Application of The Game Based Learning Model to Increase Student Learning Participation in PJOK Learning

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Abstrac: This study aims to analyze the effectiveness of the application of *the Game Based Learning* (GBL) model in increasing student involvement during Physical Education, Sports, and Health (PJOK) learning. The type of research used is Classroom Action Research (PTK) which is carried out in one cycle, including the stages of planning, implementation, observation, and reflection. The research subjects were taken from SMK Bhineka Karawang which consisted of 32 students in class X TSM 1 for the 2024/2025 school year. Data was collected through questionnaires and observations to measure student participation in the learning process. The results of the study showed a significant increase in student interest and participation with an average questionnaire score of 4.56 from the Likert scale or equivalent to 90.7% (very good category). These results show that the application of *Game Based Learning* is able to create more active, interesting, and collaborative PJOK learning. So that this model succeeds in increasing student participation during PJOK learning.

Keyword: Game Based Learning, Learning Participation, PJOK, Active Learning.

INTRODUCTION

Education is an important aspect in building the quality of human resources and realizing national goals to educate the nation's life. Through education, students are expected to be able to develop their potential and adapt to dynamic social and technological developments. Because education is a strategic means in shaping a person's personality (Sari, 2023)and Nurfatimah et al., (2022) emphasizing that education is a human effort to realize a meaningful quality of life. The quality of education in Indonesia is still facing various challenges, especially in terms of the effectiveness of the learning process. Dzaky Satria et al., (2025) stated that the low quality of education is generally caused by internal and external factors, including the lack of interest and motivation to learn from students, the performance of educators that is not optimal, and the limitations of learning support facilities and infrastructure. The level of interest of students in the learning process has a significant correlation with their level of participation in learning activities. In line with this, Nurjanah, Suci Sugiharti et al., (2025) emphasized that interest in learning is the main determinant in encouraging student involvement. Learning that takes place in a monotonous and less interesting manner tends to reduce enthusiasm and cause students to become passive in participating in learning activities. This condition is caused by the lack of innovation in learning methods that are able to foster active student involvement during the learning process. These obstacles are also seen in the subjects of Physical Education, Sports, and Health (PJOK). Ideally, PJOK serves to foster physical fitness while developing students' social and emotional skills.

However, the reality is that PJOK learning in many schools is still included in SMK Bhineka Karawang dominated by conventional methods that are instructive and teacher-centered. As a result, students tend to be passive and less enthusiastic in participating in learning activities (Xie, 2021). This shows the importance of implementing a more participatory and fun learning model so that PJOK learning objectives can be achieved optimally. as expressed by Aditya Ramadhan, (2024), a fun and interactive learning process is the main key in optimizing the potential of students. Therefore, it is necessary to update the learning strategy that not only focuses on the delivery of material, but is also able to foster motivation, enthusiasm, and active involvement of students.

One approach that is relevant to these needs is the *Game Based Learning* (GBL). This model emphasizes the use of game elements in learning activities to increase student engagement, motivation, and understanding of concepts. According to Bhat et al., (2023), *Game Based Learning* able to create an interactive and challenging learning environment, thereby encouraging students to be active in every learning activity. In addition, research by Putri et al., (2025), The application of the Game Based Learning model has been shown to improve critical thinking skills, team collaboration, and active involvement of students in the learning process. Daryanes & Ririen, (2020), adding that *Game Based Learning* Provide opportunities for students to actively participate in understanding, assessing, and applying the knowledge gained through game activities. This approach places students as active learning subjects, not just recipients of information, so that the learning process becomes more contextual and meaningful. In the context of PJOK subjects, the application of Game Based Learning is considered very appropriate because it involves elements of movement, teamwork, and strategies that naturally encourage active involvement of students in every learning activity.

Recent research in physical education (PE) has demonstrated that game-based learning (GBL) and gamified instructional approaches are effective in enhancing student motivation, engagement, and skill development. For instance, a systematic review by Gilbert et al. (2023) found that GBL in PE settings has significant positive effects on students' cognitive, social, emotional, and motivational outcomes. Similarly, a meta-analysis by Wo et al. (2024) reported that game-based PE interventions produced significant improvements in students' enjoyment of learning, particularly when sessions lasted at least 30 minutes and occurred one to three times per week. Furthermore, Harvey and Jarrett (2014) emphasized that Game-Based Approaches (GBAs), such as the Tactical Games Model and Teaching Games for Understanding (TGfU), enhance decision-making and tactical awareness compared to traditional instruction.

Collectively, these findings underscore that GBL supports active and meaningful learning processes in PE contexts.

However, despite these promising results, there are still notable research gaps. Most existing studies have been conducted in primary or secondary general education settings, with limited attention to vocational schools (e.g., SMK or technical schools) and specific PE content such as floor gymnastics and basketball. Moreover, prior studies often rely solely on short-term interventions, small sample sizes, or single measures such as motivation or enjoyment without integrating observational and behavioral indicators of learning participation. As such, the literature still lacks empirical evidence that connects GBL with quantifiable participation behavior (e.g., frequency of active involvement, teamwork, and attentiveness) in the context of PE learning in vocational education.

The present study addresses these gaps by applying a structured classroom action research (PTK) design in a vocational secondary school class (X TSM 1) to investigate the effect of GBL on students' learning participation in PJOK subjects, particularly in floor gymnastics and basketball. Unlike most previous studies, this research integrates multiple data collection methods questionnaires, direct observations, and documentation to capture both the quantitative and qualitative dimensions of student participation. Therefore, the novelty of this research lies in its contextual focus on vocational PE, the empirical measurement of student participation, and the combination of mixed-method evidence to validate the influence of GBL on participation in authentic classroom practice.

Based on this background, this study aims to analyze the application of *the Game Based Learning model* in increasing student learning participation in PJOK learning. The focus of the research is directed at how the GBL model is able to create a more active, collaborative, and meaningful learning atmosphere for students in class X of TSM 1 SMK Bhineka Karawang. So the author carried out a research entitled "The Application *of the Game Based Learning* Model to Increase Student Learning Participation in PJOK Learning".

METHOD

This research uses the Classroom Action Research (PTK) approach, which is also known as Classroom Action Research (CAR). PTK was chosen because it allows researchers and teachers to work directly together in improving the learning process through systematic reflective actions. Each cycle consists of the stages of planning, implementing actions, observation, and reflection (Purba et al., 2023). The research was carried out at SMK Bhineka Karawang, West Java, in the even semester of the 2024/2025 school year. The subjects of the study were 32 students of class X TSM 1, consisting of 31 male students and 1 female student. The selection of subjects was carried out purposively because this class showed low learning participation in PJOK learning before the action was taken.

To measure student learning outcomes in PJOK learning that applies game-based methods, researchers collect data through cognitive tests, questionnaires, observations, interviews, and documentation. The questionnaire instrument was used to assess the level of student learning participation in the application of the Game Based Learning model, while the cognitive test functioned to measure the achievement of student learning outcomes after participating in the learning process. The questionnaire consisted of 15 statements with three assessment categories, namely yes (5 points), ordinary (3 points), and no (1 point). The instruments were prepared based on the adaptation of the research (Nurningtias & Majid, 2022), with adjustments to the PJOK learning context. In addition to questionnaires, observation techniques are used to record students' involvement during learning activities, including interaction, cooperation, and enthusiasm for game activities. Interviews were conducted to obtain in-depth information about students' perceptions of game-based learning, while documentation was used to complete data in the form of photos of activities and teachers' notes during the study.

Data analysis was carried out descriptively, quantitatively, and qualitatively. Quantitative data from the results of the questionnaire was calculated using three assessment categories to obtain the average and percentage of student learning participation. Qualitative data from

observation and interview results were analyzed thematically to find patterns of student involvement during learning (Zulfqar et al., 2024). The results of these two analyses were used to assess the effectiveness of the model's application *Game Based Learning* in increasing student learning participation in PJOK subjects.

RESULT

This research was carried out at SMK Bhineka Karawang, which is located in Karawang Regency, West Java Province. The subject of the study is students of class X TSM 1 in the 2024/2025 school year, with a total of 32 students consisting of boys and girls. The method used in this study is Classroom Action Research (PTK). (Arikunto, 2021), explained that PTK is a form of research that aims to examine and improve the learning process through real actions carried out in the classroom. The PTK design in this study refers to the model developed by Kemmis and McTaggart, which includes four main stages, namely: (a) planning, (b) implementation of actions, (c) observation, and (d) reflection. This research was carried out in one learning cycle that included two meetings, with the application of game-based learning media as a means to increase student learning participation in PJOK subjects, especially in floor gymnastics and basketball games. The main focus of the research is to find out the extent to which the application of the Game Based Learning (GBL) model can increase student learning participation in Physical Education, Sports, and Health (PJOK) subjects.

1. Planning

The planning stage begins with coordination between researchers and PJOK teachers to identify learning problems that arise in the classroom. Based on the results of initial observations, it was found that student participation in PJOK learning is still low, especially in floor gymnastics activities and basketball games. Therefore, the researcher developed a strategy for the implementation of the Game Based Learning model by adjusting the characteristics of students and school conditions. Planning includes the preparation of a game-based Learning Implementation Plan (RPP), determination of interactive media such as scoreboards, motion activity cards, and digital quizzes based on Wordwall and Quiziz. Observation instruments and learning participation questionnaires were also prepared to obtain objective data on changes in student behavior during the action.

2. Implementation of Actions

The implementation of the action was carried out in two meetings. The first meeting focused on learning floor gymnastics using group game activities. Students are divided into small groups and complete basic movement challenges such as front and back rolls using motion activity cards. Each group collects points based on the accuracy of the moves and the answers of the digital quiz.

The second meeting applied GBL in learning basketball games through competitive mini-games such as dribbling, zig-zag, relay, and shooting challenge. Teachers utilize the Quiziz platform to provide interactive questions around basic techniques and game rules. Symbolic awards in the form of snacks and additional points are given to increase student motivation. During both meetings, the teacher acted as a facilitator and motivator, while the researcher observed the learning process to assess student involvement in the activity.

3. Observation

Observations were made during the learning process with a focus on aspects of student participation, cooperation, and enthusiasm. The results of the observation showed a significant increase in student engagement compared to before the action. Students seem to be actively interacting, dare to try new moves, and show high enthusiasm in completing each game challenge.

Student participation also increases in non-physical forms, such as asking questions, discussing, and providing support to group mates. Peer teachers noted that the classroom atmosphere became more lively and conducive, with most students engaging consistently in each activity session.

4. Reflection

The results of reflection show that the application of the Game Based Learning model has a positive impact on student learning participation. Students find learning to be more interesting and challenging because it is packaged in the form of games. The teacher stated that this method makes it easier to manage the classroom and fosters the enthusiasm of students who were previously passive. Overall, the average score of student participation based on the results of the questionnaire reached 4.56 or 90.7%, which is in the very good category. These findings show a marked increase in students' physical, emotional, and social engagement during learning activities.

Table 1. Average Student Learning Participation Results after the Implementation of Game Based Learning

Yes	Participation Indicators	Average	Classification
1	The spirit of participating in PJOK learning	4,87	Excellent
2	Fun against game-based methods	4,68	Excellent
3	Understanding of floor gymnastics and basketball techniques	4,25	Excellent
4	Activeness in cooperation and competition	4,62	Excellent
5	Focus and motivation during learning	4,43	Excellent
	Overall average	4,56	Excellent
	Percentage	90,7%	Excellent

DISCUSSION

The results of this study show that the application of the Game Based Learning (GBL) model is effective in increasing student learning participation in PJOK learning. The implementation of GBL has been proven to encourage active student involvement through elements of competition, challenges, and awards. These findings are in line with research Cahya Susaniari & Santosa, (2024) which states that game-based learning can increase student motivation and activeness because it creates a fun and interactive learning environment.

In addition, learning with a game approach allows students to learn through hands-on experience. Activities such as dribble challenges and shooting relays help students understand basic movement techniques through practice, not just theoretical explanations. This supports the results of the research Fadhli et al., (2023), which affirms that game-based learning (GBL) contributes to the development of critical thinking and problem-solving skills, as well as increases student engagement due to the elements of practical and interactive activities.

From the teacher's side, the implementation of GBL provides an opportunity to innovate and adapt learning strategies to the needs of students. Teachers are no longer the only source of information, but play the role of facilitators who guide the experiential learning process. Erwinsyah et al., (2020) explained that interactive learning like this has a positive effect on teachers' self-efficacy and improves class dynamics. Thus, the results of this study strengthen the evidence that Game Based Learning is an effective strategy in increasing student learning participation in PJOK learning. This model aligns with the direction of 21st-century learning that emphasizes active engagement, collaboration, and problem-solving through meaningful learning experiences (Zahroh et al., 2023).

The findings of this study indicate that the implementation of the Game-Based Learning (GBL) model effectively increased students' learning participation in PJOK lessons at SMK Bhineka Karawang. Students became more active, cooperative, and motivated to participate during physical education sessions, especially in floor gymnastics and basketball activities. This aligns with the premise that GBL fosters meaningful engagement and interaction through play-based tasks that integrate cognitive and physical challenges. These results are consistent with several previous studies emphasizing the positive impact of GBL on student engagement. Gilbert et.al (2023) found that GBL approaches significantly enhanced students' motivation and participation in PE classes by increasing the sense of autonomy and enjoyment. Similarly, Mo et.al. (2024) demonstrated that game-based PE interventions significantly improved students'

enjoyment levels and willingness to participate in physical activities, especially when lessons were structured with progressive challenges. Moreover, Harvey and Jarrett (2014) highlighted that game-centered pedagogies such as the Teaching Games for Understanding (TGfU) approach support tactical decision-making and social collaboration, thereby contributing to higher participation rates.

However, this research extends the existing literature by demonstrating that GBL not only enhances enjoyment or motivation but also increases observable behavioral participation among vocational school students a population rarely studied in previous PE research. The improvement in participation during floor gymnastics and basketball lessons suggests that contextualized game-based designs can effectively engage students who typically show lower enthusiasm in traditional physical education methods. This provides evidence that GBL can be adapted successfully for vocational education environments, which often require more applied and interactive learning strategies.

Despite its promising results, this study has several limitations. First, the research was conducted in a single class (X TSM 1) within one vocational school, limiting the generalizability of findings to broader contexts. Second, the duration of the intervention was relatively short, which might not capture the long-term effects of GBL on student participation and learning outcomes. Third, while this study used mixed methods (questionnaires, observation, and documentation), the data were primarily descriptive and focused on participation indicators rather than academic achievement or fitness improvement. Future studies should involve larger samples, diverse school types, and extended observation periods to evaluate the sustainability and transferability of GBL effects. Additionally, incorporating quantitative performance indicators (e.g., skill mastery, attendance, and motivation scales) would provide a more comprehensive understanding of the GBL model's pedagogical impact.

Overall, the results support the notion that game-based learning represents a powerful and adaptable pedagogical approach to increase participation in PJOK, particularly in vocational education contexts. The findings add empirical evidence to the growing body of literature that highlights GBL as a student-centered model promoting motivation, engagement, and active learning in physical education.

CONCLUSION

The classroom action research conducted at SMK Bhineka Karawang shows that the application of the Game Based Learning (GBL) model can increase student learning participation in Physical Education, Sports, and Health (PJOK) learning. Through the application of GBL to floor gymnastics materials and basketball games, students show significant improvements in physical, emotional, and social engagement. The average results of the learning participation questionnaire reached 4.56 or 90.7%, which is included in the very good category. Students become more enthusiastic, actively cooperate, and show high motivation during the activity. Teachers also experience increased creativity and ease in managing more fun and interactive learning. Thus, Game Based Learning has proven to be an effective alternative learning model to improve PJOK participation and learning quality in vocational high schools.

For PJOK teachers, it is recommended to apply the Game Based Learning model as a variation of learning strategies that are able to increase student motivation, participation, and enthusiasm for learning. Teachers can adjust the form of the game to the characteristics of the material and the condition of the school facilities. Then for the School, it is necessary to support the implementation of innovative game-based learning by providing supporting facilities such as practice rooms, interactive media, and access to learning technology. And for further research, it is hoped that it can expand the application of Game Based Learning to other PJOK materials, or examine its influence on other aspects such as learning outcomes, teamwork, and student sportsmanship.

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