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Development of Canva-Based "PANDERA" Learning Media to Enhance Elementary Students' Understanding of the Five Human Senses

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Abstract: Development of Canva-Based "PANDERA" Learning Media to Enhance Elementary Students' Understanding of the Five Human Senses. The topic of human senses is a crucial component of the fifth-grade elementary school curriculum. However, due to its abstract nature, it can be challenging for students to grasp. The use of technology in education has brought significant changes in the way of teaching and learning. Therefore, innovative learning media are essential to enhance students' understanding and make the material more accessible. **Objectives:** This study aims to validate and evaluate the PANDERA learning media, or the Canva-based Human Senses application, designed for fifth-grade elementary school students. **Methods:** This study employs a research and development (R&D) approach, utilizing the ASSURE model, which consists of six stages: Analyze Learners, State Objectives, Select Methods, Media, or Materials, Utilize Media and Materials, Require Learner Participation, and Evaluate. **Findings:** The expert validation results in the form of assessments of aspects of material, design, content and learning obtained an average score of 4.7, based on the e" 4 category, the PANDERA learning media was classified as feasible (valid). Meanwhile, the implementation results for fifth-grade students showed an average pretest score of 48.57 and a posttest score of 84. Statistical analysis results of the paired sample t-test, the Sig. (p-value) was found to be 0.01, which is Sig. (p-value) < 0.05. This indicates a significant difference before and after using the PANDERA learning media. **Conclusion:** Based on the research findings, it can be concluded that the PANDERA learning media, developed using the Canva application for the human senses topic, is effective and can be used to enhance the understanding of fifth-grade elementary school students.

Keywords: learning media, canva application, five human senses.

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INTRODUCTION

Education is the fundamental foundation for developing high-quality human resources. In this era of globalization, the challenges in education are becoming increasingly complex alongside advancements in science and technology. One crucial aspect of education is the use of effective and innovative learning media to enhance students' understanding of the material being taught (Al & Sepatan, 2021). According to (Ayu et al., 2020), learning media encompass tools, methods, and techniques used to improve the effectiveness of communication and interaction between teachers and students in the educational and teaching process at schools. Well-designed learning media can make the teaching and learning process more engaging, interactive, and enjoyable, especially for elementary school students who are still in

their basic cognitive development stage. In line with this, (Hidayatullah et al., 2023) stated that developing learning media through mixed media, animation, and interactive simulations enhances student interaction with the subject matter, creating a more engaging and immersive learning experience.

The integration of technology in education has significantly transformed teaching and learning methods. Applications such as Canva, initially known as a graphic design tool, are now being utilized in the educational sector to create engaging and creative learning media. Canva is an online-based graphic design application that is user-friendly, even for beginners. It is accessible on both smartphones and PCs, offering a variety of features that facilitate teachers in delivering lessons to students (Kharissidqi & Firmansyah, 2022). Canva provides numerous features that enable educators to design visually appealing and interactive learning materials, helping students grasp abstract concepts more easily. By incorporating Canva into the learning process, both teachers and students can develop their ability to leverage technology in education, thereby enhancing their digital literacy especially in science subjects (Rahmawati & Atmojo, 2021).

The use of Canva-based learning media aligns with curriculum policies that emphasize the integration of technology in education. The current curriculum requires teachers to incorporate technology into the learning process (Maritsa et al., 2021). The topic of human senses is a crucial part of the fifth-grade elementary school curriculum. Understanding the functions and roles of the five senses is essential for building students' foundational knowledge in science. In science education, scientific literacy plays a vital role in preparing competent and competitive students on an international level. To foster and develop scientific literacy in science learning, teachers must create learning conditions that actively engage students (Irsan, 2021). However, the concept of human senses is often considered abstract and difficult to grasp when delivered through conventional lecture methods. The most essential characteristic of interactive learning media is that students are not merely passive observers but are actively engaged throughout the lesson (Harsiwi & Arini, 2020). Teachers are expected to create an enjoyable learning environment to enhance student learning outcomes in science education. Various innovative approaches can be implemented by teachers, including the development of educational materials, learning media, lesson plans (RPP), and student worksheets (LK) (Wanah et al., 2024).

To date, various learning media have been utilized in education. However, most existing media tend to be one-directional, primarily serving as tools for delivering content without actively engaging students in the learning process. Learning media that do not facilitate active student participation can reduce the effectiveness of building a deeper understanding (Gegenfurtner et al., 2020). Therefore, it is essential to develop learning media that align with technological advancements and can enhance students' comprehension as well as other essential skills.

Therefore, innovation in teaching methods and learning media is necessary to make this material more accessible and understandable for students. According to (Herliana & Anugraheni, 2020), to capture students' interest in learning materials, educators must develop engaging methods or media that encourage active student participation in class and foster their interest in reading the material one such example being the PANDERA learning media. This learning media is designed to assist fifth-grade elementary school students in understanding the human senses topic in a more enjoyable and interactive manner. By utilizing Canva, it is expected that visually appealing and student-centered learning media can be developed, making the learning process

more effective while enhancing students' comprehension of the human senses material. This study aims to develop the Canva-based Human Senses Learning Media (PANDERA) and evaluate its effectiveness in improving students' understanding of the human senses topic in elementary education.

METHOD

This study employs the Research and Development (R&D) method. Research and Development (R&D) is a research process based on consumer needs, followed by product development to meet those needs. The purpose of R&D in education is not to formulate or test theories but to develop effective products for use in schools. These products include teacher training materials, learning materials, behavior-based objectives, media, and management systems (Safitri et al., 2019). This study adopts the ASSURE design, which consists of six stages: Analyze Learners, State Objectives, Select Methods, Media, or Materials, Utilize Media and Materials, Require Learner Participation, and Evaluate (Magdalena et al., 2024). The ASSURE model was chosen because this research focuses on the development of technology-based learning media. Additionally, the ASSURE model is systematic, theory-driven, and student-centered, making it highly suitable for enhancing the effectiveness of educational technology.

The first stage involves analyzing student characteristics, learning styles, and the use of technology in elementary schools. Next, the learning objectives are formulated based on the curriculum achievements outlined in the Independent Curriculum for Science and Social Studies (IPAS) Phase C, which requires students to analyze the relationship between form and function of human body parts, specifically the five senses. From these learning objectives, the following specific goals are established: (1) Students can identify the five human senses. (2) Students can explain the function of each human sense. (3) Students can describe how each sense organ works. (4) Students can explain ways to take care of the five human senses. The next step involves selecting teaching methods, media, and learning materials. The chosen methods include lectures and games, utilizing the Problem Based Learning (PBL) model with a Scientific approach. In this study, the primary learning medium used is the Canva-based PANDERA learning media. The development of this learning media is tailored specifically for this research, designed in a unique and engaging manner to enhance student interest. This stage involves determining the media concept, designing the initial media, developing the media, preparing the media assessment instruments, validating the media, and revising it based on expert feedback. After the development phase, the Canva-based PANDERA learning media and materials are utilized. Before being tested with students, the media undergoes expert validation to assess its feasibility and quality. Once the learning media is created, it is implemented in classroom activities, engaging students in the learning process. Observations conducted by researchers indicate that students responded positively to the PANDERA learning media and showed enthusiasm for learning about the five human senses in science subjects. The final stage involves evaluation and revision. This includes expert validation, trial implementation, and media revisions based on expert feedback to refine and enhance the Canva-based PANDERA learning media for optimal effectiveness.

This study was conducted at a public elementary school in Bandung Regency. The population consisted of seven students from the fifth-grade class at the selected school, comprising four male and three female students. A research sample was drawn from this population using a probability sampling method. The research instrument used was the PANDERA validation sheet, designed to assess the feasibility of the

PANDERA learning media. The evaluation criteria included content, design, presentation, and instructional effectiveness. Expert validation was conducted by specialists who assessed three key aspects: content quality, media design, and instructional effectiveness. Data processing utilized a Likert scale ranging from 1 to 5, with the following rating categories: 5 (Excellent), 4 (Good), 3 (Moderate), 2 (Poor), 1 (Very Poor). The expert validation results, obtained through expert judgment, were summed and averaged to determine the total respondent score ("5ØeÜ). The Canva-based PANDERA learning media is considered valid and feasible for use if it achieves an average score of e" 4.

The instrument used to measure students' understanding consisted of open-ended test questions, comprising 10 pretest and posttest questions. These questions were designed to assess students' comprehension before and after the learning process, based on predetermined indicators for the human senses topic. Each question was assigned a score ranging from 0 to 10, following a standardized scoring rubric. Before implementation, the instrument was validated by experts to assess its validity and reliability. Data processing was conducted using IBM SPSS Statistics. A paired sample t-Test was performed to determine whether there was a significant difference between the pretest and posttest scores. If the Sig. (p-value) < 0.05, it indicates a significant difference before and after using the PANDERA learning media. Consequently, the PANDERA learning media is considered effective in enhancing students' understanding of the human senses topic.

■ RESULT AND DISCUSSION

At the initial stage, the researcher conducted interviews and direct observations at the selected elementary school. After gathering sufficient data from the school, additional sources were explored, including data collection from journals, references to similar research methodologies, and the compilation of learning materials from teacher and student textbooks. Once the necessary data was obtained, the researcher selected the appropriate application to support the media development in this study. Canva was identified as the most suitable tool for developing the intended learning media. After finalizing the application, the next step involved designing the product. The researcher developed the structure of the PANDERA learning media by creating menus and submenus, incorporating learning objectives, instructional materials, songs, and quizzes into the prepared slides. The final product was an interactive Canva-based learning media. During the product design phase, the researcher carefully selected elements and images within Canva that aligned with the human senses topic. To enhance interactivity, the researcher utilized the hyperlink feature, allowing users to click buttons that navigate to specific slides. Additionally, hyperlinks were integrated with external applications such as YouTube to provide supplementary content. Below is an illustration of the PANDERA learning media:

Figure 1. Display of PANDERA learning media

After that, the researcher conducted validation with experts. Below is the validation test result from the experts:

This development underwent validation testing by experts in content, media, and instructional design. The average score for the material indicator was 4.8, the visual design (media) indicator scored 4.8, the content (media) indicator scored 4.6, and the learning indicator scored 4.6. When all indicators were summed and averaged, the final score was 4.7. Based on the e14 category, the PANDERA learning media was classified as feasible (valid). According to the trial results, the development of the

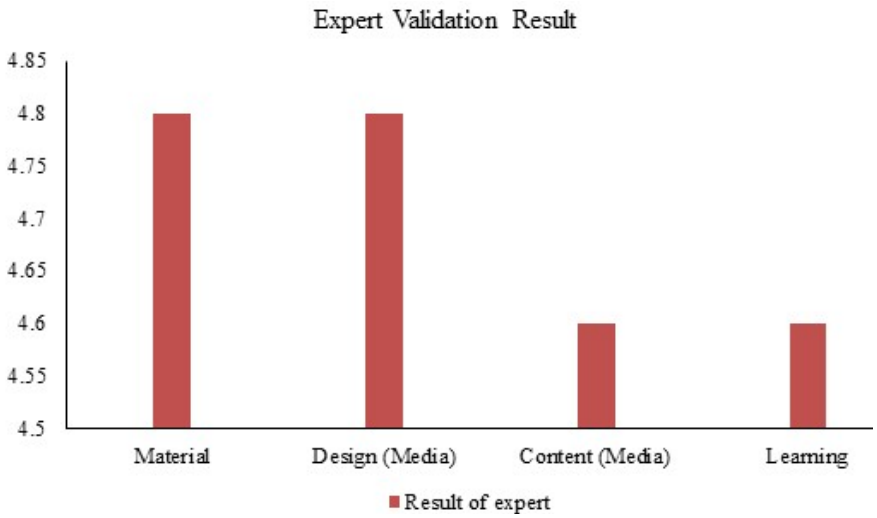

Figure 2. Expert validation result

PANDERA learning media is highly suitable for implementation as an instructional tool to enhance the understanding of fifth-grade elementary school students, particularly in science subjects related to the human senses. The highest score was obtained in the material and appearance indicators, indicating that the content in the PANDERA learning media aligns with the learning objectives and students' needs. Additionally, the appearance of the PANDERA learning media features attractive visualizations, making it appealing to fifth-grade elementary school students. This learning media has a significant positive impact not only does it facilitate student learning, but it also enables teachers to develop effective teaching strategies and utilize diverse instructional models. As a result, each learning objective and achievement indicator can yield optimal outcomes for students (Fitra & Efendi, 2020)

The PANDERA learning media, having undergone the validation process and been deemed suitable for use, proceeded to the implementation stage. At this stage, it was tested on fifth-grade students by administering pre-test and post-test questions to assess the improvement in their understanding of the human senses topic.

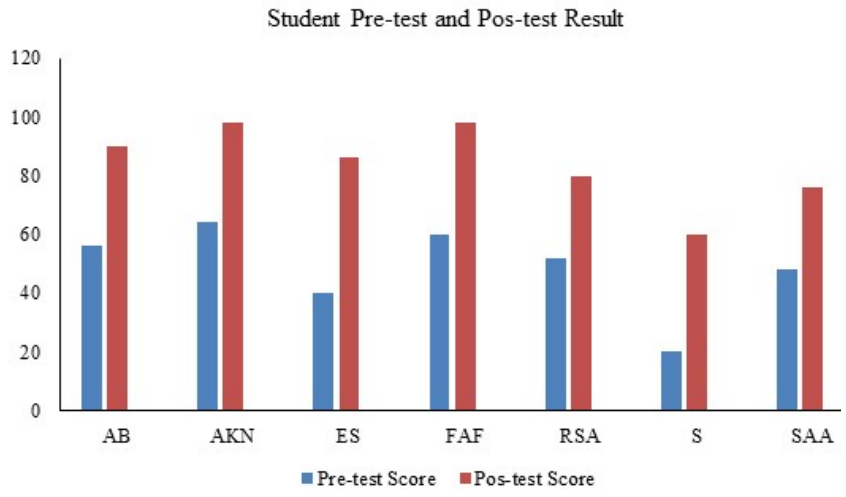

Figure 3. Student pre-test and pos-test result

Based on the data, the average pre-test score was 48.57, while the post-test score was 84. To determine whether there was a significant difference between the pre-test and post-test scores, the researcher conducted a paired sample t-test using IBM SPSS Statistics. Below are the results of the data analysis:

Based on the results of the paired sample t-test, the Sig. (p-value) was found to be 0.01, which is Sig. (p-value) < 0.05. This indicates a

Table 1. Statistics test result

Paired Samples Test										
		Paired Differences							Significance	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper	t	df	One-Sided p	Two-Sided p
Pair 1	PRE-TEST - POSTEST	-35.42857	6.50275	2.45781	-41.44261	-29.41453	-14.415	6	<.001	<.001

significant difference before and after using the PANDERA learning media. Therefore, PANDERA is considered effective in improving students' understanding of the human senses topic in fifth-grade elementary school. According to (Asiyaha, 2022) student comprehension is not merely the ability to memorize information but also the capability to grasp meaning and fully understand what is being learned. Thus, through pre-tests and post-tests, students' understanding of the human senses material can be accurately measured.

The research findings align with previous studies, as evidenced by prior research indicating that PANDERA is feasible for use and can enhance students' understanding. For instance, a study by (Prasetyo & Astuti, 2021) titled *Development of the "ORMAS" Learning Media (Human Body Organs) Based on Microsoft PowerPoint in Elementary Schools* concluded that expert validation confirmed the ORMAS media as appropriate for educational use. Another study, *Development of the Ecopet Comic (E-Comic for Future Exemplary Leaders) as a Medium for Introducing Islamic Politics to Sixth-Grade Elementary School Students* by (Gunadi et al., 2023), concluded that experts rated the media as "excellent" (93%) and deemed it effective in enhancing students' cognitive, affective, and psychomotor skills, making it suitable for use in Islamic education subjects. Additionally, research by (Rahmawati & Atmojo, 2021) titled *Analysis of 21st Century Digital Video Learning Media Using Canva in Science Learning* found that digital learning media is highly applicable to teaching natural sciences, particularly for subjects requiring in-depth understanding, such as planetary studies. Another study, *Development of Animation Video-Based Learning Media Using Canva to Enhance Student Motivation and Achievement* by (Asnawati, & Sutiah, 2023) concluded that animated videos created with Canva could increase students' motivation and academic performance, making them viable learning tools. Furthermore, research by (Kristianingrum & Radia, 2022), titled *Development of "Popandra" (Pop-Up Book on Human Senses) Learning Media for Understanding Human Senses in First-Grade Elementary School Students at SD Negeri 2 Selodoko*, found that pop-up books were effective for teaching first-grade students about human senses. Therefore, the continuous development of learning media, particularly technology-based instructional tools, is essential to ensuring that educational materials remain innovative, diverse, and engaging for students.

As a technology-based learning medium, PANDERA has both advantages and limitations.

The research findings highlight several strengths of PANDERA as a learning tool. It helps teachers effectively convey abstract concepts related to human sensory organs, increases students' enthusiasm for learning through engaging visuals and content, presents structured and concise material for easier comprehension, and enhances the understanding of fifth-grade students regarding the topic. The presence of learning media during the teaching and learning process can serve as a valuable aid for both teachers and students (Mukarromah & Andriana, 2022). However, the study also identified some limitations of PANDERA. Its use requires technological devices such as laptops and projectors, as well as a stable internet connection. According to (Widianto, 2021), the infrastructure supporting the implementation of information and communication technology is not yet widely available or evenly distributed.

CONCLUSION

The development of the PANDERA learning media, based on the Canva application for fifth-grade science subjects in elementary school, follows the ASSURE model. This development model facilitates the creation of effective learning media. The ASSURE model consists of six stages: Analyze Learners, State Objectives, Select Methods, Media, or Materials, Utilize Media and Materials, Require Learner Participation, and Evaluate. This study has undergone expert validation and implementation in a fifth-grade classroom. Based on the research findings, it can be concluded that the PANDERA learning media, developed using the Canva application for the topic of human sensory organs, is effective in enhancing students' understanding. This is supported by expert validation results, which yielded an average score of 4.7, categorizing it as valid. Additionally, the implementation results showed an increase in students' scores, with a pre-test average of 48.57 and a post-test average of 84. The statistical test results indicate a Sig. (p-value) < 0.05, confirming a significant difference before and after using the PANDERA media. This research holds great potential as a reference for further innovations in the education sector. However, research on the development of learning media and other educational advancements should continue to ensure that Indonesia's education system remains innovative and progressive.

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