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Analysis Of Gamification-Based PJOK Learning Implementation To Improve Students' Learning Motivation At State Elementary School 1 Boal, Empang District, Sumbawa Regency

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Abstract

This study discusses gamification-based Physical Education, Sports, and Health (PJOK) learning at SD Negeri 1 Boal, Sumbawa Regency. The objectives of this study consist of: 1. To analyze the effectiveness of implementing gamification-based PJOK learning at SD Negeri 1 Boal, Sumbawa Regency. 2. To analyze students' learning motivation in gamification-based PJOK learning at SD Negeri Boal, Sumbawa Regency. 3. To identify supporting and inhibiting factors in implementing gamification-based PJOK learning at SD Negeri 1 Boal, Sumbawa Regency. The study uses a mixed method (Mixed Methods), namely quantitative research with a quasi-experimental design and inferential analysis through independent samples t-test. To compare learning outcomes between the gamification-treated group and the conventional learning group, a qualitative study was conducted with interviews with the principal and physical education teachers. The results showed that gamification-based physical education learning was effective. Statistical findings confirmed a significant difference in student learning outcomes, indicating that the gamification approach significantly impacted student learning motivation. Furthermore, the study identified supporting factors. High student enthusiasm and motivation fueled by the game element; the implementation of gamification elements such as challenges, levels, points, and rewards; adequate facilities and infrastructure; and teacher competence capable of designing and managing gamification effectively. Principal support, teacher creativity, and clear assessment rubrics also strengthen the effectiveness of gamification implementation. However, there are also inhibiting factors such as weather conditions that do not support physical activity, variations in students' physical abilities, forgetting game rules, poor coordination between groups, limited learning time, and limited supporting technology. Overall, this study confirms that gamification is a potential pedagogical approach to strengthen the quality of physical education (PJOK) learning in elementary schools, especially when supported by teacher competence and thorough learning planning.

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1. INTRODUCTION

Education is a strategic process aimed at developing students' potential holistically, encompassing cognitive, affective, and psychomotor aspects, and serving as the foundation for sustainable human and societal development. From a global perspective, education is understood not only as a learning activity but also as a human right and a crucial instrument in building social

cohesion, civic participation, and individual readiness to face 21st-century social and technological change. Therefore, education is required to be provided in a high-quality, inclusive manner, and relevant to the real needs of students and society.

In Indonesia, the quality of education still faces significant challenges. The results of the 2022 Programmed for International Student Assessment (PISA) show that Indonesian students' literacy achievements in reading, mathematics, and science remain below the international average. This situation indicates the need to transform learning practices from an approach oriented solely toward knowledge acquisition to one that emphasizes competency strengthening, learning motivation, and active student engagement. The Independent Curriculum (Curriculum Merdeka) is presented as a reform effort that emphasizes student-centered learning, differentiation, and meaningful and contextual learning experiences.

Physical Education, Sports, and Health (PJOK) is an integral part of the education system that directly contributes to the development of physical fitness, motor skills, health, and the social and emotional aspects of students. At the elementary school level, PJOK plays a strategic role in developing fundamental movement skills, fostering an active lifestyle, and instilling the values of sportsmanship, discipline, and cooperation. However, in practice, PJOK learning is often monotonous and teacher-centered, resulting in low student motivation and participation in physical activity.

Learning motivation is a key determinant of successful Physical Education (PJOK) learning. Fulfilling students' basic psychological needs—autonomy, competence, and connectedness—based on Self-Determination Theory has been shown to increase intrinsic motivation, engagement, and persistence in PJOK learning. Learning that is enjoyable, challenging, and provides space for student participation and choice is believed to foster active engagement and the continuation of active lifestyle behaviors from an early age.

In line with these needs, gamification has developed as an innovative approach in education through the application of game elements, such as points, levels, challenges, and feedback, into learning contexts. Various studies have shown that gamification can increase student motivation, enthusiasm, and engagement, including in physical education (PJOK) learning, which is naturally full of physical activity and challenges. Gamification is considered effective when designed meaningfully, that is, not simply providing external rewards but also supporting students' psychological needs and learning objectives.

Despite the significant potential of gamification in physical education (PJOK) learning, research specifically examining its application at the elementary school level in Indonesia is still limited. Gamification has begun to be implemented at SD Negeri 1 Boal in Sumbawa Regency as an innovative effort to improve the quality of physical education (PJOK) learning. However, its effectiveness, student motivation, and supporting and inhibiting factors have not been systematically documented.

Based on these conditions, this research is crucial to analyze the effectiveness of gamification-based physical education (PJOK) learning, assess student motivation, and identify supporting and inhibiting factors for its implementation at SD Negeri 1 Boal, Sumbawa Regency. The results are expected to provide empirical contributions and practical recommendations for teachers and schools in developing innovative, contextual PJOK learning that aligns with the demands of the Independent Curriculum.

2. RESEARCH METHOD

This study used a mixed methods approach with a sequential explanatory design, consisting of two stages: quantitative and qualitative research. The quantitative stage aimed to test the effectiveness of gamification-based physical education (PJOK) learning and its influence on student learning motivation. The qualitative stage explored supporting and inhibiting factors for gamification implementation in PJOK learning.

The quantitative stage used a quasi-experimental method with a post-test only control group design. The study was conducted at SD Negeri 1 Boal, Sumbawa Regency, in the odd semester of the 2025/2026 Academic Year (September–November 2025). The study population was all 43 students in grades IV and V. The sampling technique used was total sampling, with grade IV (n=19) as the experimental group receiving gamification-based Physical Education (PJOK) learning and grade V (n=24) as the control group receiving conventional Physical Education (PJOK) learning. Quantitative data were collected through a PJOK learning outcome test covering zigzag running, jumping, push-ups, sit-ups, and attitude assessment. The instrument was designed based on the PJOK curriculum and validated through expert judgment and limited reliability testing. Data analysis was performed using descriptive analysis and an independent t-test with the help of IBM SPSS Statistics version 31, after fulfilling the prerequisite tests for normality (Shapiro–Wilk) and homogeneity (Levene).

The qualitative phase employed a descriptive qualitative approach with purposive sampling. The research informants consisted of physical education teachers and school principals, selected based on their direct involvement in the implementation of gamification-based physical education learning. Data were collected through semi-structured interviews to explore experiences, perceptions, and supporting and inhibiting factors in gamification implementation. Data validity was ensured through source triangulation. Qualitative data analysis was conducted using thematic analysis, which included data reduction, data presentation, and conclusion drawing. The results of the qualitative analysis were used to explore supporting and inhibiting factors in gamification implementation in physical education learning.

3. RESULTS AND DISCUSSION

The results of the study indicate that gamification-based physical education (PJOK) learning at SD Negeri 1 Boal, Sumbawa Regency, was effective. This is evidenced by the significant difference in average learning outcomes between the experimental and control classes. The implementation of gamification was able to improve the quality of the learning process through more engaging, interactive, and challenging activities, thereby encouraging active student involvement in every stage of PJOK learning. Students in the experimental class showed higher attention, focus, and enthusiasm than students who participated in conventional learning.

The effectiveness of gamification-based physical education (PJOK) learning is inseparable from the use of game elements such as points, levels, challenges, and rewards. These elements encourage students to actively participate, strive to complete movement tasks optimally, and foster healthy competition. This condition aligns with the opinions of Sailer and Homner (2020) and Hamari et al. (2019), who stated that gamification can increase student learning motivation and engagement through intrinsic and extrinsic motivation mechanisms. With increased engagement and motivation, students more easily achieve learning goals and demonstrate better learning performance.

In addition to improving learning outcomes, this study also found that students' learning motivation increased and was classified as high. Students appeared more enthusiastic, willing to try, collaborate with peers, and enthusiastically follow teacher's instructions. This increased motivation was reflected in better grades and positive changes in learning behavior throughout the learning process. These findings align with Koivisto and Hamari (2019), who emphasized that gamification effectively increases learning motivation through engagement, competition, and structured goal achievement. Gamification also helps create a fun and meaningful learning experience, encouraging students to maintain engagement for longer periods.

The successful implementation of gamification in physical education (PJOK) learning is supported by several factors, including high student enthusiasm, the suitability of game elements to the characteristics of elementary school students, the availability of adequate sports facilities, teacher creativity in designing learning activities, and school support for learning innovation. These factors enable learning to proceed more smoothly and conductively, and encourage students to actively engage in physical activity.

This study also identified several obstacles in implementing gamification-based physical education (PJOK) learning. These obstacles include limited teacher competency in consistently applying gamification, differences in physical abilities among students, limited learning time, unfavorable weather conditions, and the suboptimal use of supporting technology for managing points and game levels. These obstacles indicate that gamification implementation requires careful planning, ongoing teacher training, and support from facilities and technology for more effective implementation.

Overall, gamification-based physical education (PE) learning has proven effective in improving learning outcomes and motivation in elementary school students. Therefore, this approach is worthy of recommendation as an innovative learning strategy in PE, with the caveat that teacher competency development, good time management, and ongoing technological support and school policies are necessary.

4. CONCLUSION

The results of the study indicate that gamification-based Physical Education (PJOK) learning at SD Negeri 1 Boal, Sumbawa Regency, was effective and had a positive impact on the learning process and outcomes of students. This was demonstrated by the learning outcomes of the experimental group, which were statistically higher than those of the control group. In addition to improving learning outcomes, the implementation of gamification also had a significant impact on student motivation and learning behavior, as reflected in increased participation, enthusiasm, courage to try, and the ability to collaborate in learning. The successful implementation of gamification was supported by student enthusiasm, the application of game elements (challenges, levels, points, and rewards), the availability of infrastructure, teacher competence and creativity, the support of the principal, and the use of a clear assessment rubric. The obstacles faced included weather factors, differences in student physical abilities, limited time and supporting technology, and suboptimal coordination and understanding of game rules.

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