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## EDUCATION WITH LIMITED FACILITIES AND INFRASTRUCTURE AT SDN PLAJan

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### Abstract

This qualitative research aims to describe teacher's efforts in enhancing student learning interest in Physical Education, Sports, and Health (PJOK) subject with limited facilities and infrastructure at SDN Plajan. The research subjects consisted of 12 fourth-grade students and one PJOK teacher. Data were collected through observation, interviews, and documentation. Data analysis employed qualitative descriptive analysis techniques including data reduction, data presentation, and conclusion drawing. The research findings indicate that the teacher implemented various strategies to overcome facility limitations, including: (1) utilizing alternative spaces such as schoolyards and corridors for learning activities; (2) creating simple teaching aids from locally available materials; (3) implementing rotation systems for equipment usage; (4) modifying games to suit available resources; (5) integrating local wisdom-based traditional games; and (6) collaborating with the school committee and community for facility support. These efforts successfully increased student learning interest from 58% to 85%, as evidenced by increased participation, enthusiasm, and active involvement in learning activities. The research concludes that teacher creativity and innovation play a crucial role in overcoming facility limitations and enhancing student learning interest in PJOK.

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## INTRODUCTION

Physical Education, Sports, and Health (PJOK) is an integral component of the educational curriculum that plays a vital role in the holistic development of students. The subject not only focuses on physical fitness and motor skill development but also

contributes significantly to the formation of character, social skills, and mental well-being (Ananda et al., 2026). In the Indonesian education system, PJOK has been mandated as a compulsory subject from elementary to secondary levels, reflecting the government's commitment to promoting healthy and active lifestyles among the younger generation. Endrawan et al. (2023) further reinforce this view by demonstrating a strong relationship between sports participation and mental health, suggesting that well-designed physical education programs contribute not only to physical fitness but also to psychological well-being among students.

The effectiveness of PJOK learning is highly dependent on the availability and quality of facilities and infrastructure. According to Gunawan et al. (2026), adequate facilities and infrastructure are crucial components in supporting the quality of PJOK learning. The characteristics of PJOK as a practical subject demand safe, structured physical activities and adequate equipment support. However, numerous reports indicate that many elementary schools in Indonesia still face significant limitations in terms of facilities and infrastructure, ranging from non-standard fields, minimal sports equipment, to the absence of continuous facility maintenance (Gusniati et al., 2024; Rokhmah et al., 2025).

SDN Plajan, located in a rural area, exemplifies the challenges faced by schools with limited resources. The school has only a small field with uneven surfaces, minimal sports equipment, and no dedicated indoor facility for PJOK activities. With only 12 fourth-grade students, the teacher must navigate these constraints while ensuring that learning objectives are met and student interest remains high. This situation is not unique to SDN Plajan; similar challenges are reported across various regions in Indonesia, creating a gap between the ideal standards recommended by the Ministry of Education and the actual conditions in schools (Bafadal et al., 2024).

Student learning interest is a critical factor that influences the success of PJOK instruction. Research by Ananda et al. (2026) demonstrates that learning motivation, which encompasses interest, significantly affects student participation and learning effectiveness in physical education. When students are interested in the learning activities, they demonstrate higher engagement, better motor skill acquisition, and improved overall learning outcomes. Conversely, low learning interest results in minimal active involvement and failure to achieve optimal learning objectives. This is consistent with the findings of Sukanto, Putri, and Aliriad (2021), who reported that student interest in physical education is strongly influenced by the variety of learning approaches and the appropriateness of media used by teachers, indicating that creative instructional strategies are essential to sustain student engagement.

Previous studies have highlighted various solutions to address facility limitations, such as optimizing the use of alternative equipment, utilizing modified games, and strengthening teacher creativity in adapting instruction (Harahap, 2024; Hasibuan et al., 2024; Purba et al., 2024). However, most of these studies focused on the pedagogical aspects of teaching, while in-depth exploration of how teachers specifically work to enhance student interest within constrained environments remains

limited. Furthermore, there is a need for comprehensive documentation of practical strategies that teachers employ to maintain and improve student engagement despite resource constraints.

This research aims to fill this gap by examining the specific efforts undertaken by a PJOK teacher at SDN Plajan to enhance student learning interest despite limited facilities and infrastructure. By documenting and analyzing these efforts, this study seeks to contribute practical insights and strategies that can be replicated by other teachers facing similar challenges. The research questions guiding this study are: (1) What strategies does the teacher employ to overcome facility limitations in PJOK learning? (2) How do these efforts impact student learning interest? (3) What challenges does the teacher face in implementing these strategies?

## **RESEARCH METHODS**

This research employed a qualitative approach with a case study design. According to Creswell (2018), a case study design allows researchers to explore a phenomenon in depth within its real-life context, making it suitable for examining the specific efforts of a teacher in a particular school setting. The research was conducted at SDN Plajan during the 2025/2026 academic year.

### **Research Setting and Participants**

SDN Plajan is a public elementary school located in a rural area with limited educational resources. The school has a total enrollment of approximately 120 students across six grade levels. The fourth grade, which served as the focus of this study, consists of 12 students (7 male and 5 female) aged between 9 and 11 years. The PJOK teacher, who has five years of teaching experience, served as the primary informant for this research.

### **Data Collection Techniques**

Data were collected through three main techniques: observation, interviews, and documentation. Observation was conducted over a period of eight weeks, covering 16 PJOK learning sessions. The researcher used structured observation guidelines to record teacher activities, student behaviors, and the learning environment. Field notes were taken during and immediately after each observation session.

Semi-structured interviews were conducted with the PJOK teacher and six selected students (stratified by gender and academic performance). The teacher interview focused on teaching strategies, challenges faced, and efforts to enhance student interest. Student interviews explored their perceptions of PJOK learning, factors affecting their interest, and suggestions for improvement. Each interview lasted between 30-45 minutes and was audio-recorded with participant consent.

Documentation involved collecting relevant materials such as lesson plans, student attendance records, assessment results, and photographs of learning activities

(with appropriate permissions). These documents provided contextual information and supported the triangulation of data.

### **Data Analysis**

Data analysis followed the qualitative descriptive analysis model proposed by Miles and Huberman (2018), consisting of three concurrent activities: data reduction, data display, and conclusion drawing. During data reduction, the researcher selected, focused, and simplified the raw data by identifying key themes and patterns. Data display involved organizing the reduced data into matrices, charts, and narrative descriptions to facilitate pattern recognition. Finally, conclusion drawing involved interpreting the displayed data to identify meanings, relationships, and explanations.

### **Trustworthiness**

To ensure the trustworthiness of the findings, the researcher employed several strategies. Triangulation was achieved by comparing data from different sources (teacher, students, observations, documents) and methods. Member checking was conducted by sharing preliminary findings with the teacher participant to verify accuracy and interpretation. Detailed field notes and an audit trail were maintained to enable others to follow the research process.

## **RESULTS AND DISCUSSION**

### **Current Conditions of Facilities and Infrastructure**

The research findings reveal that the facilities and infrastructure for PJOK learning at SDN Plajan fall into the limited category. The school has an outdoor field measuring approximately 15 x 20 meters with an uneven dirt surface that becomes muddy during the rainy season. The field lacks proper drainage, making it unsuitable for activities during wet weather. There is no indoor facility or gymnasium that could serve as an alternative learning space.

The available equipment consists of three worn-out soccer balls, two badminton rackets with broken strings, two sets of plastic cones, one jumping rope, and a collection of used plastic bottles repurposed as markers. The equipment quantity is insufficient for the 12 students, often requiring students to take turns or share during activities. There is no dedicated storage room for equipment; items are kept in a corner of the teacher's office, making access and organization challenging.

These findings align with the research by Gunawan et al. (2026), who reported similar conditions in schools across Kadipaten subdistrict, where facilities were characterized by inadequate field conditions, worn-out equipment, insufficient quantities of learning tools, and poor maintenance of supporting facilities. The

researchers emphasized that such conditions significantly impact the quality and effectiveness of PJOK instruction.

#### Teacher's Efforts to Enhance Student Learning Interest

The PJOK teacher at SDN Plajan demonstrated remarkable creativity and commitment in implementing various strategies to enhance student learning interest. These efforts can be categorized into six main strategies:

### **1. Utilization of Alternative Learning Spaces**

The teacher maximized the use of available spaces within the school environment. When the field was unusable due to weather conditions, the teacher utilized the school corridor, covered patio area, and even classroom spaces for modified physical activities. These alternative spaces were adapted through creative arrangement of furniture and use of portable equipment.

This strategy is consistent with the recommendations by Frontiers in Public Health (2025), which suggested that schools with limited access to gym equipment can adapt by utilizing outdoor activities in open fields and incorporating bodyweight exercises. The research emphasized that personalized PE schedules can be adapted even with minimal resources by being flexible with space utilization.

The teacher explained during the interview: "When it rains, I don't cancel the lesson. We move to the corridor and do activities like modified marching, simple aerobics, or stretching exercises. The important thing is that students stay active and engaged." This adaptive approach ensured continuity of learning regardless of environmental constraints.

### **2. Creation of Simple Teaching Aids**

Recognizing the shortage of standard equipment the teacher developed creative solutions by making teaching aids from locally available materials. Used plastic bottles were filled with sand to create weights for strength exercises. Old newspapers were rolled and taped to form makeshift bats for striking activities. Rice sacks were sewn into beanbags for throwing and catching exercises.

This approach resonates with the findings of Harahap (2024), who emphasized the importance of teacher creativity in adapting instruction to overcome facility limitations. The creation of simple teaching aids not only addresses equipment shortages but also serves as a model of resourcefulness for students, demonstrating that physical activity can be pursued with minimal resources.

The teacher shared: "I learned to make these simple tools from a teacher workshop last year. At first, I was skeptical, but when I tried them with my students, they loved it. They even helped collect materials and make the equipment together. It became a learning activity in itself." This collaborative equipment-making process also fostered student ownership and engagement.

### **3. Implementation of Equipment Rotation Systems**

To address the insufficient quantity of equipment, the teacher implemented a rotation system where students worked in small groups, taking turns using available equipment. This approach ensured that all students had opportunities to practice skills

while others observed, provided peer feedback, or engaged in supplementary activities.

The rotation system was complemented by peer teaching, where students who quickly mastered skills assisted their classmates. This strategy not only maximized equipment usage but also developed students' social skills and reinforced their learning through teaching. Research by SHAPE America (2025) supports this approach, noting that multiple practice opportunities through rotation and peer interaction enhance skill development and student engagement.

Observation data showed that students remained engaged during waiting periods by observing their peers, offering encouragement, and mentally rehearsing their own attempts. The teacher facilitated this by providing specific observation tasks, such as identifying correct techniques or suggesting improvements, keeping all students cognitively active throughout the session.

#### **4. Modification of Games and Activities**

The teacher demonstrated expertise in modifying traditional games and sports to suit available resources and space constraints. Large-team games were adapted for small groups. Rules were simplified to accommodate limited equipment. Game durations were adjusted to ensure maximum participation within available time and space.

For example, soccer activities were modified into passing drills with reduced team sizes and simplified rules. Badminton was adapted into a wall-hitting practice using the school building's exterior wall. These modifications maintained the core learning objectives while making activities feasible within the available constraints. Such modifications also reflect the principles of structured circuit-based training described by Aliriad, Hudah, Apriyanto, and Da'i (2024), who showed that arranging physical activity into modified circuit formats can enhance physiological outcomes and student engagement even when standard equipment is unavailable.

This strategy aligns with the game-based learning approach advocated by PLT4M (2025) and Gopher Sport (2025), which emphasizes that embedding fitness concepts within games creates natural opportunities for learning while maintaining student engagement. The teacher's modifications ensured that students experienced the joy of movement and game play despite resource limitations.

#### **5. Integration of Local Wisdom-Based Traditional Games**

A particularly effective strategy involved incorporating traditional games from the local community that required minimal or no equipment. Games such as "gobak sodor," "engklek," "kasti," and "petak umpet" were integrated into the PJOK curriculum. These games, deeply rooted in local culture, resonated with students and their families, creating connections between school learning and home experiences. As emphasized by Aliriad (2023), traditional games hold significant pedagogical value in physical education as they combine cultural preservation with the development of fundamental movement skills, social interaction, and intrinsic motivation among students. Furthermore, Aliriad et al. (2024) demonstrated that the use of traditional

games in physical education learning effectively improves both motor skills and student motivation, particularly in elementary school contexts where conventional sports facilities are limited.

Research on local wisdom-based learning (JECS, 2025) highlights that integrating traditional cultural elements into education enhances student engagement and learning outcomes. Traditional games not only provide physical activity opportunities but also preserve cultural heritage and strengthen community connections.

Students expressed enthusiasm for these traditional games during interviews. One student noted: "I play gobak sodor with my friends in the village after school. When we play it in PJOK class, it feels like fun, not like studying." This perception of enjoyment rather than formal learning contributed significantly to sustained engagement.

## **6. Collaboration with School Committee and Community**

The teacher actively engaged the school committee and local community to support PJOK activities. This collaboration resulted in donations of used sports equipment from community members, volunteer assistance during school sports events, and community-led initiatives to improve the school field.

This community-based approach reflects the findings of Purnama (2017) and Gunawan et al. (2026), who demonstrated that community collaboration can significantly enhance the quality of school sports facilities. The teacher's proactive engagement with stakeholders expanded the resources available for PJOK beyond what the school could provide independently.

The teacher described the collaborative process: "I regularly communicate with parents during pick-up times, explaining what we need and how they can help. Some parents donated old balls and rackets their children no longer use. Others helped clear the field area during weekend gotong royong [community work]. Every little bit helps."

### **Impact on Student Learning Interest**

The implementation of these strategies yielded positive results in terms of student learning interest. Data from observations and interviews indicated significant improvements across multiple dimensions of engagement:

Participation rates increased from an average of 58% at the beginning of the observation period to 85% by the end of the eight-week period. This increase was evidenced by more consistent attendance, reduced instances of students seeking excuses to avoid participation, and more active involvement in learning activities.

Student enthusiasm, as observed through their energy levels, expressions of enjoyment, and voluntary engagement beyond required participation, showed marked improvement. Students were observed arriving early for PJOK sessions, requesting specific activities, and continuing games during break times.

The development of motor skills, while not the primary focus of this study, was noted as a positive outcome. Students demonstrated improved fundamental

movement skills, including running, jumping, throwing, and catching, suggesting that enhanced interest translated into more effective learning.

These findings support the theoretical framework proposed by Deci and Ryan (2000) regarding self-determination theory, which posits that intrinsic motivation is enhanced when individuals experience autonomy, competence, and relatedness. The teacher's strategies addressed these needs by providing choices (autonomy), ensuring skill-appropriate challenges (competence), and fostering social connections through collaborative activities (relatedness).

### **Challenges and Limitations**

Despite the positive outcomes, the teacher faced several challenges in implementing these strategies. Weather conditions remained a persistent obstacle, with rainy days limiting outdoor activities and the absence of indoor alternatives constraining options. The teacher noted: "During the rainy season, it's very difficult. The corridor gets crowded, and some activities just can't be done indoors."

Equipment durability was another concern. The homemade teaching aids, while functional, had shorter lifespans than commercial equipment and required frequent repair or replacement. The teacher invested personal time in maintaining and replacing these materials.

Time constraints also posed challenges. The additional preparation required for creating teaching aids and modifying activities added to the teacher's workload. Balancing these preparations with other teaching responsibilities required careful time management.

Student safety was a consideration, particularly when using modified equipment and alternative spaces. The teacher implemented strict safety protocols and close supervision, but acknowledged that some risk remained inherent in using non-standard equipment and spaces.

### **Theoretical Implications**

This research contributes to the growing body of literature on adaptive teaching in physical education. The findings demonstrate that effective PJOK instruction is possible even with limited resources when teachers employ creative, student-centered approaches. This aligns with the perspective of Cents-Boonstra et al. (2021), who asserted that flexible curricular models enhance learning outcomes by accommodating contextual diversity.

The study also reinforces the importance of teacher professional development in preparing educators to adapt instruction to their specific contexts. The teacher at SDN Plajan benefited from previous training workshops on creative teaching strategies, suggesting that investment in teacher education can yield significant returns in terms of instructional quality and student outcomes.

The research highlights the value of culturally responsive teaching in physical education. By integrating local traditional games, the teacher not only addressed resource constraints but also validated students' cultural backgrounds, creating more meaningful and relevant learning experiences. This approach supports the principles

of the Independent Curriculum (Kurikulum Merdeka) in Indonesia, which emphasizes contextual and culturally relevant learning.

### **Practical Implications**

The findings of this research offer several practical implications for PJOK teachers, school administrators, and education policymakers. For teachers facing similar resource constraints, the documented strategies provide a repertoire of practical approaches that can be adapted to their specific contexts. The emphasis on creativity, flexibility, and community collaboration offers a framework for thinking about resource limitations as challenges to be addressed rather than insurmountable barriers.

For school administrators, the research underscores the importance of supporting teacher professional development and creating opportunities for teachers to share innovative practices. The establishment of professional learning communities where teachers can exchange ideas and resources could amplify the impact of individual teacher innovations.

The findings highlight the need for continued investment in school facilities while also recognizing that resource constraints will persist in many contexts. Policies that support teacher training in adaptive teaching strategies, provide guidelines for creating simple teaching aids, and facilitate community-school partnerships could help address facility limitations at the systemic level.

### **Recommendations**

Based on the findings of this research, several recommendations are proposed. For teachers, continuous professional development in creative teaching strategies and adaptive pedagogy is essential. Teachers should also actively engage with their school communities to expand available resources and support.

For schools, establishing systematic equipment maintenance programs and creating dedicated storage spaces for PJOK materials would help preserve existing resources. Schools should also facilitate regular communication between teachers, parents, and community members to build collaborative support networks.

For education authorities, providing clear guidelines and training on adaptive teaching strategies for resource-limited environments would benefit teachers across the system. Additionally, developing and distributing simple teaching aid creation manuals could support teacher efforts to overcome equipment shortages.

Future research should explore the long-term sustainability of adaptive teaching strategies, their impact on student learning outcomes beyond engagement, and the scalability of successful approaches across different school contexts. Comparative studies examining various adaptive strategies could help identify the most effective approaches for specific types of resource limitations

### **CONCLUSION**

This research has documented and analyzed the efforts of a PJOK teacher at SDN Plajan in enhancing student learning interest despite significant limitations in

facilities and infrastructure. The findings demonstrate that through creative and committed teaching practices, it is possible to maintain and improve student engagement even in resource-constrained environments.

The six main strategies employed by the teacher—utilization of alternative learning spaces, creation of simple teaching aids, implementation of equipment rotation systems, modification of games and activities, integration of local wisdom-based traditional games, and collaboration with the school committee and community—collectively contributed to increased student learning interest from 58% to 85%. These strategies reflect the teacher's professionalism, creativity, and dedication to student learning.

The research contributes to the understanding of adaptive teaching in physical education and provides practical insights for teachers facing similar challenges. It underscores the importance of teacher agency and innovation in addressing resource constraints and highlights the potential of community collaboration in supporting school-based physical education.

While facility limitations present genuine challenges to quality PJOK instruction, this research demonstrates that they need not be insurmountable barriers to student engagement and learning. Through continued professional development, supportive school policies, and active community engagement, teachers can create meaningful and enjoyable physical education experiences for their students, regardless of resource availability.

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