

Developing Web-Assisted "Guess the Picture" Interactive Learning Media for Fifth-Grade Elementary Science

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ABSTRAK

This study aims to develop an interactive learning media based on the "Tebak Gambar" (Guess the Picture) application, supported by web integration using the QuickAppNinja platform, for the Natural Sciences subject on the theme Harmony in Ecosystems for fifth-grade students at SDN in Bandar Lampung. The research employed a Research and Development (R&D) model using the ADDIE approach (Analysis, Design, Development, Implementation, Evaluation). Validation results showed scores of 182.5% from material experts, 197.5% from media experts, 77% from teachers, and 75% from students, indicating that the media is highly feasible for use.

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INTRODUCTION

Advances in information and communication technology have had a significant impact on various fields, including education. In the context of learning, the use of technology not only enriches the delivery methods but also encourages the development of innovative, engaging and interactive learning media. 21st-century education demands active student involvement in the learning process, no longer relying on conventional methods but rather embracing a fun, creative, and digitally-driven approach.

Interactive media is classified as constructivist media, consisting of learning, students, and the learning process. Technology in the learning process, such as computers, is a tool in multimedia and the world's largest website network, which has a significant influence on students in the learning process. Interactive multimedia programs are computer-based learning media that synergize all media, including text, graphics, photos, videos, animations, music, and narratives (Watri et al., 2023).

Natural Science (IPA) is an essential subject that demands conceptual understanding and the relationship between natural phenomena and everyday life (Ramadani et al., 2023). However, in practice, science learning in elementary schools still faces challenges in the form of limited learning media capable of effectively visualizing abstract concepts. The science learning process still tends to be monotonous and relies solely on blackboards and illustrated textbooks. This results in low student interest and active engagement, particularly in complex topics such as ecosystems.

In a school setting, a teacher has the opportunity to create an engaging learning environment by using a variety of creative, innovative, and diverse learning media. This aims to increase learning effectiveness and help students achieve optimal performance. The use of learning media in the teaching and learning process can also be found rooted in the Quran, as stated in the words of Allah SWT:

"We have sent down to you the Quran, that you may (explain) to mankind what has been revealed to them and that they may reflect."(Q.S. An-Nahl:44).

The use of learning media in the classroom is still limited to the use of whiteboards and printed media images. He explained that the use of image media is effective in helping students be active in learning and discussions so that this needs to be developed. Despite the limited learning media he used, students still actively collaborate with classmates in discussions and find solutions to questions posed by educators through whiteboards and printed media images. The science learning process is still less than optimal, based on observations at SDN in Bandar Lampung, the learning process is dominated by lecture methods and direct media, with learning media limited to text and static images, this causes low active student participation and difficulties in understanding abstract concepts such as interactions in ecosystems. Educators also conveyed the need for more interesting and interactive media so that learning can take place more meaningfully (Tarigan & Siagian, 2015).

To address these challenges, alternative learning media are needed that are capable of integrating technology and interactivity elements in the delivery of material. One of the media that has great potential in increasing student motivation and understanding is educational application-based media that utilizes the gamification approach (Ramadani et al., 2023). The "Guess the Picture" application is a form of interactive media that combines visual elements, games, and challenges, so that it can create a fun learning experience and motivate students to be more actively involved in the learning process (Harahap et al., 2023).

This research develops interactive learning media based on the Guess the Picture application with the help of webusing the platformQuickAppNinjaThis media is designed to facilitate science learning on the theme of Harmony in Ecosystems for fifth-grade elementary school students. The use of this technology is in line with the approachExamples Non-Examples, where educators use images to explain concepts or lesson materials, and actively involve students in the learning process (Winaryati, 2021).

In addition to encouraging student engagement, this media is also expected to address teachers' needs for contextual, efficient, and enjoyable learning tools. This research seeks not only to produce appropriate learning media but also to contribute to improving the quality of science learning at the elementary school level through technological and interactive approaches.

To overcome the problem of learning media, the focus is on developing interactive media designs based on guessing picture applications for fifth grade students. Learning through application media will be more practical through various existing technological devices, making it easier and more active for students to learn.

METHOD

This research was conducted at SDN 1 Way-Huwi, Jati Agung District, South Lampung Regency with the research subjects being class V at the school, the type of research Research and Development (R&D) is a research method used to produce certain products and test the effectiveness of the method. In the fields of education, research and development, or Research and Development (R&D), is a research method used to develop or validate media used in education and learning.

The aim of this development research is to produce and design learning media products as tools for problem-solving and critical thinking, as well as play media in the classroom or outside the classroom. The method used in this research is the research and development method. Research and Development R&D with the ADDIE model of research used to produce certain products and test the effectiveness of those products.

The products developed in this research are not in the form of objects or hardware (hardware), such as books, modules, or learning aids such as laboratories. However, it can also be like software (software), such as application programs that are often used on computers and smartphones that can be accessed for the learning process, or other general things that are used according to needs.

The research naturally follows cyclical steps using the ADDIE model. Based on the ADDIE model learning design scheme, because the researcher uses ADDIE with a procedural approach, the stages must be in accordance with the first procedure of the analysis (Analyze), design (Design), development (Development), implementation (Implementation) and the final stage of evaluation (Evaluation) (Saidiman, n.d.). This is a general overview of a generic design system model. ADDIE further provides a framework to illustrate the learning process, from analysis to evaluation. It turns out, based on various literature explaining ADDIE, that each activity has sub-stages that vary according to needs.



The ADDIE development model was created using a scheme by Branch as a learning system design. Researchers used the ADDIE model, which stands for Analyze, Design, Development,

Implementation, and Evaluation (Komara, 2014). This model was chosen because the ADDIE model is often used because the stages of the ADDIE model describe a systematic approach to instructional development. The product development procedure using the ADDIE model can be seen in the image above.

Analysis (Analysis)

Analysis is conducted to determine learning needs by identifying problems. The analysis stage aims to identify problems encountered by students during the learning process. Analysis is the explanation or breakdown of a complete system into its component parts with the aim of identifying and evaluating issues such as media or materials to be studied in the learning process.

Design (Design)

After conducting the analysis, the next step is the second stage, namely the design stage. The design of the learning application is based on...webThe ADDIE model can be defined as a representation of a separate system design that forms a unified whole for its intended use. The general stage of system design can be completed after the requirements analysis stage. This design is expected to serve as a learning reference specifically for instructional purposes. The goal is to ensure users or students feel comfortable and avoid boredom while using and learning the system, while also serving as a play tool during the learning process.

Development (Development)

Procedures performed at the development stage in designing the application in this research, namely;

Building Content

The content referred to here is the key points to engage students during the learning process. The purpose of this procedure is to produce a learning plan that aligns with the theoretical approach used in designing the application (Arikunto, 2017). The media developed should align with the lesson plan and create a more engaging learning environment with realistic content, including videos, images, materials, music, puzzles, and other elements, to achieve learning objectives.

Selecting or developing supporting media

The media selected or developed to assist students includes images, music, puzzles, and Q&A sessions. Therefore, the media is integrated with the application, specifically hardware such as a computer, smartphone, or similar, so that the application can be used in the learning process.

Conducting Expert Validation

Expert validation is the stage where a development researcher enlists the help of experts to assess the initial product based on predetermined criteria. Each expert's assessment can be tailored to the developer's needs. Generally, two experts are involved for each aspect, for example, two for the content aspect, and two for the media and language aspects. The more input obtained from experts, the better for the next stage.

Performing product revisions

Revisions are carried out before the product is implemented with users. Media revisions are carried out after receiving input from expert validation teams, such as on design models, language, materials, etc., so that it can later be implemented with groups or users for trial.

Field Trial

A field trial was conducted to implement the designed media model, which had undergone several expert validations and revisions. In this study, the trial was conducted on a group of fifth-grade elementary school students. The goal was to assess the effectiveness of the previously designed web-based application media and to determine whether there were differences in outcomes between the treatment and untreated groups.

Implementation (Implementation)

This stage is the media implementation step, preparing educators and students for the implementation of the media to be used. Next, the previously created design is tested on several validation targets, including experts, educators, and students to determine their responses to the feasibility and effectiveness of the developed learning application media.

Evaluation (Evaluation)

This is the stage for determining the success and suitability of the learning media being created, or vice versa. The evaluation conducted in this study is a formative evaluation. Formative evaluation is an assessment activity that aims to seek feedback (feedback), the research results can then be used to improve ongoing or past teaching and learning processes. Evaluations are based on expert validation and field testing. Data analysis is then performed, including processing responses, criticisms, suggestions, and respondent assessments.

The instruments used in the research and development of learning media based on the picture-guessing application include observation, interviews, questionnaires, and documentation. These instruments are essential for evaluating the feasibility of the learning media and validating the product being developed. Before use, these instruments must be validated by experts to ensure their accuracy.

After obtaining the data, the next step is to analyze the data. The data analysis technique used in this development is to describe all opinions, suggestions, or criticisms, for example, responses from evaluators obtained from assessment sheets or questionnaires resulting from data analysis used to see the feasibility of designing learning media for guessing pictures using Likert scale. Likert scale used to measure the attitudes, opinions, and perceptions of an individual or group regarding social events, which are determined by the researcher. Attitudes in the analysis of the validation instrument questionnaire data can be seen in the following table:

Attitude Development Criteria in the Assessment of Guess the Picture Media Design

Attitude Category			
1	2	3	4
Very poor	Nood Good	Good	Very Good

Meanwhile, to determine the presentation results of the assessment scores, a calculation formula is used to obtain the results. After data collection, quantitative data is converted to qualitative data based on four answer categories, as shown in the table:

Eligibility Scale Table

Skor	Kriteria
0-20%	Not feasible
26- Max 50%	Less Qualified
51- Max 75%	Quite Decent
76- Max 100%	Eligible

After obtaining the answer categories for each assessment component, the data analysis process is continued by determining the percentage by tabulating the existing questionnaire data using the formula calculation:

$$\frac{\text{Total Score}}{\text{Maximum score}} \times 100\% = \text{Eligibility\%} = \frac{\text{Score obtained by respondents}}{40} \times 100\%$$

The results of all assessment scores using the Likert scale are then averaged across a number of trial sample subjects and converted into assessment questions to determine the quality of the usefulness of the resulting media product based on user opinions. Research instruments using the Likert scale can be made in the form of checklist or multiple choice.

RESULTS AND DISCUSSION

The needs analysis phase consisted of analyzing field conditions or the learning environment and students, as well as gathering reference information on media used by educators before developing them as classroom teaching tools. In this phase, researchers began by observing and interviewing fifth-grade elementary school teachers who had received science instruction on ecosystems in their classrooms.

The design phase uses the help of the quickaapninja.com website. QuickAppNinja is a platform that allows users to design interactive Android-based quiz applications without the need for programming skills, in creating Guess the Picture learning media, for fifth grade science subjects with the theme "Harmony in Ecosystems." The following is an image of the media design results:



This development stage aims to create interactive learning media that is effective and appropriate to the needs of students and subject matter. After the application has been designed, an internal trial is carried out by the development team or teacher to ensure that all components, such as images, text, instructions, and navigation buttons, function properly.

The implementation stage not only emphasizes the use of the application as a learning tool, but also includes teacher assistance, evaluation, and adjustments according to student responses, so that the application can function optimally in achieving learning objectives in the classroom.

The evaluation phase aims to assess the effectiveness and quality of the Guess the Picture application in achieving the science learning objectives related to the theme "Harmony in Ecosystems." The evaluation is carried out comprehensively to determine how well this application helps students understand the material. After the implementation of the product stage has been carried out, an assessment of the Guess the Picture application media is carried out. This assessment functions to obtain results in the form of an assessment and feasibility of the learning media that has been created and

implemented using several assessment aspects, including aspects of appearance, attractiveness, and media use. The following are the results of the assessment by experts in their fields:

Results of expert material validation assessment data:

Amount	36	37
Eligibility Scale Score	90%	92,5%
Criteria	Eligible	Eligible
Information	No Revision	

Results of media expert validation assessment data:

Amount	51	39
Eligibility Scale Score	127,5%	97,5%
Criteria	Eligible	Eligible
Information	No Revision	

The data analyzed in this study were data from the results of the validation of learning media. Validation was carried out on two material validators and two media validators obtained a feasible result. The developed media product successfully passed the ADDIE stage, the results of expert validation showed a very feasible category, indicating that the media is interesting and easy to use. This media has been proven to support exploration-based learning and strengthen the understanding of ecosystem concepts through educational games.

After the learning media product was deemed suitable by experts, the learning media was then tested with the aim of assessing the product's attractiveness as an interactive medium for students. During the trial, students were invited to use the application according to the designed learning scenario. These activities included observing visual elements, interacting with image-based questions, and participating in group discussions to solve challenges given through the application. Teachers monitored the learning process to assess the extent to which the media was able to attract students' interest, motivate them, and increase their engagement in learning activities. This trial was conducted in grades 5A and 5B at SDN in Bandar Lampung.

The results obtained from student responses to the use of the application also showed very positive results, with the level of involvement and satisfaction of class A students obtaining results 75% and class B students got the results 80%, which is included in the Very Good category characteristics.

The use of this application has been proven to improve students' understanding of ecosystem concepts such as the food chain, the relationships between living things, and environmental balance. Furthermore, the interactive, game-based learning method offered by the application can create a fun learning atmosphere and motivate students to be more active in the learning process. Based on the research results, the QuickAppNinja web-based Guess the Picture application can be used as an effective, innovative learning medium and is suitable for implementation in science subjects at the elementary school level. Further development is recommended to increase the topic coverage and integrate feedback from teachers and students so that this medium can be used more widely.

CONCLUSION

This development resulted in an interactive learning media product based on the Guess the Picture application, which contains material on the theme of harmony in ecosystems for fifth grade elementary school. The development process used the ADDIE model, which includes the stages of Analysis, Design, Development, Implementation, and Evaluation. The use of this application allows

students to learn independently or in groups using an interactive educational game approach. Thus, this learning media not only provides material enrichment but also creates a fun and participatory learning atmosphere.

Educators are encouraged to utilize various web platforms, such as QuickAppNinja, which is expected to become an alternative, innovative learning medium in elementary schools, particularly in science subjects. Further development can be done by expanding learning topics and adjusting application features based on user feedback, both students and teachers.

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