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Fun Science in the Classroom: Collaboration of PGSD Alum Students in Creating Interactive Media for SD Negeri 8 Juli

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ABSTRACT

This study aims to describe the process and impact of collaboration between students of the Primary School Teacher Education (PGSD) Study Program and SD Negeri 8 Juli in creating interactive science-based learning media for science education. This activity was conducted within the context of the Science Media Product course, using a descriptive qualitative approach and a case study method. The research subjects included sixth-semester PGSD students, fourth-grade teachers, and fourth-grade students. Data collection techniques consisted of observation, interviews, and documentation. The results showed that the collaboration produced educational videos and learning games that enhanced student engagement, facilitated the understanding of science concepts, and created a fun learning atmosphere. The students also gained reflective experience in understanding learners' needs and developing pedagogical creativity. This activity serves as a concrete form of project-based learning and field practice aligned with the Merdeka Curriculum policy. The study recommends strengthening campus-school partnerships to support learning innovation and the development of pre-service teacher competencies.

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1. Introduction

Scientific thinking skills and curiosity are two essential elements in early science education. However, in reality, many elementary school students show a lack of interest in science subjects due to monotonous material delivery and the lack of engaging learning media. This situation often leads to students' low comprehension of basic science concepts, which should

ideally be taught in a concrete and contextual manner (Sari & Rahmawati, 2022). As technology advances and 21st-century learning approaches evolve, there is an increasing demand for teachers and future educators to provide interactive, collaborative, and meaningful learning experiences. PGSD (Elementary School Teacher Education) students, as future educators, must be equipped with hands-on experience in designing and implementing learning media that are relevant to students' needs. One effective approach is direct collaboration with elementary schools in the process of creating and applying learning media (Putra et al., 2023).

Within the context of teacher education curricula, particularly in the Science Media Product course, students are challenged not only to understand learning theories but also to apply them through real product development. This activity requires creativity, teamwork, and the ability to analyze real classroom situations important elements in shaping their pedagogical competence. SD Negeri 8 Juli was chosen as the partner school due to its openness to innovation and collaboration with higher education institutions. Moreover, the school has a significant need for science learning media to help teachers explain abstract and challenging science materials to students. This collaboration is expected to become a strategic step in bridging theory from campus with practice in the field. The creation of these learning media benefits not only the elementary students as the end users, but also the PGSD students who gain valuable contextual learning experiences. Through direct interaction with teachers and students, PGSD students gain deeper insights into the characteristics of elementary school learning, the challenges faced by teachers, and adaptive strategies for delivering science content. In addition, this collaborative approach aligns with the Merdeka Belajar Kampus Merdeka (Freedom to Learn - Independent Campus) paradigm, which encourages student engagement in real-world projects beyond classroom walls with direct community impact. Through this activity, the campus transforms not only into a center of theory but also into a social laboratory connected to the needs of primary education (Kemendikbudristek, 2025). Technology plays a key role in transforming learning media. Students are challenged to use digital design applications, Android-based interactive media, and other visual tools that enhance student engagement. This promotes both digital literacy and science literacy for both PGSD students and elementary school students (Nuraini & Widodo, 2024).

The application of interactive media in science learning has been proven to provide a more effective multisensory learning experience compared to conventional methods. Students not only see and hear but also actively interact with the material presented through the media. The learning process becomes more lively, enjoyable, and contributes to long-term understanding (Kurniasih et al., 2024). Furthermore, this activity becomes a reflective space for PGSD students to assess their readiness as future educators. They learn the importance of well-planned instruction, the use of appropriate media, and flexibility in facing classroom dynamics. This cross level collaboration serves as a stepping stone in shaping adaptive and innovative future teachers. Based on this background, it is important to explore the forms, processes, and impacts of PGSD students' collaboration in creating science-based interactive

media for science learning at SD Negeri 8 Juli. This study is expected to contribute to the development of primary education practices as well as project-based learning in teacher education.

2. Research Methodology

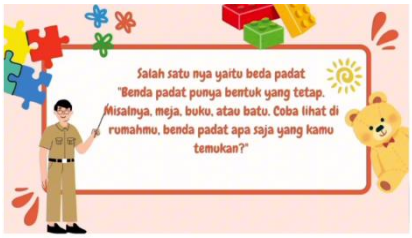
This research employed a descriptive qualitative approach using a case study method. This approach was considered the most appropriate as it enabled the researcher to explore in depth the collaborative process between PGSD students and elementary school teachers in creating interactive science-based learning media, as well as to examine its impact on student learning. The case study method allowed the researcher to understand the phenomenon contextually and comprehensively, particularly in the educational collaborative practices occurring at SD Negeri 8 Juli (Sugiyono, 2022). The research was conducted at SD Negeri 8 Juli, located in Bireuen Regency, Aceh Province. The school was selected based on its openness to innovation in learning media and its evident need for engaging and interactive science learning tools. The study took place during the even semester of the 2024/2025 academic year, from February to June 2025. The implementation of the research coincided with the Science Media Product course in the Primary School Teacher Education (PGSD) Study Program. The research subjects involved three main parties: sixth-semester PGSD students enrolled in the course, the fourth-grade teacher at SD Negeri 8 Juli, and 26 fourth-grade students. The students were divided into three small groups, each responsible for designing one innovative learning media product aligned with the science learning theme. In this process, the classroom teacher served as a field supervisor, providing feedback on the design process and implementation of the media in classroom activities, while the students acted as direct users of the media being tested.

Data collection was carried out using several techniques, including participatory observation, semi-structured interviews, and documentation. Direct observation was conducted by the researcher throughout the planning, design, and implementation stages of the learning media in the classroom. Interviews were conducted with students, the classroom teacher, and elementary students to gather information regarding their experiences, responses, and evaluations of the process and outcomes of the activity. The documentation technique was used to collect data in the form of activity photos, student-created media products, reflective notes, and recorded classroom sessions. This combination of methods is in accordance with the triangulation approach in qualitative research to enhance the validity of the data obtained (Putra, Nugraha, & Maharani, 2023). Data analysis was carried out interactively using the Miles and Huberman model, which consists of three stages: data reduction, data display, and conclusion drawing (Sugiyono, 2022). Data obtained from observations and interviews were reduced to select relevant information and then presented in a narrative description. From this data, the researcher interpreted meaning, identified key patterns, and formulated conclusions regarding the collaborative process and outcomes of the media development between students and the teacher. Verification was carried out

continuously during the analysis process to ensure the consistency and validity of the findings. Data validity was ensured through technique triangulation and source triangulation. Technique triangulation was conducted by comparing data from observation, interviews, and documentation, while source triangulation involved multiple informants - teachers, students, and elementary school pupils. In addition, member checking was conducted by confirming the initial interpretations with the informants to ensure that the data reflected their intended meanings (Yuliani & Pratama, 2023). Peer debriefing was also carried out with academic supervisors and fellow researchers to maintain the objectivity of the analysis.

3. Results and Discussion

The research findings indicate that the collaborative process involving PGSD students in creating interactive science-based learning media was structured and participatory. The students did not merely design the media theoretically on campus, but were directly involved in field activities at the school. They conducted classroom observations, engaged in discussions with the fourth-grade teacher, and adapted their media designs to the actual needs identified in the classroom. This collaboration served as a practical implementation of the campus-school partnership concept, which is increasingly recommended in practice-based teacher education programs (Putra et al., 2023). The media products developed by the students included self-made educational videos titled “Playing with Water While Learning: Exploring Objects Around Us (Solids, Liquids, and Gases), Light, and Shadows”. In addition, the students created Science Educational Games designed to stimulate quick thinking and deepen the understanding of basic science concepts. Each learning media was tailored to match the specific learning themes and cognitive level of fourth-grade students. Below are some screenshots and visuals from the video-based media that have been created.



(1)

(2)

(3)

Figure 1. The Developed Learning Media

During the classroom trial of the media, students demonstrated very positive responses. They appeared enthusiastic, asked questions actively, and participated directly in the learning activities. Even students who were usually passive began to show increased engagement. This suggests that interactive media can significantly enhance students' motivation and involvement in learning. These findings support the results of Kurniasih, Santoso, and Amelia (2024), who stated that interactive learning media can effectively improve students' interest and understanding in science subjects. The fourth-grade teacher at SD Negeri 8 Juli also expressed appreciation for the media developed by the students. According to the teacher, the activity greatly helped in delivering abstract content in a more concrete and easily understandable manner for students. The teacher further noted that the students not only provided the media, but also demonstrated how to use it directly in the classroom, resulting in simultaneous knowledge and practice transfer.

Yuliani and Pratama (2023) also emphasized the importance of practice transfer between pre-service teachers and classroom teachers in collaborative activities such as this. From the students' perspective, involvement in this project offered an authentic learning experience. They learned to align their creative ideas with real conditions in the field, communicate with students and teachers, and directly evaluate the effectiveness of the media they created. This experience served as a real-world application of reflective teaching, which is increasingly emphasized in 21st-century teacher education curricula (Kemendikbudristek, 2025). In their written reflections, students expressed that they felt more confident and better understood students' learning needs after completing this process. Overall, the collaboration between PGSD students and SD Negeri 8 Juli not only resulted in the creation of learning media products but also fostered a two-way learning process that enriched all parties involved. This activity reinforced the principle that effective learning media must be contextual, participatory, and responsive to the characteristics of learners. As highlighted by Nuraini and Widodo (2024), the design of instructional media should consider psychological, social, and pedagogical aspects to be truly effective in science learning. The discussion of these findings strengthens the understanding that student involvement in creating interactive learning media is not merely an academic task, but an essential part of the professional identity formation process for future teachers. Sari and Rahmawati (2022) noted that project-based activities involving school partnerships can foster pedagogical skills, creativity, and social empathy in a balanced way. Thus, this collaborative activity served a dual purpose: first, as a means to improve the quality of science education at SD Negeri 8 Juli, and second, as a reflective and transformative learning platform for PGSD students. It clearly demonstrates that science learning does not have to be rigid and theoretical, but can instead be enjoyable, communicative, and grounded in real classroom experiences.

4. Conclusion

Based on the research findings and discussion, it can be concluded that the collaboration between PGSD students and SD Negeri 8 Juli in creating interactive science-based learning media had a positive impact on both the classroom learning process and the development of pre-service teacher competencies. The media developed by the students, consisting of self produced educational videos and educational games, successfully increased student engagement, clarified abstract science concepts, and created a more enjoyable and meaningful learning environment. PGSD students gained valuable hands-on learning experiences, particularly in understanding learner characteristics, developing pedagogical creativity, and sharpening their reflective abilities as future educators. The use of interactive media in science learning proved effective in enhancing student motivation and understanding. The positive responses from both teachers and students indicate that the developed media were not only innovative but also practical and well-suited to the context of elementary school learning.

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