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DEVELOPMENT OF INTERACTIVE LEARNING MEDIA BASED ON POWERPOINT ON LEARNING IPAS MATERIAL ELEMENTARY SCHOOL PLANT BODY PARTS

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Abstract: This research aims to develop interactive learning media based on PowerPoint in the learning of Natural and Social Sciences (IPAS) for the material of plant body parts in elementary schools. The research method uses the ADDIE development model (Analysis, Design, Development, Implementation, Evaluation). The analysis stage is used to identify learning needs and student characteristics. At the design stage, the media is designed with relevant visual content and supports interactivity. The results of the development are then implemented in the classroom and evaluated through observation, interviews, and questionnaires. The results show that this learning media improves students' understanding plant body parts material and increases learning motivation. Features such as animation and multiple choice evaluation help students understand the material more concretely and interestingly. Teachers also find it helpful as it presents the material in a systematic and structured way. With this media, the learning process becomes more effective, interesting, and relevant to the needs of students in the digital era. This research recommends training for teachers and further development for other IPAS materials.

Keywords: Interactive Learning Media, *Powerpoint*, Plant Body Parts

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INTRODUCTION

The learning process in elementary schools requires creative and innovative approaches to attract students' interest (Kholil & Ahmad, 2023). One of the main challenges in learning is creating a learning atmosphere that is both fun and effective in delivering the material (Aditiyawarman et al., 2022). In the subject of Natural and Social Sciences (IPAS), especially the material of plant body parts, the concept of abstract plant parts is often difficult for elementary school students to understand (Nurmin et al., 2014). Students often have difficulty understanding the material because the learning media used is less interesting or inappropriate (Fira Afilia Firnanda & Farida Nurlaila Zunaidah, 2024). Therefore, learning media is needed that can overcome these challenges.

The development of information and communication technology (ICT) has brought major changes in various aspects of life, including education (Fricticarani et al., 2023). One of the main impacts of ICT development is the ease of access to information and the provision of various learning media that are more interesting and interactive (Trilling & Fadel, 2009). One alternative that can be applied is the development of PowerPoint-based learning media (Pramesti et al., 2021). PowerPoint has various features that support interactivity, such as animations, transitions, and hyperlinks, which can be used to create a more enjoyable and interactive learning experience (Mishra & Koehler, 2006). In addition, PowerPoint-based media allows teachers to present material systematically and visually, so that it can assist students in understanding concepts better (Jais & Amri, 2021).

In Merdeka Curriculum, which emphasizes flexibility and creativity in learning, the development of interactive learning media is one of the important strategies to improve the quality of education. PowerPoint-based learning media not only supports the achievement of curriculum objectives, but also encourages the development of 21st century skills, such as critical thinking, creativity, and collaboration (Kemendikbudristek, 2022). PowerPoint-based learning media is one of the potential solutions. With features such as animations, transitions, and hyperlinks, PowerPoint enables the development of media that is interactive, visual, and easily understood by students (Alatas & Albaburrahim, 2021). In addition, it supports an active learning approach, where students can be more involved in the learning process through exploration and interactive activities. This research aims to develop interactive learning media based on PowerPoint as one of the innovative efforts to improve concept understanding and student engagement in learning Natural and Social Sciences (IPAS), especially on the material of plant body parts. This material was chosen because it has characteristics that are often

difficult elementary school students to understand, given its abstract concepts and requires concrete visualization to facilitate understanding.

The goal is to create an engaging and participatory learning experience, where students are not only passive recipients of information, but are also actively involved in the exploration of the material. This is in line with the active and fun learning principles advocated in the Merdeka Curriculum. Furthermore, this research is also expected to provide practical guidance for teachers in utilizing technology to improve the effectiveness of classroom learning. By providing relevant, systematic and accessible tools, teachers can enrich their teaching methods, thus accommodating students' various learning styles. This research focuses not only on improving student engagement, but also on developing 21st century skills, such as critical thinking, creativity and collaboration.

The ADDIE model is a framework that is often used in the development of learning media because of its systematic and structured approach. This model consists of five main stages, namely Analysis, Design, Development, Implementation, and Evaluation. The ADDIE model with its structured approach ensures that the learning media produced is relevant, effective, and able to support the achievement of learning objectives.

Through this research, it is expected that the learning media developed can be a concrete solution to the challenges in learning IPAS in elementary schools. In addition, this research is expected to be able to make a significant contribution to the literature of technology-based interactive learning media development, as well as being an inspiration for the development of learning media on other materials and contexts.

METHOD

This research uses the ADDIE (*Analysis, Design, Development, Implementation, Evaluation*) development model as a systematic approach to develop *PowerPoint-based* interactive learning media. The first stage is *Analysis*, where learning needs and student characteristics are identified through interviews with teachers, observation of the learning process, and analysis of curriculum documents. The main focus at this stage is to identify problems in learning, students' needs for interactive media, and the learning context of plant body parts material. For example, it was found that students have difficulty understanding abstract concepts without the help of concrete visualization.

The next stage is *Design*, which involves designing learning media with interactive features such as animation, multiple-choice evaluation, and *hyperlinks*. This media design is

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organized with multimedia-based learning principles to increase visual appeal and effectiveness of student understanding. The structure of the learning media is designed to include an introduction that explains learning objectives, explanation of concepts using animated visualizations, and student activities in the form of independent exploration through *hyperlinks*.

In the *development* stage, the learning media is produced in accordance with the design that has been made. The media prototype is tested on a small scale by a group of teachers and students to obtain feedback which is then used to make revisions, such as adjusting the animation or difficulty level of multiple-choice evaluations. The developed media has a structure that includes material slides about plant body parts, and *hyperlink-based* navigation to provide a non-linear learning experience.

The *implementation* stage is carried out by applying *PowerPoint-based* interactive learning media to 7 students from Dukuhtengah Village Rt.03/Rw.02 Buduran Sidoarjo. The teacher acts as a facilitator, while students become users of the media. Data were collected through direct observation, interviews with teachers and students, and questionnaires to evaluate user responses to the media.

Finally, at the *evaluation* stage, formative and summative evaluations are conducted. Formative evaluation is conducted during the development process to identify media deficiencies, while summative evaluation is conducted after implementation to assess the effectiveness of the media. The evaluation instruments used include questionnaires to measure students' learning motivation, tests to assess the improvement of students' concept understanding, and interviews to obtain teachers' views on the ease of using the media.

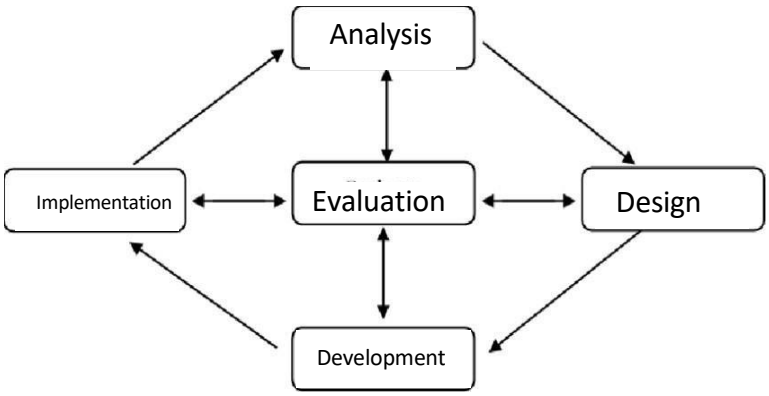

Figure 1. Diagram of the ADDIE Model stages

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FINDING AND DISCUSSION

The results of the analysis show that the developed media has main features in the form of animated visualization, multiple choice evaluation, and hyperlink-based navigation. Animation visualization helps students understand the structure and function of plant body parts concretely, so that concepts that were previously considered abstract become easier to understand. Learner Worksheets (LKPD) and multiple-choice evaluation questions provide opportunities for students to test their understanding directly, while hyperlink-based navigation allows students to explore the material independently as needed.

In the classroom learning stage, using PowerPoint-based interactive learning media is designed to create an active and fun learning atmosphere. The learning begins with the teacher giving a brief introduction to the topic of "plant body parts" using the opening slide of the PowerPoint-based interactive media. The teacher explains the learning objectives and relates them to everyday life, for example by asking students about their experiences with plants around them. This discussion aims to build students' curiosity. Next, the teacher presents the material by utilizing animations on the media to explain the structure and function of plant body parts, such as roots, stems, leaves, flowers, and fruits. The animations presented, such as the roots where food reserves are stored or the photosynthesis process on the leaves, help students understand concepts that were previously abstract. The teacher's explanation is enriched with sparking questions, such as "Have you eaten yet? What happens if you don't eat?" to train students to think critically. Power Point-based interactive learning media is designed by utilizing advanced features, such as animation, dynamic transitions, the use of hyperlinks for self-navigation, and multiple-choice evaluation. Figure 2, Figure 3 and Figure 4 are some of the stages of creating these features.

Figure 2. Transition and Animation Feature creation process

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Figure 3. (a) Hyperlink creation process; (b) Hyperlink creation process

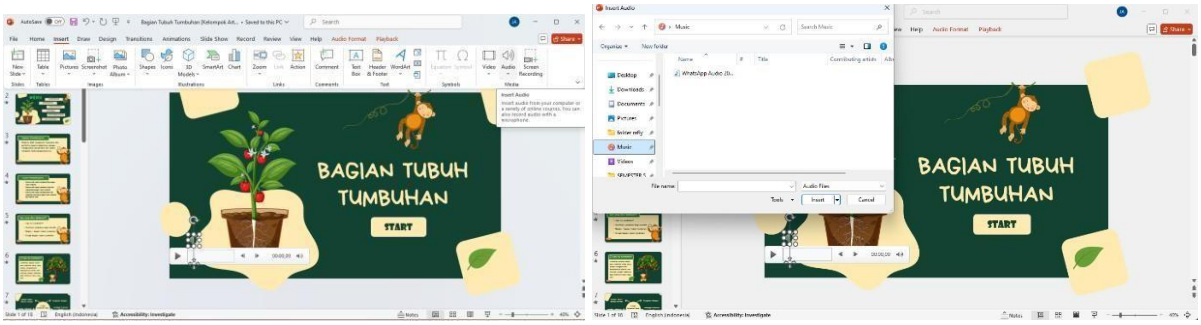
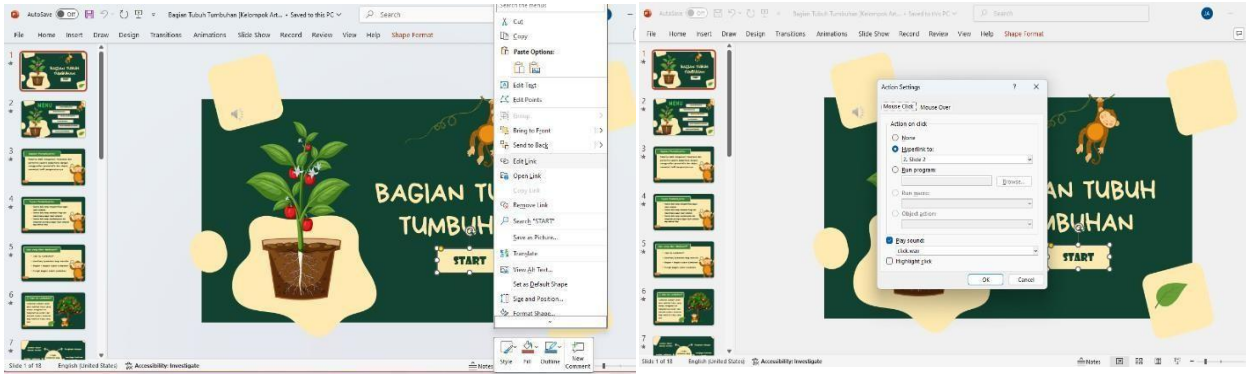


Figure 4. (a) Voice feature creation process ; (b) Voice feature creation process



After the presentation of the material, students are invited to participate in discussions working on the Learner Worksheet (LKPD) and multiple-choice evaluation questions. The multiple-choice evaluation questions are designed to test students' understanding through various formats, such as multiple choice and drag-and-drop. This multiple-choice evaluation creates a learning atmosphere that collaborative as other students provide support and suggestions. In addition, students are given the opportunity to explore the material further through the hyperlink feature in the media, which allows them to learn according to their individual interests and needs.

In the independent exploration stage, students are divided into small groups to explore one of the topics, such as the function of flowers in plant reproduction, through available hyperlinks. The results of their exploration are then presented to the whole class, where the teacher provides feedback and connects students' answers to the material that has been presented. The activity ends with a joint reflection, where students are invited to convey the new things they learned. The teacher also reiterates the main points of the material using the closing slides, ensuring that all students understand the concepts well. As an additional assignment, students were asked to observe plants around their homes and record the plant body parts and their functions. Throughout the activity, the classroom atmosphere was very active and interactive, with students showing great enthusiasm, both in following themultiple choice

evaluation questions and working in groups. Teachers find this media helpful, as it presents the material systematically, interestingly, and supports more meaningful learning for students.

The trial implementation of PowerPoint-based interactive learning media was conducted on 7 students from Dukuhtengah Village Rt.03/Rw.02 Buduran Sidoarjo, to see its effectiveness in improving understanding of plant body parts material. The trial results showed a significant increase in students' understanding of the material taught. The average score of students increased from 65 before learning to 90 after learning using this media. This increase reflects that the PowerPoint-based learning media, which is equipped with animations, multiple-choice evaluation questions, and hyperlink-based navigation, is able to transform concepts that are difficult to understand more concrete and easy to follow. In addition to the increase in material understanding, students' learning motivation also experienced a significant increase. As many as 92% of students stated that they felt more motivated to learn using this media compared to conventional learning methods, such as lectures or written assignments. This high motivation arises because the media offers a learning experience that is fun, interactive and different from everyday learning.

During the learning process, observations noted that 85% of students were actively involved in various activities presented by the media. This active involvement is not only seen from the enthusiasm of students when answering multiple choice evaluation questions, Learner Worksheets (LKPD) in groups, but also from their ability to explore the material through hyperlink-based navigation. This feature provides flexibility for students to learn according to their own needs and pace, thus creating a more personalized and relevant learning experience. In addition, the animations used in the media make it easier for students to understand how plant body parts work, such as how roots store food reserves. This kind of visualization makes learning more interesting and students' memory of the material becomes stronger.

From the teacher's side, the implementation of this media is felt to be very helpful in delivering learning materials. Teachers feel that this media is able to present material in a more systematic, structured and interesting manner. By using this media, teachers can save time in explaining abstract concepts, because the animations provided already provide clear and intuitive explanations. Interactive features such as multiple-choice evaluation also make it easier for teachers to evaluate students' understanding directly during learning. However, although this media provides many conveniences, there are some obstacles encountered.

One of the main challenges is the need for training for teachers to make optimal use of this media. Teachers need additional time to understand the features of the media, such as the use of hyperlinks. Without adequate training, teachers may find it difficult to operate the media

effectively and utilize its full potential. In addition, some students, especially those who are not familiar with technology, require further guidance to understand how hyperlink- based navigation works. This issue poses a challenge for teachers in managing the classroom, especially when it comes to guiding students who are slow to adapt to technology.

These obstacles can be overcome by providing an introduction session to the media to teachers and students before the learning begins. Teachers need to be trained to understand the features of the media and how to integrate them into learning, while students need to be given a brief orientation on how to use the media, such as how to explore hyperlinks or answer the Learner Worksheet (LKPD) in groups, multiple choice evaluation questions. In this way, the learning process can run more smoothly, and all parties can make the most of the media.

Further discussion shows that this learning media is very much in line with the principles promoted by the Merdeka Curriculum. This curriculum emphasizes flexibility in learning, where students are given the freedom to learn according to their own style and pace. This media supports that approach by providing hyperlink-based navigation that allows students to explore the material in a way that is personalized to them. It also encourages the development of 21st century skills, such as critical thinking, creativity and collaboration. In the multiple-choice evaluations and group activities, students are encouraged to think deeply, find solutions, and communicate with their peers to solve problems. This not only improves their understanding of the material, but also prepares them for future challenges.

This research also contributes significantly to digital literacy among teachers and students. Teachers who use this media get the opportunity to improve their technological competence, especially in utilizing digital tools to support the learning process. By learning and implementing this media, teachers not only enrich their teaching methods, but also instill confidence in utilizing technology more widely. On the other hand, students learn to use technology as a tool to explore knowledge, broaden their horizons and improve their skills. Thus, this PowerPoint-based learning media is not only successful in improving student learning outcomes, but is also relevant to the demands of education in the digital era that increasingly emphasizes the use of technology as an integral part of a highly active student engagement process.

CONCLUSION

This research shows that the development of interactive learning media based on PowerPoint in the learning of Natural and Social Sciences (IPAS) for the material of plant body parts in elementary schools successfully increases student engagement. This media is effective

in increasing students' engagement with the material, with students' average score increasing from 65 before learning to 90 after learning. Students' learning motivation also increased significantly, with 92% of students feeling more motivated to learn using this media compared to conventional methods.

The features in the media, such as animated visualization and hyperlink-based navigation, are proven to be able to make learning more interesting, concrete, and relevant for students. In addition, this media also helps teachers deliver materials in a more systematic and structured manner, thus improving the efficiency of the learning process. Nevertheless, this study found some obstacles, such as the need for training for teachers in operating the media optimally and students' adaptation to navigation technology. These obstacles can be overcome by providing media introduction sessions to teachers and students before implementation.

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