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Examining the Availability of Physical Education Facilities and Teacher Innovation in Equipment Modification in Junior High Schools

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ABSTRACT

Purpose of the study: This study aims to identify the availability, quality, and utilization of Physical Education, Sports, and Health facilities and infrastructure in public junior high schools in Purbalingga, and to examine teacher creativity in modifying learning tools to overcome facility limitations.

Methodology: This study employed a qualitative descriptive design using observation, documentation, and questionnaire techniques. Data were collected from public junior high schools in Purbalingga. Instruments included observation sheets and questionnaires for teachers. Data analysis was conducted through data reduction, data display, and conclusion drawing based on percentage standards.

Main Findings: The results show that the availability of facilities is generally categorized as fairly ideal to ideal, although disparities exist among schools. Some facilities are in poor condition and not optimally utilized. Teacher creativity in modifying equipment using simple materials was identified as an effective strategy to support learning.

Novelty/Originality of this study: This study provides a comprehensive regional analysis of facilities combined with an examination of teacher creativity in modifying learning tools. It offers a more integrated perspective by linking facility availability with adaptive teaching practices in resource-limited school environments.

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1. INTRODUCTION

Physical Education, Sports, and Health [1]-[3] is an integral part of the national education system that plays a strategic role in the holistic development of students. is not only oriented toward physical fitness but also encompasses the development of motor skills, cognitive abilities, social and emotional competencies, as well as character building. International studies have shown that high-quality learning significantly contributes to improving physical health, learning engagement, and students' psychological well-being [4], [5] In Indonesia, is positioned as a compulsory subject that emphasizes physical activity as the primary medium of learning [6]. Therefore, the achievement of objectives largely depends on the quality of its implementation in schools, including the support of adequate facilities and infrastructure.

The implementation of learning at the junior high school level has unique characteristics, as students are in a phase of rapid physical and psychological development [7]. At this stage, structured and safe physical activity-based learning experiences are essential to support optimal student growth. Research indicates that the quality of learning experiences is closely correlated with the availability of facilities and a supportive learning environment [8], [9] .Without adequate facilities and infrastructure, the learning process tends to be limited, less varied, and may reduce students' learning motivation. This highlights that facilities are not merely complementary but are essential components in the learning process. Therefore, attention to the condition of facilities and infrastructure is a critical issue in improving educational quality [10], [11].

National education policy also emphasizes the importance of providing adequate educational facilities and infrastructure. Law Number 20 of 2003 concerning the National Education System, Article 45, states that every educational institution is required to provide facilities and infrastructure that meet the developmental needs of students. In this context, facilities include sports fields, equipment, and supporting resources for health education. Published research reports that limited facilities directly impact the quality of learning and student competency achievement [12]-[14]. However, the implementation of this policy at the school level still faces various challenges, particularly limited land and equipment. This situation highlights the need for empirical studies on the availability of facilities in schools..

Several studies in Indonesia indicate that many schools have not yet met the minimum standards for facilities and infrastructure. Research published in Sinta indexed journals reveals that disparities in facilities among schools lead to differences in learning quality [15]-[17]. Even schools located in urban areas do not always have adequate facilities due to land constraints and differing development priorities. This situation often forces teachers to modify learning activities to ensure that instructional objectives are still achieved [18]. Although modification serves as a practical solution, its effectiveness is highly dependent on the existing facility conditions. Therefore, mapping the condition of facilities and infrastructure is an urgent necessity.

To date, research on facilities at the junior high school level remains largely partial and limited in scope. Most studies focus on a single school or a specific type of facility, thus failing to provide a comprehensive picture at the regional level [19], [20]. This represents a research gap, particularly the lack of comprehensive survey studies that systematically examine the quantity, quality, and utilization of facilities [21]. Furthermore, few studies have explored the relationship between facility conditions and teacher creativity in modifying learning activities. In fact, teacher creativity is a crucial factor in sustaining learning amid limited resources. Therefore, research that integrates the aspects of facility availability and learning modification practices offers strong novelty [22].

This study presents novelty in terms of its regional coverage and depth of analysis. It not only maps the availability of facilities across all public junior high schools in Purbalingga but also examines the quality of these facilities and teachers' adaptive efforts in utilizing them [23], [24]. This comprehensive survey approach provides a realistic overview of learning conditions in urban public schools with limited land availability. Moreover, the findings of this study are expected to serve as a basis for developing more targeted policies related to the provision and management of facilities [25]. Thus, this study holds significant academic and practical urgency in supporting the improvement of learning quality.

Based on the above description, this study aims to identify the availability, quality, and utilization of learning facilities and infrastructure in public junior high schools in Purbalingga. It also aims to examine teacher creativity in modifying facilities to overcome existing limitations [26], [27]. The findings are expected to provide empirical contributions to the development of effective and sustainable learning. In addition, this study may serve as a reference for policymakers in planning school facilities. Ultimately, this research is expected to strengthen the role of as a strategic subject in developing a healthy and high-quality generation..

2. RESEARCH METHOD

2.1. Research Design

This research is qualitative [28], meaning it aims to explain and describe natural phenomena through analyzing data and the results obtained from existing processes. The research aims to describe the availability of learning facilities and infrastructure for Physical Education, Sports, and Health through data analysis on the number of facilities available. Furthermore, this study seeks to illustrate teachers' creativity in modifying learning facilities and infrastructure for Physical Education, Sports, and Health, particularly in schools with limited facilities and infrastructure.

2.2. Population and Sample

The population of this study consisted of all public junior high schools in Purbalingga Regency. The population data were obtained through documentation from the local education office and school administration records. Since the number of public junior high schools was manageable and relevant to the research objectives, this study applied total sampling, meaning that all public junior high schools in Purbalingga were included as

research subjects. The respondents involved were Physical Education, Sports, and Health teachers responsible for the implementation of Physical Education, Sports, and Health learning in each school.

2.3. Data Collection Technique

The data collection techniques used in this study consisted of documentation, observation, and questionnaires [29]. Documentation was employed to obtain data in the form of a list of public junior high schools in Purbalingga, which constituted the research population. Observation was conducted to collect direct field data regarding the availability of Physical Education, Sports, and Health learning facilities and infrastructure in these schools. In addition, questionnaires were distributed to teachers to gather data on the availability and utilization of facilities and infrastructure used in the learning process.

2.4 Teknik Analisis Data

The data analysis used in this study to examine the availability [30] of Physical Education, Sports, and Health learning facilities and infrastructure was qualitative analysis. The data collection and analysis procedures were carried out through several steps. First, the researcher identified the total number of public junior high schools in Purbalingga, including the number of students in each class, the number of classes, and the average number of students per class. Second, data were collected on the facilities and infrastructure available in each school. Third, the ideal number of facilities and infrastructure required for each type of sport taught in the schools was determined. Finally, the availability of facilities and infrastructure for each sport was calculated in percentage form based on the conditions in each school, using a specified percentage formula.

$$\text{Presentase} = \frac{Number\ of\ Facilities\ Available}{Ideal\ Number\ of\ Facilities} \times 100\% \qquad ...(1)$$

Drawing conclusions using the standard percentage of facilities and infrastructure assessment, as follows.

Table 1. Percentage Standards for Assessment of Learning Facilities and Infrastructure for Physical Education, Sports and Health

Presentage (%)	Categori
81-100	Very Ideal
61-80	Ideal
41-60	Quite Ideal
21-40	Less Ideal
00-20	Very Less Ideal

The percentage categories presented in the table are used as a benchmark to evaluate the level of availability of Physical Education, Sports, and Health ( ) facilities and infrastructure in each school. A percentage range of 81–100% indicates that the facilities are very ideal, meaning they are complete and fully support the learning process. A range of 61–80% is classified as ideal, showing that most facilities are available and adequate. Meanwhile, a percentage of 41–60% falls into the fairly ideal category, indicating that the facilities are moderately sufficient but still require improvement. A range of 21–40% is categorized as less ideal, significantly reflecting limitations in facility availability. Lastly, a percentage of 0–20% is considered very less ideal, meaning that the facilities are highly inadequate and may seriously hinder the implementation of effective learning.

2.5 Research Procedures

The research procedure in this study was conducted through several stages. First, the researcher obtained the necessary research permits, prepared the research schedule, and designed the research instruments. Second, interviews were conducted with Physical Education teachers in public junior high schools across Purbalingga to gather information regarding the condition of facilities and infrastructure used in learning at each school. Finally, the researcher carried out direct surveys to observe the actual condition of facilities and infrastructure, including the implementation of physical education learning activities in the schools

3. RESULTS AND DISCUSSION

3.1. Availability of Physical Education Facilities and Infrastructure

The findings of this study indicate that the availability of Physical Education, Sports, and Health facilities and infrastructure in public junior high schools in Purbalingga shows significant variation among schools. Based

on observation and documentation, several schools already possess relatively complete facilities, especially for major sports such as football, volleyball, and basketball. These facilities include sports fields, balls, nets, goalposts, and supporting equipment that can adequately facilitate the teaching and learning process.

However, some schools still experience limitations, particularly in athletics equipment, gymnastics tools, and small game learning media. Several schools were also found to have limited land area, which affects the availability of standard sports fields and outdoor learning spaces. This condition causes teachers to adjust learning activities according to the facilities available at school.

Based on percentage analysis using the standard of facilities and infrastructure assessment, the average availability of Physical Education, Sports, and Health facilities falls within the category of fairly ideal to ideal, with a percentage range of 61%–80%. This means that most schools already have sufficient facilities to support learning implementation, although they are not yet fully optimal. Meanwhile, several schools are still categorized as less ideal (21%–40%), especially schools with budget limitations and restricted physical space.

These findings are consistent with previous studies by Peranita [31] and Yudhi Putra [32], which reported that disparities in the availability of Physical Education, Sports, and Health facilities among schools directly affect the quality of learning implementation. Schools with more complete facilities tend to provide more varied and curriculum-oriented learning experiences, while schools with limited facilities often rely on simplified learning methods and teacher improvisation.

This result also supports the study by Ellen Niah et al. [33], which found differences in Physical Education, Sports, and Health facilities between urban and rural schools, indicating that institutional support and infrastructure development strongly influence learning quality. Therefore, the availability of facilities is not merely a supporting factor but a fundamental component in achieving effective Physical Education, Sports, and Health learning objectives.

3.2. Quality and Condition of Facilities

In addition to availability, the quality and physical condition of facilities are also important aspects identified in this study. The findings reveal that not all available facilities are in proper condition for learning use. Several sports tools such as balls, nets, and athletics equipment were found to be damaged, worn out, or no longer safe for students. Some basketball courts and volleyball fields were also observed to have poor surface conditions, which may increase the risk of injury during physical activities.

This condition indicates that the issue is not only related to the number of facilities but also to the maintenance and sustainability of their use. Schools that have sufficient quantities of facilities may still experience ineffective learning implementation if those facilities are poorly maintained. Inadequate maintenance reduces the effectiveness of learning and limits the variety of physical activities that teachers can provide.

These findings align with the research of Andri Pronomo et al. [34], which emphasized that infrastructure quality significantly influences the effectiveness of physical education learning and student participation. Similarly, Mercy et al [35] found that poor sports facilities contribute to lower student engagement and reduced physical fitness outcomes.

Furthermore, this result supports the argument of Purwanto et al [36], who stated that effective management of sports facilities requires not only provision but also regular supervision, repair, and maintenance. Without proper management, facility availability cannot fully support learning quality. Therefore, school management should prioritize both procurement and sustainable maintenance of Physical Education, Sports, and Health infrastructure.

3.3. Utilization of Facilities in the Learning Process

The study also found that the utilization of Physical Education, Sports, and Health facilities in the learning process has not yet reached an optimal level. In several schools, facilities that were already available were not fully maximized due to various factors, such as limited lesson hours, large class sizes, and limited teacher strategies in managing group activities. As a result, some learning sessions were conducted using repetitive activities with minimal variation.

Nevertheless, several schools demonstrated effective facility utilization by implementing strategies such as equipment rotation, student grouping systems, and combining multiple learning objectives within a single lesson. For example, one ball could be used alternately by several student groups while maintaining active participation. This strategy allowed learning to remain effective despite limited equipment availability.

The effectiveness of facility utilization strongly depends on teacher competence in classroom and field management. Teachers with stronger pedagogical understanding and adaptive teaching strategies tend to maximize available resources more effectively. This finding is supported by Khairunnisa [37], who stated that teacher competence has a significant influence on the successful implementation of Physical Education, Sports, and Health learning, especially in schools with limited infrastructure.

Similarly, Vina Oktavia et al. [38] explained that the utilization of alternative media and internet-based learning resources can support teachers in improving instructional effectiveness when conventional facilities are insufficient. Thus, optimal utilization depends not only on physical resources but also on teachers' instructional innovation and classroom management skills.

3.4. Teacher Creativity in Modifying Facilities

One of the most significant findings of this study is the creativity shown by Physical Education, Sports, and Health teachers in modifying learning equipment to overcome facility limitations. Teachers in several schools used simple and accessible materials such as plastic bottles as cones, raffia ropes as field boundaries, plastic balls for volleyball practice, and other modified tools adapted to student needs and school conditions.

These modifications proved to be effective in maintaining student participation and ensuring learning objectives were still achieved. In some cases, modified equipment even increased student enthusiasm because the tools were lighter, safer, and easier to use. This demonstrates that teacher innovation plays an essential role in creating meaningful and enjoyable learning experiences.

These findings are consistent with previous studies by Priyanka Singh [39] and Masduki Ahmad [40] , which found that teacher creativity is a key factor in overcoming limited facilities in Physical Education, Sports, and Health learning. Teachers who actively modify learning tools are more capable of maintaining student engagement and achieving curriculum targets despite infrastructure constraints.

Likewise, the study by Majid Khan [41] reported that teacher creativity significantly contributes to the effectiveness of physical education learning in schools with inadequate facilities. Modification is not only a practical solution but also reflects professional competence and adaptive teaching ability.

However, this study also found that the level of creativity varies among teachers. Some teachers still depend entirely on existing facilities without attempting innovation. This suggests the need for professional development programs, workshops, and institutional support to strengthen teachers' competencies in designing creative and adaptive learning strategies.

Overall, the findings confirm that the quality of Physical Education, Sports, and Health learning is influenced by both infrastructure availability and teacher innovation. Adequate facilities support effective learning, but limitations do not necessarily become barriers when teachers possess strong creativity and pedagogical competence. Therefore, improving educational quality requires not only infrastructure development but also continuous teacher capacity building.

This study contributes to a broader understanding of the relationship between facility availability and teaching practices in Physical Education, Sports, and Health learning. It emphasizes that equitable infrastructure distribution and teacher professional development should become strategic priorities for improving educational outcomes in junior high schools.

Several previous studies have examined the availability of Physical Education, Sports, and Health facilities and infrastructure in schools; however, most of them remain limited in scope and analytical depth. The study by Jun Xia et al [42] focused primarily on identifying the level of availability of facilities and infrastructure in junior high schools without exploring how these conditions influence the actual learning process. Similarly, Dhongdong Zhu [43] emphasized the quantitative availability of facilities but did not analyze the quality, maintenance, and effectiveness of their utilization in supporting learning outcomes. Furthermore, research by Hendra Jodry [44] discussed teacher creativity in overcoming facility limitations; however, the study was conducted separately from infrastructure analysis, so it did not comprehensively explain the relationship between facility availability and teacher innovation. This indicates a significant research gap, namely the absence of integrated studies that simultaneously examine the availability, condition, utilization, and teacher modification strategies within a broader regional context. Therefore, this study addresses that gap by combining these variables into one comprehensive analysis across public junior high schools in Purbalingga.

The novelty of this study lies in its integrated and regional-based analytical approach that combines infrastructure mapping with teacher adaptive practices in the learning process of Physical Education, Sports, and Health. Unlike previous studies that tended to focus only on facility availability or teacher creativity separately, this research systematically examines four interconnected dimensions: availability, quality, utilization, and teacher modification of learning facilities. In addition, this study covers all public junior high schools in Purbalingga, providing a broader and more representative regional perspective rather than focusing on a single institution. Another important novelty is the emphasis on how teacher innovation functions as a strategic response to infrastructure limitations, showing that educational quality is influenced not only by physical resources but also by pedagogical adaptation. This comprehensive perspective strengthens the academic contribution of the study and offers a more realistic understanding of Physical Education, Sports, and Health learning implementation in schools with varying facility conditions.

The implications of this study are both theoretical and practical. Theoretically, the findings strengthen the concept that the effectiveness of Physical Education, Sports, and Health learning is determined not only by the availability of facilities but also by the interaction between infrastructure quality and teacher pedagogical creativity. This expands previous perspectives that often viewed facilities merely as supporting elements, while this study confirms that they are fundamental components in achieving learning objectives. Practically, the results

provide important recommendations for school principals, local education authorities, and policymakers to prioritize equitable distribution of facilities and regular maintenance systems. In addition, teacher training programs should be strengthened to improve innovation in equipment modification and adaptive teaching strategies, particularly for schools with limited resources. These implications are highly relevant for improving educational quality, ensuring equal learning opportunities, and supporting sustainable school development policies in the field of Physical Education, Sports, and Health.

This study also has several limitations that need to be acknowledged. First, the research was conducted only in public junior high schools in Purbalingga, which may limit the generalizability of the findings to private schools or schools in other regions with different socio-economic and geographical conditions. Second, the study used a qualitative descriptive approach supported by percentage analysis, which provides strong descriptive findings but does not statistically measure causal relationships between facility conditions and student learning outcomes. Third, the data collection relied heavily on observation, documentation, and teacher questionnaires, which may contain subjective bias, particularly in reporting facility utilization and teacher creativity. In addition, this study did not directly examine students' perceptions or measure their academic and physical performance outcomes as indicators of learning success. Therefore, future studies are recommended to employ mixed-method or quantitative approaches involving broader samples, comparative regional analysis, and direct measurement of student learning outcomes to provide stronger empirical evidence and wider policy relevance.

4. CONCLUSION

In conclusion, this study reveals that the availability and quality of Physical Education, Sports, and Health facilities and infrastructure in public junior high schools in Purbalingga are generally categorized as fairly ideal to ideal, although disparities still exist among schools, particularly those with limited land and resources. The findings indicate that inadequate facilities and poor maintenance can hinder the effectiveness of the learning process and reduce student engagement. However, teacher creativity in modifying and adapting available resources plays a crucial role in overcoming these limitations and ensuring that learning objectives are still achieved. Therefore, improving the quality and equitable distribution of facilities, along with enhancing teachers' innovative capacities, is essential to support more effective, inclusive, and sustainable learning.

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