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Effectiveness of Game-Based Learning (GBL) Instructional Strategy in Teaching Volleyball Skills to Grade 8 Students

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ABSTRACT

This study assessed the effectiveness of the Game-Based Learning (GBL) Instructional Strategy in developing fundamental volleyball skills among Grade 8 students at Ramon E. Bacaltos National High School in Simala, Sibonga, Cebu, during the second term of School Year 2026–2027. An explanatory sequential mixed-methods research design was employed, combining a pre-experimental one-group pretest–posttest approach with qualitative descriptive inquiry. Forty Grade 8 students, comprising 20 males and 20 females, were selected through purposive sampling and a random fishbowl selection procedure. Data were gathered using the Volleyball Skills Performance Assessment and semi-structured individual interviews and analyzed through descriptive statistics, paired-samples t-tests, and thematic analysis. Findings revealed that overall volleyball skill performance improved from a pretest mean of 2.48 (Poor) to a posttest mean of 4.11 (Good), with a statistically significant overall mean difference of 1.63 ($t = 18.55$, $p < .001$). Significant improvements were observed in blocking, digging, serving, spiking, and tossing. Qualitative findings identified five major themes: enjoyment and engagement, perceived skill improvement, challenges and adjustment, friendship and cooperation, and growing confidence. The findings suggest that structured game-based activities offer promising opportunities for improving volleyball competencies, encouraging active participation, and strengthening cooperative learning experiences. Consequently, the study recommends the proposed GBL Instructional Activity Guide as a supplementary resource for Grade 8 Physical Education instruction. However, the single-school setting, limited sample, short intervention period, and absence of a comparison group restrict generalizability and causal interpretation. The study contributes localized evidence supporting learner-centered Physical Education and instructional practices relevant to quality education and student well-being.

Keywords: *Game-Based Learning, Volleyball Skills, Physical Education, Instructional Strategy, Skill Performance, Mixed-Methods Research, Student Engagement*

1. INTRODUCTION

Physical Education plays an essential role in promoting students' holistic development by strengthening physical literacy, movement competencies, health awareness, and social skills through active participation in physical activities (Department of Education, 2023). Quality Physical Education also encourages confidence, cooperation, teamwork, and lifelong participation in physical activity (UNESCO, 2021). Among school-based sports, volleyball provides meaningful opportunities to develop coordination, agility, timing, communication, and teamwork while improving fundamental movement competencies (Awaluddin & Hasanuddin, 2025). However, acquiring volleyball skills requires consistent practice, appropriate instructional strategies, and opportunities to apply technical movements in actual game situations (Batez et al., 2021). Despite these benefits, teaching fundamental volleyball skills remains challenging, particularly among secondary school learners who experience difficulties in ball control, movement coordination, positioning, and technical execution (Arifin et al., 2021; Iqbal et al., 2024). Traditional skill-focused instruction may provide limited opportunities for students to apply learned techniques in meaningful gameplay. Consequently, learner-centered instructional approaches that integrate skill development, active participation, and practical game experiences have gained increasing attention. Game-Based Learning (GBL) offers an instructional strategy that incorporates structured games, modified activities, collaborative challenges, and repeated practice to strengthen students' motor skills, decision-making, and engagement in Physical Education (Camacho-Sánchez et al., 2023; Dimmick, 2024). At Ramon E. Bacaltos National High School in Simala, Sibonga, Cebu, the Grade 8 MAPEH Mean Percentage Score increased from 63.06% in School Year 2024–2025 to 69.21% in School Year 2025–2026. Although this improvement indicated academic progress, the results remained below the expected 75% proficiency level. Furthermore, while the school demonstrated competitive participation in volleyball, the performance of regular Grade 8 learners required further instructional attention. These conditions emphasized the need to explore teaching strategies that could strengthen fundamental volleyball competencies while encouraging meaningful participation. Previous investigations have demonstrated the potential of game-centered approaches to improve volleyball skills, tactical understanding, and student engagement. Batez et al. (2021) reported improvements in volleyball performance through the Teaching Games for Understanding approach, while Munar et al. (2021) emphasized the development of technical competencies and decision-making through structured volleyball activities. Similarly, Endriani et al. (2022) explored volleyball learning through instructional approaches designed to support skill development. Nevertheless, existing investigations have examined different educational settings, learner populations, and selected aspects of volleyball performance. Limited localized evidence simultaneously addresses five fundamental volleyball skills—blocking, digging, serving, spiking, and tossing—alongside students' learning experiences in a Philippine public secondary school. To address this gap, the present study examined the effectiveness of the GBL Instructional Strategy in developing fundamental volleyball skills among Grade 8 students at Ramon E. Bacaltos National High School. By integrating quantitative assessments of volleyball skill performance with qualitative accounts of students' experiences, the investigation sought to provide evidence that could inform the development of a Game-Based Learning Instructional Activity Guide in Volleyball. The findings may contribute to learner-centered Physical Education instruction by identifying practical approaches for strengthening technical competencies, active participation, teamwork, and confidence.

Research Problem

Developing fundamental volleyball skills remains a significant instructional concern among secondary school learners, particularly in executing technical movements, maintaining ball control, coordinating body movements, and applying learned competencies during gameplay.

Previous studies have identified difficulties in volleyball passing, positioning, coordination, and tactical decision-making, highlighting the importance of appropriate instructional strategies that provide meaningful opportunities for skill development (Arifin et al., 2021; Iqbal et al., 2024). Although game-based instructional approaches have demonstrated promising outcomes, their application requires further examination within specific educational contexts (Batez et al., 2021). At Ramon E. Bacaltos National High School, the Grade 8 MAPEH Mean Percentage Scores of 63.06% and 69.21% during School Years 2024–2025 and 2025–2026, respectively, remained below the expected 75% proficiency level. Despite the school's participation in competitive volleyball, these academic outcomes indicated the need to strengthen instructional practices among regular Grade 8 learners. Furthermore, limited localized evidence has examined improvements in blocking, digging, serving, spiking, and tossing alongside students' experiences during game-based instructional activities. Accordingly, this study investigated the pretest and posttest volleyball skill performance of Grade 8 students following the implementation of the GBL Instructional Strategy. It also determined whether statistically significant differences existed between their performance assessments and explored their experiences during the instructional intervention. The findings served as the basis for developing a proposed Game-Based Learning Instructional Activity Guide in Volleyball.

Assumptions of the Study

The study proceeded from the methodological assumption that fundamental volleyball skills, particularly blocking, digging, serving, spiking, and tossing, could be systematically assessed using the established performance indicators of the Volleyball Skills Performance Assessment. It also relied on the suitability of structured instructional activities for providing opportunities to practice and demonstrate these skills within the selected educational setting. The quantitative component assumed that pretest and posttest assessments could describe changes in students' volleyball performance following participation in the GBL Instructional Strategy. Meanwhile, the qualitative component relied on students' ability to communicate their experiences, perceived improvements, challenges, and interactions during the instructional activities through semi-structured interviews. These methodological assumptions did not predetermine the findings or establish that improvements were caused exclusively by GBL. Rather, the study examined performance changes and reported learning experiences within the limitations of its one-group pretest–posttest design.

Objectives of the Study

The primary objective of this study was to assess the effectiveness of the Game-Based Learning (GBL) Instructional Strategy in developing fundamental volleyball skills among Grade 8 students at Ramon E. Bacaltos National High School in Simala, Sibonga, Cebu, during the second term of School Year 2026–2027. Specifically, the study aimed to determine students' pretest performance in blocking, digging, serving, spiking, and tossing before the implementation of the instructional strategy and assess their posttest performance following participation in structured game-based activities. It also sought to determine whether statistically significant differences existed between students' pretest and posttest volleyball skill performance. Furthermore, the investigation explored students' learning experiences during the intervention, particularly their engagement, perceived skill development, challenges, cooperation, and confidence. Based on the integrated quantitative and qualitative findings, the study aimed to develop a Game-Based Learning Instructional Activity Guide in Volleyball as a supplementary resource for Grade 8 Physical Education instruction. The investigation employed an explanatory sequential mixed-methods research design, combining a pre-experimental one-group pretest–posttest approach with qualitative descriptive inquiry. Its scope was limited to 40 Grade 8 students from the selected public secondary school. Consequently, the findings were intended to describe

performance changes and learning experiences within the investigated setting rather than establish definitive causal relationships or generalize outcomes across broader student populations.

Conceptual and Theoretical Framework

The study was informed by the Teaching Games for Understanding (TGfU) approach originally articulated by Bunker and Thorpe (1982) and the experiential learning principles of Kolb (1984). These perspectives provide relevant foundations for understanding how structured gameplay, active participation, practical experiences, and reflection may support the development of fundamental volleyball competencies. The Teaching Games for Understanding approach emphasizes learning sports through meaningful game situations that encourage students to develop technical skills, tactical awareness, and decision-making abilities. Within volleyball instruction, this perspective supports the use of modified games and structured activities that allow learners to practice fundamental techniques while understanding their application during gameplay. Previous research has demonstrated the relevance of game-centered instruction in developing volleyball skills and enjoyment among secondary school students (Batez et al., 2021). Experiential learning principles further emphasize the importance of learning through direct experiences, reflection, and practical application (Kolb, 1984). In the context of this study, students participated in structured volleyball activities that provided opportunities to perform technical movements, respond to game situations, interact with classmates, and progressively refine their skills through repeated practice and feedback. These experiences were relevant to understanding both measurable changes in volleyball performance and students' perceptions of their learning. Conceptually, the investigation focused on the implementation of the GBL Instructional Strategy and the assessment of students' performance in five fundamental volleyball skills: blocking, digging, serving, spiking, and tossing. The instructional process involved nine structured 50-minute sessions conducted over three consecutive weeks, incorporating skill-specific challenges, modified gameplay, cooperative activities, and opportunities for feedback. Students' performance was assessed before and after the intervention, while semi-structured individual interviews documented their learning experiences. The integrated findings provided the basis for developing the proposed Game-Based Learning Instructional Activity Guide in Volleyball. Together, these theoretical and conceptual perspectives supported the examination of game-based instruction as a promising approach to learner-centered Physical Education. However, the framework was used to guide the interpretation of observed performance changes and reported experiences without assuming that the instructional strategy independently caused the documented improvements.

Sustainable Development Goal and Multidisciplinary Sustainability Relevance

This study aligns with Sustainable Development Goal (SDG) 4: Quality Education by examining a learner-centered instructional strategy intended to strengthen fundamental volleyball competencies, active participation, and meaningful learning experiences among Grade 8 students. Through structured game-based activities, the investigation contributes to discussions on instructional approaches that promote engagement, cooperation, confidence, and skill development in Physical Education. The study is also relevant to SDG 3: Good Health and Well-Being because volleyball instruction encourages physical activity, movement competency, teamwork, and positive participation in sports. By integrating technical skill development with enjoyable and cooperative gameplay, the proposed instructional approach may help support students' interest in physical activities and continued engagement in school-based sports. Its multidisciplinary sustainability relevance connects Physical Education, instructional innovation, student development, and educational well-being. The proposed Game-Based Learning Instructional Activity Guide offers a supplementary teaching resource that may assist Physical

Education teachers in implementing structured, inclusive, and competency-based volleyball activities. Nevertheless, these contributions represent potential educational and health-related implications, as the study did not directly measure long-term physical activity participation, health outcomes, or SDG achievement.

2. METHODOLOGY

Research Design

This study employed an explanatory sequential mixed-methods research design, integrating a quantitative pre-experimental one-group pretest–posttest approach with a qualitative descriptive inquiry to assess the effectiveness of the Game-Based Learning (GBL) Instructional Strategy in developing fundamental volleyball skills among Grade 8 students. The quantitative component examined changes in students' performance in blocking, digging, serving, spiking, and tossing before and after the implementation of structured game-based instructional activities. The qualitative component subsequently explored students' learning experiences through semi-structured individual interviews, providing additional insights into their engagement, perceived skill improvement, challenges, cooperation, and confidence. The quantitative phase involved administering the Volleyball Skills Performance Assessment before and after the instructional intervention, while the qualitative phase documented students' experiences following their participation in the activities. Descriptive statistics and paired-samples t-tests were employed to analyze performance scores, whereas inductive thematic analysis was used to identify recurring patterns in interview responses. The quantitative and qualitative findings were subsequently integrated to provide a comprehensive understanding of students' volleyball skill development and learning experiences, consistent with the mixed-methods research approach discussed by Creswell and Creswell (2023). The design enabled the examination of performance changes following the intervention, although the absence of a comparison group limited definitive causal interpretations.

Research Locale or Study Setting

The study was conducted at Ramon E. Bacaltos National High School and the adjacent Simala Sports Complex in Barangay Simala, Municipality of Sibonga, Province of Cebu, Philippines, during the second term of School Year 2026–2027. The school served as the primary setting for participant orientation and semi-structured individual interviews, while the sports complex provided the venue for volleyball skill assessments and game-based instructional activities. The research setting was selected because the investigation focused on developing fundamental volleyball competencies among Grade 8 learners of the identified institution. The school's Grade 8 MAPEH Mean Percentage Score increased from 63.06% in School Year 2024–2025 to 69.21% in School Year 2025–2026, although both results remained below the expected 75% proficiency level. These academic outcomes highlighted the need to explore instructional approaches that could strengthen students' learning experiences and volleyball skill performance. Conducting the intervention within the school and adjacent sports complex provided a defined educational setting for assessing students' competencies and documenting their experiences during structured game-based activities.

Participants or Data Sources

The target population comprised 157 Grade 8 learners distributed across five sections at Ramon E. Bacaltos National High School. From this population, 40 students, consisting of 20 males and 20 females, participated in the study. The participants were selected through purposive sampling combined with a random fishbowl selection procedure to ensure that eligible learners met the established criteria while maintaining equal representation by sex. Initially, students were screened according to predetermined inclusion and exclusion criteria involving physical

capability, previous volleyball training experience, and the availability of parental informed consent and learner assent. Students with physical limitations affecting safe participation, competitive volleyball athletes, and those without the required consent and assent were excluded. Eligible students were subsequently grouped according to sex, and color-coded slips containing their names were used in separate fishbowl draws to randomly select 20 male and 20 female participants. This procedure combined eligibility-based selection with random selection among qualified learners. The final sample consisted of 40 eligible Grade 8 students who participated in the pretest assessment, structured GBL instructional intervention, and posttest assessment. Their volleyball skill performance scores provided the quantitative data, while their responses during semi-structured individual interviews served as the qualitative data sources. The sampling procedure supported balanced male and female participation within the selected group, although the purposive eligibility criteria and single-school setting limited the generalizability of the findings.

Research Instruments or Materials

The study utilized two research instruments: the Volleyball Skills Performance Assessment and the Semi-Structured Individual Interview Guide. These instruments were employed to obtain quantitative measurements of students' fundamental volleyball skills and qualitative descriptions of their experiences during the implementation of the GBL Instructional Strategy. The Volleyball Skills Performance Assessment was adapted and modified to evaluate five fundamental volleyball skills: blocking, digging, serving, spiking, and tossing. Each skill was assessed through ten performance attempts using a five-point scoring scale ranging from Very Poor to Very Good. The assessment procedures and scoring criteria were modified to accommodate the participants' age, skill level, and instructional context. The instrument provided a structured basis for comparing students' volleyball skill performance before and after the instructional intervention. Game-centered approaches to volleyball skill assessment and development were discussed by Batez et al. (2021). However, the validity and reliability of the locally modified performance assessment require confirmation from the researcher. The Semi-Structured Individual Interview Guide consisted of two open-ended questions with follow-up probes designed to explore students' experiences during game-based volleyball activities. The interview questions allowed participants to describe their engagement, perceived improvements in volleyball skills, encountered difficulties, interactions with classmates, and developing confidence. The qualitative responses complemented the quantitative performance assessments by providing insights into students' learning experiences beyond their measured skill performance. The instructional intervention involved structured game-based volleyball activities designed to provide opportunities for repeated practice, modified gameplay, teamwork, and progressive skill development. These activities were implemented across nine 50-minute sessions conducted over three consecutive weeks, focusing on the development and application of the five fundamental volleyball skills.

Data Gathering Procedure

Data collection commenced with securing the necessary institutional and school permissions to conduct the study at Ramon E. Bacaltos National High School and the adjacent Simala Sports Complex. Following administrative authorization, parental informed consent and learner assent were obtained from eligible participants. The selected students underwent an orientation regarding the study procedures, instructional activities, and volleyball skill assessments. Before the intervention, participants were familiarized with the five fundamental volleyball skills: blocking, digging, serving, spiking, and tossing. The pretest was subsequently administered using the Volleyball Skills Performance Assessment to establish students' initial performance levels. Each skill was evaluated through ten performance attempts based on the established five-point

scoring criteria. Following the baseline assessment, the researcher implemented the Game-Based Learning (GBL) Instructional Strategy through nine structured 50-minute sessions conducted over three consecutive weeks. The instructional activities incorporated skill-specific challenges, modified volleyball games, cooperative learning experiences, and opportunities for repeated practice and feedback. These activities were intended to provide meaningful learning experiences while supporting the progressive development of fundamental volleyball competencies. After completing the instructional intervention, participants underwent the posttest using the same Volleyball Skills Performance Assessment to determine changes in their performance across the five assessed skills. Semi-structured individual interviews were subsequently conducted to document students' experiences during the game-based activities, including their perceived improvements, challenges, engagement, teamwork, and confidence. The collected quantitative and qualitative data were organized, recorded, and prepared for statistical and thematic analysis.

Data Analysis

The quantitative data were analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, particularly the arithmetic mean and sample standard deviation, were employed to determine students' pretest and posttest performance levels in blocking, digging, serving, spiking, and tossing. These measures provided numerical descriptions of students' volleyball skill performance and the variability of their scores before and after the instructional intervention (Creswell & Creswell, 2023). A paired-samples t-test was employed to determine whether statistically significant differences existed between students' pretest and posttest performance scores. Statistical significance was evaluated at the 0.05 level. The analysis examined performance changes across the five fundamental volleyball skills and the overall assessment scores, providing evidence of differences following participation in the GBL Instructional Strategy. The qualitative interview responses were analyzed using inductive thematic analysis following the framework of Braun and Clarke (2022). The analytical process involved familiarization with participants' responses, identification of meaningful statements, generation of initial codes, development of potential themes, review and refinement of themes, and interpretation of the resulting patterns. The foundational approach to thematic analysis was originally described by Braun and Clarke (2006). The quantitative and qualitative findings were subsequently integrated to examine how measured changes in volleyball skill performance corresponded with students' reported learning experiences. This integration provided the basis for developing the proposed Game-Based Learning Instructional Activity Guide in Volleyball, incorporating structured skill practice, modified gameplay, progressive challenges, cooperative activities, and constructive feedback.

Ethical Considerations

The study observed established ethical principles and institutional research protocols to protect the rights, safety, confidentiality, and well-being of participating Grade 8 students. Necessary permissions were secured from the appropriate institutional and school authorities before the commencement of data collection. Parental informed consent and learner assent were obtained to ensure that participation was authorized and voluntary. Participants were informed of the study's purpose, procedures, and their right to withdraw at any stage without academic consequences. Confidentiality was maintained through the use of participant codes in assessment records, interview transcripts, and research reporting. Collected information, including performance assessments, interview responses, and audio recordings, was securely stored and made accessible only to authorized personnel. Appropriate safety precautions were observed during volleyball assessments and instructional activities to minimize potential physical risks. Students with physical limitations affecting safe participation were excluded

according to the established eligibility criteria. Throughout the research process, the study upheld the ethical principles of respect for persons, beneficence, non-maleficence, and justice, ensuring that participants' rights and welfare remained central to the implementation of the investigation.

3. RESULTS AND DISCUSSION

3.1. Pretest Performance of Grade 8 Students in Volleyball Skills

The pretest findings revealed that Grade 8 students demonstrated an overall mean score of 2.48 (SD = 1.49), interpreted as Poor, indicating limited proficiency in fundamental volleyball skills before the implementation of the Game-Based Learning (GBL) Instructional Strategy. Among the five assessed skills, blocking obtained the highest mean score of 2.90 (SD = 1.72), followed by spiking with a mean of 2.63 (SD = 0.93), both classified as Acceptable. Serving recorded a mean of 2.58 (SD = 1.58), followed by digging at 2.45 (SD = 1.71), while tossing obtained the lowest mean of 1.83 (SD = 1.53). These three skills were interpreted as Poor, indicating greater difficulties in performing the corresponding volleyball techniques. The findings suggest that students entered the instructional intervention with varying levels of volleyball competency, demonstrating relatively stronger performance in blocking and spiking than in serving, digging, and tossing. The observed standard deviations further indicated differences in individual skill proficiency, particularly in blocking and digging, where performance scores demonstrated considerable variability. These results highlight the importance of instructional approaches that accommodate differences in learners' initial abilities while providing structured opportunities for technical development. The relatively low performance in serving, digging, and tossing suggests a need for repeated practice, appropriate feedback, and instructional activities that strengthen ball control, movement coordination, and technical execution. Previous investigations have similarly identified challenges in volleyball passing and skill acquisition, emphasizing the importance of appropriate instructional models and practice opportunities (Arifin et al., 2021; Iqbal et al., 2024). Overall, the pretest findings established the baseline performance of the participants and provided a basis for implementing structured game-based instructional activities designed to address their identified learning needs.

3.2. Posttest Performance of Grade 8 Students in Volleyball Skills

The posttest findings revealed that Grade 8 students achieved an overall mean score of 4.11 (SD = 1.13), interpreted as Good, indicating improved proficiency in fundamental volleyball skills following the implementation of the GBL Instructional Strategy. Among the five assessed skills, digging obtained the highest mean score of 4.58 (SD = 0.75), followed by spiking with a mean of 4.30 (SD = 1.35), both interpreted as Very Good. Blocking recorded a mean of 3.95, followed by tossing at 3.93 and serving at 3.78, all classified as Good. These results demonstrated improved performance across the five fundamental volleyball skills after participation in the structured instructional activities. The findings suggest that game-based instructional activities provided meaningful opportunities for students to practice and refine volleyball techniques through repeated skill execution, active participation, and modified gameplay. Digging demonstrated the highest posttest performance and the lowest reported variability, indicating relatively consistent proficiency among the participants. Conversely, serving obtained the lowest posttest mean, suggesting that students continued to require instructional reinforcement and additional practice to strengthen serving accuracy and execution. These findings are consistent with Zirman et al. (2025), who emphasized the relevance of game-based learning strategies and fundamental

motor skills in developing volleyball techniques. Similarly, Ebrahimi Khayat et al. (2025) examined traditional and game-based teaching models in adolescent volleyball instruction, supporting the relevance of game-centered approaches to skill development. Endriani (2026) further highlighted the potential benefits of student-centered volleyball instruction while recognizing variations in educational contexts and implementation practices. Overall, the posttest results indicated favorable volleyball skill performance following the intervention, emphasizing the potential value of structured gameplay, progressive practice, and constructive feedback in supporting students' technical development.

3.3. Significant Differences Between Pretest and Posttest Volleyball Skill Performance

The paired-samples t-test revealed statistically significant differences between the pretest and posttest performance of Grade 8 students across all five fundamental volleyball skills following the implementation of the GBL Instructional Strategy. The overall mean difference was 1.63 ($t = 18.55$, $p < .001$), indicating a statistically significant improvement in students' volleyball skill performance at the 0.05 significance level. Consequently, the null hypothesis stating that no significant difference existed between pretest and posttest performance was rejected. Among the assessed skills, digging demonstrated the greatest mean difference of 2.13 ($t = 8.06$, $p < .001$), followed by tossing with a mean difference of 2.10 ($t = 8.15$, $p < .001$). Spiking recorded a mean difference of 1.68 ($t = 10.91$, $p < .001$), while serving demonstrated a mean difference of 1.20 ($t = 6.31$, $p < .001$). Blocking registered the smallest mean difference of 1.05 ($t = 4.96$, $p < .001$). Despite variations in the magnitude of improvement, all five volleyball skills demonstrated statistically significant performance gains following the instructional intervention. The substantial improvements in digging and tossing suggest that these skills may particularly benefit from interactive learning experiences involving repeated practice, movement coordination, and practical application during modified gameplay. Meanwhile, the comparatively smaller improvement in blocking indicates the continued importance of targeted instructional reinforcement, particularly in defensive positioning, timing, and proper skill execution. These findings support the potential relevance of game-centered instructional approaches that integrate technical practice with meaningful game situations, consistent with the findings of Batez et al. (2021). The statistically significant differences indicate that students demonstrated improved volleyball competencies after participating in the structured game-based activities. However, because the quantitative component employed a pre-experimental one-group pretest–posttest design without a comparison group, the observed improvements cannot be attributed exclusively to the GBL Instructional Strategy. Other influences, including repeated practice and familiarity with the assessment procedures, cannot be ruled out. Nevertheless, the findings provide localized evidence of favorable performance changes following the intervention and support further investigation of game-based instructional approaches in Physical Education.

3.4. Students' Experiences in the Game-Based Learning Instructional Activities

The qualitative findings from the semi-structured individual interviews revealed five major themes describing Grade 8 students' experiences during the implementation of the GBL Instructional Strategy: enjoyment and positive engagement, perceived improvement in volleyball skills and understanding, challenges and adjustment during skill practice, friendship and cooperation through gameplay, and growing confidence and willingness to participate. These themes provided insights into students' learning experiences beyond their measured volleyball skill performance. The first theme, enjoyment and positive engagement, revealed that students

generally perceived the game-based instructional activities as enjoyable, interesting, and motivating. Participants appreciated opportunities to engage in modified volleyball games, interact with classmates, and participate in competitive yet cooperative activities. These experiences encouraged active involvement and provided meaningful opportunities to apply fundamental volleyball techniques in practical game situations. This finding is consistent with Harvey and Jarrett (2014), who emphasized the potential of game-centered instructional approaches to strengthen learner motivation, participation, and engagement in Physical Education. The second theme, perceived improvement in volleyball skills and understanding, highlighted students' recognition of their developing competencies in blocking, digging, serving, spiking, and tossing. Participants described improvements in body positioning, footwork, ball control, timing, and proper execution of volleyball techniques. Their responses suggested that structured practice and modified gameplay helped them understand the application of fundamental skills during actual playing situations. These perceptions complemented the quantitative findings, which demonstrated statistically significant improvements across the five assessed volleyball skills. The third theme, challenges, fear, and adjustment during skill practice, reflected the difficulties encountered by students throughout the instructional intervention. Participants reported challenges involving serving accuracy, ball control, spiking coordination, physical discomfort, nervousness, and fear of making mistakes. Despite these difficulties, several students described gradually adjusting to the activities through continued participation and practice. These experiences highlighted the importance of progressive instructional activities, appropriate safety measures, repeated practice, and constructive feedback in helping learners manage technical and emotional challenges during volleyball instruction. The fourth theme, friendship, cooperation, and communication through gameplay, demonstrated the social learning experiences reported by participants. Students described developing friendships, communicating with teammates, assisting classmates, and cooperating during volleyball activities. These interactions provided opportunities to strengthen teamwork and mutual support while participating in structured games. The findings align with Harvey and Jarrett (2014), who emphasized the value of game-centered approaches in promoting meaningful participation and social interaction within Physical Education settings. The fifth theme, growing confidence and willingness to participate, revealed that some students became increasingly comfortable performing volleyball skills as they gained experience and received encouragement from classmates. Successful execution of techniques, repeated participation, and positive peer interactions contributed to their reported sense of accomplishment and willingness to engage in subsequent activities. These experiences suggest that structured game-based instruction may provide opportunities for students to develop confidence alongside their technical volleyball competencies. Collectively, the qualitative findings indicated that students experienced enjoyment, perceived skill development, cooperation, communication, and growing confidence while encountering technical and emotional challenges during the instructional intervention. The findings complemented the quantitative performance assessments by providing additional perspectives on students' participation and learning experiences. The organization and interpretation of these themes were informed by the thematic analysis framework of Braun and Clarke (2022). However, the interview findings represented participants' reported experiences and did not independently establish that the GBL Instructional Strategy caused the identified outcomes.

3.5. Proposed Game-Based Learning Instructional Activity Guide in Volleyball

Based on the integrated quantitative and qualitative findings, a Game-Based Learning (GBL) Instructional Activity Guide in Volleyball was developed as a proposed supplementary instructional resource for Grade 8 Physical Education teachers. The guide was designed to address students' identified learning needs in blocking, digging, serving, spiking, and tossing while promoting active participation, teamwork, communication, decision-making, and confidence. Its development was informed by the statistically significant improvements in volleyball skill performance and the qualitative findings concerning students' enjoyment, perceived skill development, cooperation, challenges, and growing confidence during gameplay. The proposed instructional guide incorporates structured, skill-specific activities and modified volleyball games intended to support progressive learning experiences. The Keep It Alive Challenge and Dig and Move Challenge focus on strengthening digging techniques and ball control, while the Serve-to-Score Challenge and Set-to-Target Challenge emphasize serving accuracy and tossing skills. The Set, Attack, Score! and Attack the Open Space activities are designed to develop attacking techniques and tactical decision-making, whereas Block the Attack reinforces defensive positioning and blocking skills. Furthermore, the Three-Contact Rally Challenge promotes the integration of fundamental volleyball techniques through coordinated teamwork, while the Game-Based Volleyball Challenge provides opportunities for students to apply their acquired competencies in modified gameplay situations. The instructional guide is structured for implementation over three consecutive weeks, consisting of nine 50-minute sessions. Each activity includes learning objectives, instructional procedures, equipment requirements, safety precautions, assessment strategies, and opportunities for feedback and reflection. The activities progress from basic skill familiarization toward more complex skill combinations and gameplay applications, accommodating learners with varying levels of proficiency. Particular instructional emphasis is placed on serving and tossing, which obtained relatively lower posttest performance scores, and blocking, which demonstrated the smallest pretest–posttest mean difference. The guide incorporates additional practice opportunities and targeted feedback to address these identified learning needs. Its implementation may be considered following review and approval by the school administration, with further evaluation by MAPEH specialists and experienced Physical Education teachers to establish its content validity, clarity, and instructional appropriateness. Overall, the proposed Game-Based Learning Instructional Activity Guide provides a practical framework for strengthening learner-centered volleyball instruction through structured practice, modified gameplay, cooperative learning, and progressive skill development. Its development represents an instructional application of the study findings rather than evidence of the guide's independently established effectiveness. Further evaluation is therefore necessary to determine its usability, instructional suitability, and potential contribution to sustained volleyball skill development.

3.6. General Discussion

The integrated findings revealed favorable changes in Grade 8 students' fundamental volleyball skill performance following the implementation of the GBL Instructional Strategy. Overall performance increased from a pretest mean of 2.48 (Poor) to a posttest mean of 4.11 (Good), with a statistically significant mean difference of 1.63 ($t = 18.55$, $p < .001$). Significant improvements were observed in blocking, digging, serving, spiking, and tossing, although the magnitude of improvement varied across the assessed skills. Digging and tossing demonstrated the greatest performance gains, while blocking recorded the smallest improvement. These

findings highlight the potential value of structured game-based activities in providing opportunities for repeated practice, technical refinement, and application of volleyball skills in meaningful gameplay situations. The qualitative findings complemented the performance assessments by revealing students' experiences of enjoyment, perceived skill improvement, cooperation, communication, and growing confidence. Participants also reported technical difficulties, nervousness, and adjustment challenges, emphasizing the importance of progressive instruction, constructive feedback, and supportive learning environments. The convergence of quantitative performance gains and positive reported experiences suggests that GBL offers promising opportunities for integrating technical skill development with social interaction and active learner participation. These findings are consistent with previous investigations emphasizing the educational relevance of game-centered volleyball instruction (Batez et al., 2021; Zirman et al., 2025; Ebrahimi Khayat et al., 2025). The results also support the broader relevance of learner-centered approaches in Physical Education, particularly those incorporating modified gameplay, collaborative activities, and practical skill application (Camacho-Sánchez et al., 2023; Endriani, 2026). However, differences in research designs, educational settings, and participant characteristics should be considered when interpreting similarities with previous studies. The development of the proposed Game-Based Learning Instructional Activity Guide represents the principal practical contribution of the investigation. By incorporating structured skill-specific challenges, cooperative gameplay, progressive activities, and targeted feedback, the guide provides a supplementary instructional resource informed by the documented performance changes and students' learning experiences. Its proposed application is relevant to strengthening competency-based Physical Education instruction and supporting educational practices associated with SDG 4: Quality Education and SDG 3: Good Health and Well-Being. Nevertheless, the findings should be interpreted within the study's methodological limitations. The investigation involved 40 Grade 8 students from a single public secondary school, employed purposive sampling with random selection among eligible learners, and implemented a three-week intervention without a comparison group. These conditions restrict generalizability and prevent definitive causal conclusions regarding the effectiveness of GBL. Furthermore, the qualitative findings reflected participants' reported experiences rather than independently verified changes in motivation, confidence, or social behavior. Despite these limitations, the study provides localized evidence of improved volleyball skill performance following structured game-based instruction and offers a foundation for further evaluation of the proposed instructional guide in broader educational contexts.

4. CONCLUSIONS AND RECOMMENDATIONS

The study concluded that the Game-Based Learning (GBL) Instructional Strategy was associated with significant improvements in the fundamental volleyball skills of Grade 8 students at Ramon E. Bacaltos National High School. Overall performance increased from a pretest mean of 2.48 (Poor) to a posttest mean of 4.11 (Good), with a statistically significant mean difference of 1.63 ($t = 18.55$, $p < .001$). Significant improvements were observed in blocking, digging, serving, spiking, and tossing, with digging demonstrating the greatest improvement and blocking the smallest. Qualitative findings further revealed students' enjoyment, perceived skill development, cooperation, communication, and growing confidence despite challenges encountered during practice. These findings suggest that structured game-based activities offer promising opportunities for strengthening volleyball competencies, active participation, and meaningful learning experiences.

Based on the findings, the proposed Game-Based Learning Instructional Activity Guide in Volleyball is recommended as a supplementary resource for Grade 8 Physical Education teachers. The guide should incorporate structured skill-specific activities, modified gameplay, cooperative learning, progressive challenges, and constructive feedback, with particular emphasis on serving, tossing, and blocking. Physical Education teachers are encouraged to integrate these approaches to strengthen technical competencies, teamwork, decision-making, and student engagement. School administrators may support its implementation through appropriate instructional resources and professional collaboration. Before implementation, the proposed guide should undergo evaluation by MAPEH specialists and experienced Physical Education teachers to establish its content validity and instructional appropriateness. These recommendations support learner-centered Physical Education practices relevant to SDG 4: Quality Education and SDG 3: Good Health and Well-Being.

The study was limited to 40 Grade 8 students from a single public secondary school, restricting the generalizability of its findings. Its pre-experimental one-group pretest–posttest design lacked a comparison group, preventing definitive causal conclusions regarding the effectiveness of GBL. Furthermore, the three-week intervention limited the assessment of long-term skill retention, while qualitative findings reflected participants' reported experiences. Future studies should involve larger samples, comparison groups, extended intervention periods, and follow-up assessments to establish stronger evidence of effectiveness and sustainability. Further evaluation of the proposed instructional guide across different educational settings is also recommended to determine its usability and contribution to sustained volleyball skill development.

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