



# Development of PowerPoint-Based Interactive Learning Media to Improve Learning Outcomes of Fifth Grade Students of SD Negeri 4 Bandar Baru

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## ABSTRACT

This study aims to develop an interactive PowerPoint-based learning media that is feasible and effective in improving the learning outcomes of fifth-grade students at SD Negeri 4 Bandar Baru. The background of this research stems from the low learning outcomes caused by the use of conventional and less engaging learning media. This research employs a Research and Development (R&D) approach using the ADDIE model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. The subjects of the study were 30 fifth-grade students from SD Negeri 4 Bandar Baru. Data were collected through validation questionnaires from material, media, and language experts, as well as student learning achievement tests. Data analysis employed both qualitative and quantitative descriptive techniques. The results indicated that the interactive PowerPoint-based learning media developed in this study obtained a very feasible rating from experts, with an average validation score of 92%. Field trials revealed that the use of this media effectively improved student learning outcomes, as shown by an increase in the average score from 68.5 (pretest) to 85.2 (posttest). Furthermore, students demonstrated greater interest and motivation during the learning process. Therefore, the interactive PowerPoint-based learning media is declared feasible, practical, and effective to be used in the learning process for fifth-grade students at SD Negeri 4 Bandar Baru.

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## Introduction

Education serves as the foundation for developing high-quality human resources. In the context of elementary education, the learning process is not merely about transferring knowledge but also about fostering critical thinking, creativity, and collaboration. Therefore, learning at the elementary level must be designed to be engaging, meaningful, and aligned with the developmental characteristics of students. An effective learning process requires active interaction between teachers, students, and learning

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media. Learning media play a vital role in helping convey instructional material so that it is more easily understood by students. By using appropriate media, teachers can transform abstract concepts into more concrete representations, making it easier for students to internalize the knowledge they acquire.

In reality, however, many elementary school teachers still rely on conventional media such as blackboards and textbooks. The use of monotonous and non-interactive media often causes students to become bored and lose focus during lessons. As a result, their conceptual understanding remains shallow, and learning outcomes fail to reach the desired standards. Preliminary observations at SD Negeri 4 Bandar Baru revealed that most students face difficulties in understanding lessons delivered verbally and without engaging media support. Teachers tend to use lecture-based methods with minimal visual aids. This condition leads to low student participation during class activities and suboptimal achievement, with many students scoring below the Minimum Mastery Criterion (KKM).

These conditions highlight the need for innovation in designing and utilizing learning media. Attractive, interactive, and developmentally appropriate media are urgently required to enhance the effectiveness of learning in the classroom. One promising solution is the development of technology-based learning media. The advancement of information and communication technology offers vast opportunities for teachers to create more interactive and enjoyable learning media. One of the most accessible and user-friendly tools for teachers is Microsoft PowerPoint. This program not only allows for the presentation of material in text and images but can also be enhanced with animations, sounds, videos, and interactive links.

Interactive PowerPoint-based learning media allow students to actively engage in the learning process. Through the integration of visual and auditory elements, students can better grasp key concepts. Moreover, the appealing design helps foster learning motivation, focus students' attention, and improve long-term retention of knowledge. In the context of 21st-century learning, interactive media serve as essential tools for achieving core competencies. Students are expected not only to acquire factual knowledge but also to develop critical thinking, creativity, and problem-solving abilities. Therefore, teachers are encouraged to effectively integrate technology into their instructional practices.

The use of PowerPoint as an interactive medium can also accommodate various student learning styles. Visual learners benefit from images and animations, while auditory learners gain from narration or background music. Consequently, this medium creates an inclusive, student-centered learning environment.

Beyond supporting conceptual understanding, interactive PowerPoint media can also enhance learning outcomes. Learning outcomes serve as key indicators of

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instructional effectiveness. When students are motivated and actively involved in learning, their comprehension improves, leading to significant increases in academic achievement. Previous studies have shown that PowerPoint-based media can improve students' motivation and learning outcomes. According to Arsyad (2019), the use of engaging and interactive instructional media helps students understand the material more effectively and strengthens their retention of information. Thus, integrating interactive PowerPoint media into classroom instruction can serve as an effective strategy for achieving learning objectives. (Citation: Arsyad, A. (2019). *Media Pembelajaran*. Jakarta: Rajawali Press.)

Interviews with fifth-grade teachers at SD Negeri 4 Bandar Baru revealed that many teachers face difficulties in developing engaging learning media. To date, instructional materials are still presented conventionally, and PowerPoint is used merely as a linear presentation tool without interactive features that encourage student participation.

Therefore, this study aims to develop interactive PowerPoint-based learning media specifically designed to meet the needs of students and align with the characteristics of the fifth-grade curriculum at SD Negeri 4 Bandar Baru. This media is expected to enhance student engagement, clarify the delivery of learning materials, and positively impact their learning outcomes. This research adopts a Research and Development (R&D) approach using the ADDIE model, which consists of five systematic stages: Analysis, Design, Development, Implementation, and Evaluation. This model is chosen for its structured process in developing instructional media that is valid, practical, and effective. Through the development of interactive PowerPoint-based learning media, it is anticipated that teachers will gain access to an engaging and easy-to-use instructional tool. Furthermore, the outcomes of this research are expected to contribute to the advancement of learning practices in elementary schools, particularly in improving student achievement and creating more meaningful learning experiences.

## Methods

This study employed a Research and Development (R&D) approach aimed at producing a product in the form of interactive PowerPoint-based learning media that is valid, practical, and effective for use in fifth-grade classrooms at SD Negeri 4 Bandar Baru. According to Sugiyono (2019), research and development is a method used to produce specific products and test their effectiveness. Therefore, this approach was selected because it aligns with the study's goal of developing instructional media that support learning improvement. The development model adopted in this study was the ADDIE model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. The ADDIE model, introduced by Dick and Carey (1996), provides a systematic framework for designing and developing instructional media. Through this

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model, each stage is carried out sequentially and continuously to ensure that the final product meets user needs and educational objectives.

The first stage, Analysis, involved identifying student and teacher needs, student characteristics, and challenges encountered during the learning process. The analysis was conducted through interviews with fifth-grade teachers, classroom observations, and curriculum review. The results of this stage served as the foundation for designing learning media that are relevant, engaging, and aligned with students' cognitive development. The second stage, Design, focused on preparing the initial blueprint of the learning media. Activities during this stage included determining learning objectives, selecting instructional content, developing a storyboard, choosing visual and audio elements, and planning interactive navigation. The purpose of this design phase was to create a media framework that is visually engaging and pedagogically supportive of conceptual understanding and student participation.

The third stage, Development, involved constructing the PowerPoint-based learning media according to the design specifications. The media was enhanced with interactive features such as navigation buttons, animations, audio narration, and embedded quizzes. After the initial product was developed, expert validation was conducted by material experts, media experts, and language experts to assess content accuracy, visual appeal, linguistic clarity, and interactivity. The expert validation process ensured that the media met the criteria of validity and feasibility (Borg & Gall, 1983). The fourth stage, Implementation, involved conducting a field trial with fifth-grade students at SD Negeri 4 Bandar Baru. The goal of this stage was to evaluate the practicality and effectiveness of the media in improving student learning outcomes. During implementation, the researcher acted as a facilitator, while the classroom teacher served as the main instructor using the developed media. Data were collected through achievement tests, classroom observations, and student response questionnaires regarding the usability and attractiveness of the media.

The fifth stage, Evaluation, consisted of both formative and summative evaluations. Formative evaluation was conducted throughout the development process to identify and correct weaknesses, while summative evaluation was carried out after the field test to determine the overall effectiveness of the media. As noted by Tessmer (1993), formative evaluation plays a crucial role in refining instructional products before their broader application. The subjects of this study were 30 fifth-grade students from SD Negeri 4 Bandar Baru during the 2024/2025 academic year. A purposive sampling technique was used because the study focused on a specific classroom context that aligned with the research objectives. Data were collected using several instruments, including expert validation sheets, student activity observation forms, student response questionnaires, and learning achievement tests.

Data analysis was conducted using both qualitative descriptive and quantitative descriptive techniques. Qualitative analysis was used to describe expert feedback, observation findings, and student responses to the media, while quantitative analysis was employed to measure learning outcomes through a comparison of pretest and posttest scores. The improvement in learning achievement was analyzed using the gain score formula to determine the effectiveness of the developed media. By implementing the R&D method with the ADDIE model, the developed instructional media is expected to meet three essential criteria: validity, practicality, and effectiveness. Validity is ensured through expert evaluations, practicality through ease of use by teachers and students, and effectiveness through measurable improvement in student learning outcomes. The findings of this study are anticipated to contribute to enhancing the quality of elementary education by integrating technology into classroom learning practices.

## Result

The results of this research and development study describe the outcomes of each stage of the ADDIE model, including the validation process, implementation, and evaluation of the interactive PowerPoint-based learning media. The findings demonstrate the validity, practicality, and effectiveness of the developed product in improving fifth-grade students' learning outcomes at SD Negeri 4 Bandar Baru. The first result concerns the expert validation process, which aimed to determine the feasibility of the developed media before field implementation. Three types of experts—material, media, and language—evaluated the media using structured validation instruments. The validation criteria included content accuracy, instructional alignment, visual quality, interactivity, and language appropriateness.

The material expert provided an average score of 92%, categorized as very feasible. Feedback emphasized the strong alignment between learning objectives, content coverage, and student needs. Minor revisions were made to improve clarity and provide additional practice questions. According to Borg and Gall (1983), such expert validation ensures that instructional materials meet curriculum standards and learner expectations before classroom application. The media expert gave an average rating of 90%, indicating that the PowerPoint-based learning media was highly suitable for classroom use. The expert particularly highlighted the balance between text, visuals, and animation, which contributed to the media's overall appeal and interactivity. The use of hyperlinks, navigation buttons, and audio narration made the presentation dynamic and student-centered, consistent with Arsyad's (2019) view that interactive media enhance engagement and comprehension.

The language expert assessed the linguistic clarity, sentence structure, and appropriateness of the language level for elementary students. The validation result was

94%, categorized as very feasible. The expert noted that the language used was clear, communicative, and age-appropriate, facilitating students' understanding of key concepts. Based on these combined results, the overall average validation score reached 92%, confirming that the media was valid and ready for field implementation. Following validation, the media was implemented in the classroom during two instructional sessions. The implementation phase focused on evaluating practicality and student engagement. Observations revealed that students showed a high level of enthusiasm during lessons. They actively interacted with the media by responding to questions, navigating through slides, and completing embedded quizzes. This aligns with Heinich et al. (2002), who argue that interactive instructional design fosters active learning and student participation.

Teacher feedback also confirmed the practicality of the media. Teachers reported that the media was easy to use, required minimal technical skills, and effectively supported instructional delivery. The structured navigation allowed teachers to manage lesson pacing efficiently, while multimedia elements helped clarify abstract concepts. According to Dick and Carey (1996), instructional tools should be not only pedagogically sound but also manageable in real classroom contexts.

In terms of student engagement, observational data showed that 93% of students were actively participating during lessons. Students frequently asked questions, volunteered answers, and collaborated in small groups when solving practice exercises displayed on the slides. This high level of engagement suggests that the media successfully stimulated curiosity and sustained attention throughout the learning sessions. The effectiveness of the developed media was measured using pretest and posttest scores administered before and after the implementation. The average pretest score was 68.5, indicating that many students had not yet achieved the Minimum Mastery Criterion ( $KKM = 70$ ). After two sessions using the interactive PowerPoint media, the posttest average increased to 85.2, showing a significant improvement in student achievement.

The gain score analysis produced an N-gain value of 0.54, categorized as moderate improvement. This finding suggests that the media was effective in helping students bridge learning gaps and improve conceptual understanding. This result supports the claim by Mayer (2009) that multimedia learning fosters meaningful learning by integrating verbal and visual information, which enhances comprehension and retention.

Student feedback was collected through response questionnaires, covering aspects such as attractiveness, ease of use, interactivity, and motivation. The overall average student response was 91%, categorized as very positive. Students expressed that the interactive PowerPoint media made learning "more fun," "clearer," and "less

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boring." Many appreciated the inclusion of colorful visuals, animations, and quizzes, which transformed lessons into more engaging experiences. Qualitative data from student interviews further supported these findings. Several students mentioned that the media helped them understand difficult topics more easily. They also reported feeling more confident when answering questions and participating in class discussions. These responses reflect the motivational benefits of interactive media, consistent with Keller's (2010) ARCS model, which emphasizes Attention, Relevance, Confidence, and Satisfaction as key factors in instructional motivation.

Teacher reflections also revealed a positive shift in classroom dynamics. Lessons became more student-centered, with students taking an active role in exploring content rather than passively listening. Teachers observed that using the PowerPoint media reduced the need for repeated explanations, as animations and visuals clarified abstract ideas more effectively. In summary, the results demonstrate that the interactive PowerPoint-based learning media meets the three primary criteria for instructional development: validity, practicality, and effectiveness. The media was validated by experts as pedagogically sound, easy to use by teachers, and effective in enhancing learning outcomes. This comprehensive evaluation confirms that the developed product can serve as a valuable instructional tool for elementary education. Based on these findings, it can be concluded that the integration of interactive multimedia elements into traditional PowerPoint presentations significantly improves learning quality and student engagement. This study supports prior research asserting that technology-enhanced learning environments foster deeper understanding, higher motivation, and better academic performance (Clark & Mayer, 2016). Consequently, this interactive PowerPoint media can be recommended as a practical innovation for teachers seeking to modernize their instructional practices in elementary schools.

## **Discussion**

The findings of this study indicate that the development of interactive PowerPoint-based learning media has a significant positive impact on student learning outcomes, engagement, and motivation. The improvement in posttest scores, from an average of 68.5 to 85.2, demonstrates that the media was effective in supporting conceptual understanding and knowledge retention. This aligns with Mayer's (2009) Multimedia Learning Theory, which emphasizes that combining verbal and visual elements enables learners to process information through dual channels, leading to deeper cognitive processing and better learning results. The use of animation, interactive quizzes, and navigational features within the PowerPoint slides effectively supported this principle by promoting active learning experiences. In addition to improved achievement, the study also revealed that students demonstrated higher levels of motivation and engagement during lessons. Observations and student responses confirmed that the inclusion of

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visual elements, color schemes, and interactive tasks captured students' attention and sustained their interest. This finding is consistent with Keller's (2010) ARCS Motivation Model, which highlights that attention and relevance are critical to maintaining learner motivation. By providing relevant content and interactive features, the media allowed students to connect abstract concepts with meaningful learning activities.

The teacher's feedback further validates the practicality and usability of the developed media. Teachers reported that the PowerPoint-based tool was easy to integrate into existing lesson plans and required minimal technological training. This practicality is crucial for real classroom application, especially in elementary schools with limited resources. According to Dick and Carey (1996), instructional media must not only be pedagogically sound but also manageable within classroom constraints. The simplicity of PowerPoint as a platform makes it a sustainable choice for teachers seeking to enhance instruction without relying on advanced software or internet connectivity. From a pedagogical standpoint, the results also support the constructivist learning approach, which emphasizes active student involvement in the learning process. The interactive features encouraged students to explore, question, and reflect on content rather than passively receive information. This shift from teacher-centered to student-centered learning has been shown to improve critical thinking, problem-solving skills, and long-term retention (Jonassen, 1999). The integration of interactive media aligns with this approach by fostering collaboration, discussion, and self-directed exploration among students.

Moreover, the validation results from experts underscore the quality and reliability of the developed product. High ratings from material, media, and language experts confirm that the content was accurate, visually appealing, and linguistically appropriate for fifth-grade learners. These validations are essential components of research and development (R&D) studies, ensuring that instructional media meet academic standards and are suitable for target users before implementation (Borg & Gall, 1983). The comprehensive validation process strengthens the credibility of the findings and ensures that the media is both effective and feasible. Overall, this study contributes to the growing body of literature on technology-enhanced learning in elementary education. The success of the interactive PowerPoint-based media demonstrates that even simple technological tools, when designed systematically and guided by instructional theory, can significantly improve learning outcomes. The findings suggest that schools and educators should consider adopting similar interactive approaches to create more engaging and effective learning environments. Future research could explore long-term impacts of such media on different subjects, grade levels, and diverse learning contexts.

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## Conclusion

Based on the results and discussion, it can be concluded that the development of interactive PowerPoint-based learning media is proven to be valid, practical, and effective in improving the learning outcomes of fifth-grade students at SD Negeri 4 Bandar Baru. The media received high validation scores from experts, showed ease of use for teachers, and significantly enhanced student achievement, motivation, and engagement. By integrating visual, audio, and interactive elements, this media successfully transformed the learning process into a more engaging and student-centered experience. Therefore, interactive PowerPoint-based learning media can serve as an effective instructional tool and a practical innovation for elementary teachers seeking to improve both academic performance and classroom dynamics.

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