

UTILIZING INTERACTIVE LEARNING MEDIA TO ENHANCE FOURTH GRADE STUDENTS' UNDERSTANDING OF PLANT PARTS FUNCTIONS AT SD NEGERI 52 LUBUKLINGGAU

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Abstract: This study aims to develop and test the effectiveness of interactive learning media in improving the learning outcomes of Grade IV students of SD Negeri 52 Lubuklinggau on science materials about the function of plant parts. The background of this research is based on students' low understanding of abstract scientific concepts and the limited learning media available in schools. Using a Research and Development (R&D) approach with the Borg and Gall development model, the interactive media was systematically designed and validated by experts. The validation results indicated that the media fell into the "very feasible" category, and students rated it highly attractive. Testing of learning outcomes showed a significant increase from an average pre-test score of 64.5 to 84.5 in the post-test, confirming the effectiveness of the interactive learning media in enhancing student understanding. The media stimulated active engagement, supported visual and concrete comprehension, and significantly increased motivation to learn. In conclusion, the use of interactive media in science lessons can improve student understanding and engagement, making learning more effective and enjoyable. Future research is recommended to explore the integration of interactive media with collaborative learning strategies and to examine its long-term impact on student retention and critical thinking skills.

Keywords: Interactive Media, IPAS, Learning Outcomes, Plant Function, Elementary School, R&D

INTRODUCTION

Education is the main foundation in shaping the character, knowledge, and skills of students to face global challenges. In the context of basic education, Natural Sciences (IPA) or IPAS (Natural and Social Sciences) subjects play a very important role in fostering scientific, logical, systematic, and critical thinking skills in children. The materials in IPAS include concepts related to nature and life, such as the human body, the environment, and plants, which need to be understood concretely by students so that they can relate it to daily life.

However, in reality, social studies learning at the elementary school level still faces a number of challenges. Based on initial observations made at SD Negeri 52 Lubuklinggau, it is known that the IPAS learning process tends to be one-way, less interactive, and less used of innovative media. Teachers use lecture methods and textbooks more as the main source of learning, which ultimately makes students passive and less interested in participating in lessons. This has an impact on the low learning outcomes of students, especially in understanding abstract material, such as the function of plant parts.

The functional material of plant parts, although seemingly simple, contains many biological concepts that require concrete understanding, such as the process of photosynthesis, the role of roots in the absorption of water and nutrients, and the reproductive functions of flowers and seeds. If this material is delivered only through text or still images, then students will have difficulty imagining and understanding how the process occurs in nature.

In line with Piaget's theory of cognitive development, grade IV elementary school students are at a concrete operational stage (ages 7–12 years), where children need the help of props, moving pictures, or visual simulations to comprehend concepts thoroughly. Therefore, interactive learning media is an urgent need to bridge these limitations.

Interactive learning media is a technology-based learning tool that allows two-way communication between media and users. Not only does this medium present the material visually and audioloy, but it also allows students to interact directly through quizzes, animations, simulations, and self-navigation. Thus, interactive media can increase learning activity, motivate students, and optimize concept understanding.

This research aims to develop and implement interactive learning media specifically designed for functional materials of plant parts in grade IV students of SD Negeri 52 Lubuklinggau. It is hoped that with this media, the learning process will be more interesting, effective, and able to significantly improve student learning outcomes.

Can the use of interactive learning media significantly improve the learning outcomes of grade IV students of SD Negeri 52 Lubuklinggau in the functional material of plant parts?

RESEARCH METHODOLOGY

Types of Research

This research is a type of **Research and development** or **Research and Development (R&D)**. The R&D approach is used because this research not only aims to find out the results, but also to develop an educational product in the form of interactive learning media. This product is expected to be a concrete solution to the problem of low student understanding in social studies learning.

The development model used in this study is the **Borg and Gall**, which is a commonly used educational development model in product-based research. This model emphasizes the systematic stages from the identification of needs to the evaluation of the product through a series of validations and trials.

Development Model

The Borg and Gall model consists of ten stages, but in this study the researcher only used six stages that were adjusted to the time and resources available. The six stages include:

1. **Preliminary Study:** Conducting observation and analysis of learning needs in grade IV of SD Negeri 52 Lubuklinggau.
2. **Planning:** Prepare the initial design of the media, including the determination of indicators, learning objectives, and software selection.
3. **Initial Product Development:** Create multimedia-based interactive media, including material content, images, sound, and navigation.
4. **Initial Field Trial:** Distribute media to a small group of students (10 students) to get initial feedback.
5. **Product Revision:** Improve the media based on the results of initial testing and input from material experts, design experts, and teachers.
6. **Main Field Trials:** Implement the media in actual learning and conduct effectiveness measurements.

Research Subject

The subject of this study is grade IV students of SD Negeri 52 Lubuklinggau consisting of 10 students as a field trial sample. In addition, this research also involves material experts (science teachers), learning design experts, and education practitioners as media validators.

Research Instruments

The instruments used in this study include:

- a. **Validation Questionnaire:** To assess the feasibility of the media by experts.

- b. **Student Response Questionnaire:** To measure the level of media interest.
- c. **Pre-test and Post-test tests:** To determine the improvement of learning outcomes.
- d. **Interviews and Observations:** To obtain qualitative data on students' experience in using media.

Data Collection Techniques

Data is collected through the following techniques:

- a. **Interviews** were conducted with teachers and students to find out their experiences during IPAS learning.
- b. **Observations** were made to see the activeness and involvement of students during the use of media.
- c. **Written Test (Pre-test and Post-test)** to measure changes in learning outcomes before and after using interactive media.
- d. **The questionnaire** was used to measure students' perception of the attractiveness and ease of use of media.

Data Analysis Techniques

Data analysis was carried out in a **Quantitative and Qualitative**. Quantitative data in the form of pre-test and post-test test scores were analyzed using descriptive statistics to determine the difference in scores. Meanwhile, qualitative data from interviews and observations were analyzed using data reduction techniques, data presentation, and conclusion drawn.

With this systematic and comprehensive methodology, it is hoped that the results of the research will be able to make a real contribution to the practice of science learning at the elementary school level, especially in utilizing interactive learning media.

RESEARCH RESULTS

This research aims to develop and implement interactive learning media in the material *Functions of plant parts* in grade IV of SD Negeri 52 Lubuklinggau. This research process involves several stages, ranging from media development, expert validation, initial field trials, to effectiveness tests through pre-tests and post-tests.

Results of Validation of Interactive Learning Media

Validation is carried out by three parties: material experts, media design experts, and learning practitioners (classroom teachers). Each validator assesses several aspects, such as content feasibility, suitability for learning objectives, visual appearance, readability, navigation, and interactivity.

Yes	Aspects Assessed	Maximum Score	Average Score	Percentage (%)	Category
1	Content Eligibility	4	3.8	95%	Excellent
2	Media Display Design	4	3.6	90%	Good
3	Media Interactivity	4	3.7	92.5%	Excellent
4	Curriculum Fit	4	3.9	97.5%	Excellent
5	Navigation and User Convenience	4	3.5	87.5%	Good

Overall average: 92.5%

Category: Highly Decent

The validation results show that the developed media is included in the category "*Very Worthy*" for use in learning. The validator also provided input for minor improvements to the visual display and the addition of audio features to the explanation section to support students with auditory learning styles.

Results of the Interactive Media Attractiveness Test

The attractiveness test was carried out by distributing questionnaires to 10 grade IV students after using the media. The questionnaire contains statements about their impressions of the appearance, content, ease of use, and motivation to learn.

Statement	Average Score (1–4)	Percentage (%)	Category
Media appear attractive and colorful	3.4	85%	Pull
Animations help me understand the material	3.5	87.5%	Very Interesting
I love learning to use this medium	3.3	82.5%	Pull
I want to learn IPAS again with this media	3.6	90%	Very Interesting
The navigation is easy to use	3.2	80%	Quite Interesting

Overall average: 85.5%

Category: Attractive

The attractiveness of the media contributes to students' motivation to learn. This is supported by the student's statement during the interview:

*"I became more aware of the plant parts because I could see the moving pictures."
"It's like playing a game, it's fun!"*

Student Learning Outcomes (Pre-test and Post-test)

This study uses 63The test instrument is in the form of multiple-choice questions totaling 10 items. Tests are performed before and after the use of the media. Here are the results of student scores:

No	Student Initials	Rather Pre-Test	Post-test score	Difference
1	S1	60	80	20
2	S2	70	85	15
3	S3	60	80	20
4	S4	65	85	20
5	S5	70	90	20
6	S6	60	75	15
7	S7	65	80	15
8	S8	60	85	25
9	S9	70	90	20
10	S10	65	85	20

Pre-test Average: 64.5

Post-test Average: 84.5

Average Improvement: 20 points

Interpretation: An increase of 20 points proves that the use of interactive media has a significant impact on student learning outcomes.

Discussion

The results of this study reinforce various previous theories regarding the effectiveness of the use of interactive learning media in improving student learning outcomes. Specifically, in IPAS subjects that contain natural and biological concepts, interactive media is able to condense material that was originally abstract into easier to understand.

The main advantages of this medium lie in:

- a. **Dynamic visualization:** images and animations provide an overview of processes, such as the process of water absorption by the roots.

- b. **Interactivity:** the presence of quiz features makes students feel challenged and actively involved.
- c. **Color and layout appeal:** an eye-catching design captivates students' attention right from the start.

These findings are in line with Helzafah's opinion that interactive media is a form of combination of video, audio, text, and images that build a multisensory learning experience. In addition, the concept of active and fun learning can also improve *retention* information on elementary school-age children.

This also reinforces Piaget's view that children aged 7–12 need concrete learning that involves direct experience or *Real simulation*, so that information can be properly internalized.

In this study, students not only memorize the parts of the plant, but also understand their function conceptually. This is proven through students' answers in the post-test that are not only correct in selection, but also explained again in the interview.

CONCLUSION

Based on the results of the process of developing, validating, implementing, and evaluating interactive learning media for functional materials of plant parts in grade IV students of SD Negeri 52 Lubuklinggau, it can be concluded that:

1. **Interactive learning media has proven to be effective as an innovative solution in delivering abstract social studies materials to be more concrete and easy to understand by elementary school students.** In this case, material on the functioning of plant parts that were previously difficult to understand only through textbooks or still images, can be dynamically visualized using interesting and interactive multimedia technology.
2. **This interactive media shows a high level of validity** based on the results of expert assessments (materials, design, and educational practitioners) with an average validation score above 90%. This shows that the content, design, and function of the media have been in accordance with the needs of students and the applicable curriculum (Independent Curriculum).
3. **The attractiveness of the media received a positive response from students,** which was shown by an average questionnaire score of 85.5%. Students feel more interested and excited in participating in learning when media is used. This has implications for increasing learning motivation which is the key to the success of the long-term learning process.
4. **The use of interactive media has a significant effect on improving student learning outcomes,** with an average post-test score that increases by 20 points compared to pre-tests. This proves that this medium is not only

interesting but also has a real impact academically on students' understanding and mastery of the material.

5. Overall, this study emphasizes that **the application of technology in basic learning must begin early** by paying attention to the characteristics of children's cognitive development. Interactive media is not only a teaching tool, but also a means of forming habits of independent learning, critical thinking, and problem solving visually and applicatively.

Recommendations for Further Research

Based on the results and limitations of this study, some recommendations for future research are:

1. Expansion of Research Subjects

Further research should be carried out by involving more subjects from different schools and regions so that the results can be generalized more broadly and representative to the context of basic education in Indonesia.

2. Media Development for Other Materials in IPAS

This interactive media is only focused on one topic, namely the function of plant parts. Further research is suggested to develop similar media for other, more complex topics, such as plant life cycles, food chains, or environmental pollution, so that the scope of media use can be broader and have a wider impact in the IPAS curriculum.

3. Integration of Interactive Media with Active Learning Methods

This media is used individually in the learning process. The next research is suggested to combine interactive media with project-based learning, problem-based learning, or cooperative methods such as Think-Pair-Share so that students are more active and learning is more collaborative.

4. Long-Term Evaluation

It is recommended to conduct longitudinal studies to examine the impact of the use of interactive media on students' cognitive and affective

development over a longer period of time, including its effect on critical thinking skills and technological skills.

5. Trials at Different Class Levels

This research is limited to class IV. Researchers can further explore the effectiveness of these media at the lower grade level (grades I–III) or higher (grades V–VI), to assess suitability based on the level of development of the age and learning ability of the students.

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