage was carried out using interviews, surveys, and observation techniques to analyze the curriculum and student needs. The design stage was carried out by making a summary of the material, question grids, validity and practicality questionnaires, and designing products. Product development and validity testing by experts are carried out at the development stage. While at the implementation stage, testing the practicality of game products in small and large groups is carried out. The evaluation stage is a necessary step in each stage so that game development becomes better.

This development research used interview, survey, and observation techniques at SDN Lecari, SDN Kalirejo 1, and SDN Kalirejo 2. Based on the data collection, qualitative and quantitative data were obtained. Qualitative data is data derived from interviews, observations, criticisms, and suggestions obtained from validators and teachers, while quantitative data is obtained from filling out questionnaires from material experts, media experts, teachers, and students. Quantitative data in the form of student needs analysis questionnaires and practicality tests use a Guttman scale by presenting 2 answer options, namely "yes" and "no". While in the validity test, the experts used a Likert scale with a scale of 1-4.

3. Results and Discussion

3.1 Result

3.1.1. Validation Test Results

The needs analysis stage in the research and development of Meharun educational games is carried out by analyzing the curriculum and student needs. This analysis was carried out through observations from May 31, 2023, to June 4, 2023. Curriculum analysis involving grade V teachers to obtain information about the curriculum used by related schools, namely SDN Lecari, SDN Kalirejo 1, and SDN Kalirejo 2. The three elementary schools are still using Curriculum 13 until it changes to the Merdeka Curriculum in the 2023-2024 school year. Based on observations of classroom conditions, it is found that the teacher provides an explanation of the material at the beginning of the lesson and continues by working on the assignments that have been given independently. Reinforced by the results of the interview that the teacher does not like discussions between friends. This is because it can have the possibility that not all students work on their assignments together with their work groups. Media in learning is not




always used as well as possible. Teachers only provide picture media in social studies teaching and learning activities.

In interviews conducted on May 31 to June 1, 2023, the teacher obtained the results that students have difficulty in understanding social studies material. Students often forget about the material they learn when only using picture media. In this context, it is possible due to the lack of maximum utilization of learning media. The condition of the class during social studies learning is considered boring without anything that makes students interested. During class activities, teachers more often focus on explaining material from books and providing images as visual media that are easily obtained through textbooks and the internet. The factor of lack of student motivation in learning social studies is still low.

The design stage begins with designing the MEHARUN educational game flow product and then compiling research instruments. Designing an educational game flow scheme entitled MEHARUN using Ms.Word by loading the material on the distribution of flora and fauna found in phase C. The stage carried out after designing educational game products is designing research instruments consisting of validation questionnaires by 2 validators, namely media validators and material validators as well as practicality questionnaires for teachers and students. Validation questionnaires aimed at media and material validators are used to determine the level of validity of the products developed by researchers. Making MEHARUN educational game products using the Unity engine is carried out by the predetermined concept flow. Throughout the process not only using Unity, but also using Google to search for game assets in the form of animals and plants and backgrounds that come from Canva. The Meharun game design process begins with creating a splash screen and cover screen. Followed by creating an identity menu, home screen, instructions for use, CP and ATP menus, profiles, volume settings, pop-up messages, camera setup, adding game assets in the form of animals and plants, adding quiz questions and answer options, and animating the appearance of scores. The following are the results of the MEHARUN educational game product "Looking for Treasure" material on the distribution of flora and fauna.

Table 1. Meharun Game Product Results

No	Image	Description
1.		Meharun educational game start screen

No	Image	Description
1.		Display material that has an initial discussion and final discussion. There is a button to the material on the distribution of flora and fauna.
2.		Meharun's in-game question display with four answer options
3.		Feedback according to the score obtained

This Meharun educational game produces products in the form of desktop and Android web-based with a size of 74 MB. This Meharun game has the advantage that it can be accessed flexibly and does not require the internet when accessed via Android. This game development is displayed in semi-3D by presenting 30 multiple-choice questions and there is feedback when the final score is shown. However, there are shortcomings in educational games in terms of animated graphics that still need to be optimized and material that is still limited with a focus on the distribution of flora and fauna and is limited to the scope of material on the distribution of flora and fauna.

The Meharun educational game needs to be tested for media validation before it is implemented for grade V students on June 10, 2024. This assessment includes aspects of quality, programming, display presentation, and audio presentation with each of the four indicators detailed in Table 2 below.

Table 2: Media Expert Validation Results

Aspect	Percentage
Quality	93,75%
Programming	93,75%
Display Presentation	93,75%
Audio Presentation	100%
Average	95,31%
Category	Highly Valid

Based on validation by media experts, the validity result is 95.31%, which can be said that Meharun's educational game media is included in the very valid category. This category has fulfilled the aspects of quality, programming, display presentation, and audio presentation. There are also comments from media experts regarding graphics or animation that need to be

improved to be better than before. In conclusion, Meharun's educational game media did not undergo improvements according to the feasibility of the trial.

This material validation test assesses the content and linguistic aspects of the Meharun game, each of which has four indicators. The following is Table 3 which contains the results of the material validation test by material experts.

Table 3. Material Expert Validation Results

Aspect	Percentage
Contents	100%
Language	93,75%
Average	96,87%
Category	Highly Valid

Based on the material expert validation test conducted on June 13, 2024, it is known that the content aspect has a percentage of 100% and language has a percentage of 93.75%. From these two aspects, it can be calculated with an average of 96.87%. This level of validity is included in the category of highly valid media.

3.1.2. Practicality Test Results

At the development stage, which includes the teacher's practicality test and small group trials as users. Meharun educational game media based on Android that has been validated by media experts and material experts will be assessed by teachers. The teacher who conducted the practicality assessment of the Meharun game was the fifth-grade teacher of SDN Lecari on June 14, 2024. The results of the practicality assessment from the teacher as a user are as follows.

Table 4. Results of the Teacher Practicality Questionnaire

Aspect	Percentage
Quality	100%
Practicality	100%
Relevance and Motivation	100%
Average	100%
Category	Highly Valid

From the results of the questionnaire practicality of teachers as users obtained data that reached a percentage of 100%. So Meharun media is said to be very practical to be used in social studies learning media in elementary schools. However, there needs to be revisions such as suggestions given by the fifth-grade teacher regarding the Meharun game media besides being accessible via Android can also be accessed via the web to facilitate student access.

Meharun media trials in small groups were conducted with grade V students of SDN Kalirejo I with a total of 9 students. This small group trial was conducted on June 14, 2024, and aims to test the practicality of the Meharun game in social studies learning. The results of the calculation of the Meharun game media practicality test questionnaire in small groups can be seen in Table 5 below.

Table 5. Results of Small Group Practicality Questionnaire

Aspect	Percentage
Practicality	100%
Effectiveness	100%
Quality	94,4%
User Experience	100%
Average	98,6%
Category	Highly Valid

The small group trial conducted at SDN Kalirejo 1 resulted in a percentage of practicality of 100%, effectiveness of 100%, quality of quality of 94.4%, and user experience of 100%. Which then obtained an average level of practicality of 98.6% so it was concluded that Meharun media was included in the very practical category. The assessment is seen from the assessment of the aspects of practicality, effectiveness, quality, and user experience.

The implementation stage with a large group trial was aimed at all fifth grade students of SDN Lecari with a total of 32 children. This implementation stage was carried out on June 18, 2024. The Meharun educational game large group trial that has been implemented at SDN Lecari, was given a practicality questionnaire to students to determine the level of practicality and observe how students respond when working on the game. The results of the large group trial practicality questionnaire are as follows.

Table 6. Large Group Practicality Test Results

Aspect	Percentage
Practicality	100%
Effectiveness	100%
Quality	100%
User Experience	100%
Average	100%
Category	Highly Valid

The large group trial conducted at SDN Lecari obtained the results of the practicality of the Meharun game media with a maximum score of 320 and an average of 100%. It can be said that the Meharun game is categorized as a very practical medium. With very practical criteria, Meharun games can be used in elementary school learning practices.

3.2 Discussion

Development of the educational game Meharun "Looking for Treasure" on the material of the distribution of flora and fauna is intended for grade V students because of the limited media for social studies subjects. Students who find it difficult to the limited social studies learning media and only use image media need to use audio-visual media. Educational games that use audiovisuals can increase student interest and focus (Seftiana and Delia 2021). The audio produced comes from the back sound of the game as well as the visuals contained in the material. The application of game learning in the classroom can have a good impact during the process of transferring knowledge. In another study, it was stated that game-based learning can give the impression of comfort, interest, and ease in understanding the material (Yustina and Yahfizham 2023). The Meharun educational game that has been developed is validated to determine the validity of the product. The validity of Meharun game products produces a percentage of 96.87% which is categorized as very practical media.

The validity of the Meharun game is measured based on quality aspects, which have indicators, namely game rules, game area, plot, theme, characters, animation, graphics, text and sound. With the completeness and good management of these game elements, it can create interesting and not boring games (Eka Purnama 2013). Another indicator of the quality aspect is that educational games qualify as learning media, which contains content: games that educate, train users to think, there is supporting musical accompaniment, and there is attractiveness in terms of appearance. The presence of musical accompaniment in a game can make users accept the game and stimulate thinking (Wibisono and Yulianto 2012). The quality aspect also applies the principles of educational games, such as individualized, active feedback, active learning, motivating, social, multilevel, transfer, and assessment. Meharun's game applies active learning because the learning activities are focused on students. In line with the idea (Hasanah 2018) that active learning provides opportunities for students to learn more independently compared to teacher centered. Meharun's game contains educational game development criteria, namely accuracy, appropriate game content and design, relevant to learning objectives, objective game results, and feedback. Feedback is information that contains responses to a performance. This feedback has an important role in learning because it can increase the confidence of students (Wahyudi and Sari 2016).

The suitability of Meharun game illustrations with the material, namely the distribution of flora and fauna in Indonesia, can increase student understanding because they get a visualization of the material being studied. The existence of animation that suits the material will make it easier for students to understand the material (Widiastuti and Hidayat). Given that Meharun's educational game prioritizes the practicality of users, the quality of the text in Meharun's game also needs to be well designed so that students can easily read the discussion of material about the distribution of flora and fauna. Good text quality will make it possible for students to learn interactively and increase their learning ability (Liani 2023). The presentation of sound is one aspect of the assessment that has been fulfilled, namely by showing indicators of clarity of sound, ease of sound regulation, suitability of sound to the theme, suitability of sound to the age, and understanding of students. The existence of musical accompaniment in the background of the Meharun game that is appropriate for the age of elementary school students can enhance the learning experience (Ardiansyah 2023).

The validity of the material in the development of Meharun's educational game on the distribution of flora and fauna resulted in a percentage of 96.87% with a very valid category. Overall, the assessment of each indicator in each aspect is good, the material in the Meharun educational game is in accordance with the learning objectives, the content of the material in the game is coherent and clear, and has the right material coverage. In line with the opinion of Rohani (2020), that learning objectives can be achieved, if the learning media has compatibility with the material that is the topic of teaching. The sequence of material on the distribution of flora and fauna with an initial discussion of the diversity of flora and fauna is important to explain. If there is no sequence of material, it can have an impact on students' lack of understanding so that the sequence of material is very important in presenting the material (Panjaitan et al. 2021). The linguistic aspects that include conformity with EYD, the use of punctuation marks, the sentence structure of the material, and the terms used are appropriate. The linguistic aspect focuses on the right sentence structure that will make it easier for students to understand the material provided. On the other hand, non-conformity with EYD and improper use of punctuation marks can make sentences ambiguous (Edy Prayitno et al. 2021).

The practicality of the Meharun game media was obtained based on practicality questionnaire data by users, namely teachers and students. If when using interactive media, the user response agrees that the game is able to provide ease of use, then it can be said that the learning media is practical (Kumalasani 2018). The practicality questionnaire data obtained by the fifth-grade teacher achieved 100% validity, so it is included in the very practical category. Comments given by teachers regarding the Meharun game should be developed on a web basis as well, to make it easier for students to access. Teachers as users assess the practicality of the Meharun game by referring to three aspects, including the quality aspect, practicality aspect, and relevance and motivation. The quality aspect consisting of clarity of images, writing, sound, video, and instructions for use has been fulfilled. The clarity of the display is designed with the aim that students can focus so they can understand the material well. If students can understand the material well, it can be interpreted that the use of Meharun game media has been successful in the learning objectives (Ari Santoso 2019).

The practical aspect of the practicality test by teachers consists of optimizing time, helping to achieve learning goals, helping students learn independently, can be used many times, and is easy to use. The Meharun game, which is packaged in the form of an Android application or desktop web base and can be used repeatedly, creates the potential for a sustainable learning experience (Firdaus and Yermiandhoko). Another aspect that is fulfilled is the relevance aspect which contains two indicators. These indicators are by the environment and student characteristics. Adaptation to the student environment is very necessary, because the provision of facilities also needs to be considered so that these educational games can be affordable. In line with (Indriyani 2019), learning media is designed according to the environment and what is needed from students. The characteristics of elementary school students who want to be involved and like to play also influenced the development of the Meharun game. The Meharun game can also foster a sense of fun, interest, and enthusiasm. In line with research conducted by Rizal & Hernawati (2017), at the trial stage of educational games, students looked happy and enthusiastic. The practicality of the Meharun educational game has been tested on small groups of 9 students at SDN Kalirejo 1, while in large groups there are 32 children at SDN Lecari. The average percentage of small trials and large trials is 99.4% in the very practical category. If the practicality calculation results are in the range of 85.01% - 100%, then it is included in the very practical category.

The Meharun educational game that has been developed will be assessed for its practicality by teachers as users. The practical test assessment by students includes four aspects. The practical aspect includes assessing ease of access, instructions for use, and completing missions in the Meharun game. Completion of the Meharun game mission is by completing a game quiz of 30 questions and obtaining at least 490 treasures. In line with (Humaira Salsabila et al. 2020), the presence of missions in educational games can create an attraction for students to study the material seriously. Another aspect that is the basis for assessment is the effectiveness aspect. The Meharun game contains material on the distribution of flora and fauna that is easy to understand and helps in the social studies learning process. This is one of the requirements for appropriate learning media because it can be used optimally in learning (Wibisono and Yulianto 2012). The happy experience of students is greatly supported by the existence of educational games that apply sophisticated technology, namely Android. In line with ideas by (SR Juraman 2014), regarding learning using Android applications, students can easily access educational information effectively. Apart from that,

another indicator in the experience aspect is that the language used in explaining the Meharun game material can be easily understood by users.

4. Conclusion

Based on the data obtained from the research and development that has been carried out, it can be concluded that the Meharun educational game on the distribution of flora and fauna is suitable for use in elementary school social studies learning. Meharun game was declared valid by media experts with a validity result of 95.31% which is included in the very valid category. The validation test by material experts obtained a validity of 96.87%, the percentage was categorized as very valid media.

Practicality tests aimed at teachers and students are included in the very practical category. The results of the practicality test conducted by the teacher were 100%, while the Meharun game practicality test on small group and large group trials obtained an average of 99.4%. Meharun game media development has the advantages of being flexible, increasing learning motivation, training independence, and sharpening students' level of focus. On the other hand, Meharun's educational game has disadvantages, namely broken images, and colors in graphic design that are less striking and can only be used in one lesson.

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