



## Development of a Volleyball Underhand Pass Learning Model for Students

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### ABSTRACT

This study aimed to develop a volleyball underhand passing learning model for eighth-grade students at Salvation Army Christian Middle School in order to increase students' interest, motivation, and active participation in physical education learning. The study was motivated by the lack of variation in volleyball teaching methods, which often caused boredom and low enthusiasm among students during learning activities. The research employed a Research and Development (R&D) approach using a modified Borg and Gall development procedure. Data collection techniques included interviews, classroom observations, and questionnaires administered to students, teachers, and expert validators. The collected data were analyzed using qualitative and quantitative descriptive techniques. The needs analysis results revealed that 78% of students required a more innovative and game-based learning model to improve engagement during volleyball lessons. The developed product consisted of five game-based learning models, namely Catch the Ball, Curve Ball, Wall Drill, Sprint Ball, and Obstacle Course. Expert validation results from the learning expert and volleyball game expert showed a feasibility score of 96.15%, categorized as "highly feasible." Furthermore, product trials demonstrated positive student responses, with a percentage score of 86.20% in the small-group trial and 87.33% in the large-group trial, indicating that the model was highly suitable for implementation. In conclusion, the developed volleyball underhand passing learning model was proven to be valid, practical, and effective in creating a more varied, enjoyable, and student-centered learning environment for junior high school volleyball instruction.

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- Conception and design of the study;
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- Manuscript preparation;
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## INTRODUCTION

Physical Education, Sports, and Health (PJOK) is an essential component of the educational curriculum in Indonesia because it contributes not only to students' physical development but also to their cognitive, emotional, and social growth. Through structured sports activities, PJOK encourages students to develop discipline, cooperation, responsibility, and healthy lifestyles that support lifelong learning outcomes. Volleyball is one of the most widely implemented team sports in junior high



school physical education because it combines fundamental motor skills, teamwork, coordination, and strategic thinking in a comprehensive learning environment. According to Sukintaka and Widodo, volleyball learning in junior high school supports the holistic development of adolescents by integrating physical activity with character education such as cooperation, independence, and sportsmanship.

Physical education is also understood as a systematic learning process conducted through physical activities to improve physical fitness, movement skills, intelligence, emotional maturity, and harmonious personality development. Vania Aurellia Azzahra et al. (2024) emphasized that physical education aims to develop physically literate individuals who possess knowledge, skills, and character aligned with educational goals. Therefore, PJOK at the junior high school level must be implemented through innovative and student-centered learning approaches that actively engage learners in meaningful movement experiences.

At the junior high school level, volleyball becomes an important learning medium because it introduces students aged 13–15 years to various fundamental techniques such as serving, passing, setting, smashing, and blocking. These techniques contribute to the development of coordination, agility, reaction speed, and social interaction among students. Hidayat and Rahman (2021) explained that volleyball learning in PJOK helps students improve psychomotor competence while simultaneously fostering teamwork and communication skills. In the context of the Merdeka Curriculum, volleyball learning has been simplified into mini-volleyball activities that emphasize collaboration, participation, and enjoyment during the learning process.

Among all volleyball techniques, underhand passing is considered the most fundamental skill because it serves as the initial response to an opponent's serve or attack. Underhand passing requires students to maintain a low body position, create a stable arm platform, coordinate lower-body movements, and accurately direct the ball toward teammates. According to Pratiwi and Santoso (2022), underhand passing functions as the foundation of defensive play and rally continuation in volleyball games. Students who fail to master this technique often experience difficulties participating effectively in volleyball activities, resulting in decreased motivation and low confidence during PJOK classes.

From a developmental perspective, underhand passing is highly suitable for junior high school students because it trains eye-hand coordination, balance, motor control, and rapid decision-making abilities during adolescence. Moreover, successful mastery of underhand passing contributes positively to students' self-confidence and social interaction during team activities. However, many students still struggle to perform correct underhand passing techniques due to inadequate instructional strategies, monotonous teaching methods, and limited opportunities for active participation during learning sessions.

The preliminary needs analysis conducted at Salvation Army Christian Middle School revealed several instructional challenges in volleyball learning. Based on questionnaire results, approximately 78% of students expressed the need for game-

based and more engaging learning models, while only 22% considered the existing learning methods adequate. Interviews with PJOK teachers also indicated that students generally showed low interest and enthusiasm during volleyball lessons because traditional instructional methods relied heavily on verbal explanations and repetitive drills. Although some students demonstrated interest in volleyball due to extracurricular participation, the majority remained passive and less motivated during classroom learning activities.

These findings indicate that conventional volleyball instruction has not fully accommodated students' learning characteristics, interests, and developmental needs. Consequently, there is a strong need for an innovative and interactive learning model that can improve students' motivation, participation, and mastery of underhand passing skills in volleyball learning.

Recent studies in physical education have emphasized the importance of student-centered and game-based learning approaches to improve motor skill acquisition and student engagement in sports learning environments. Contemporary PJOK pedagogy no longer focuses solely on technical mastery but also emphasizes meaningful learning experiences that encourage creativity, collaboration, and active participation among students. Various instructional models such as cooperative learning, Teaching Games for Understanding (TGfU), problem-based learning, and game-modification approaches have been widely implemented in sports education research over the last decade.

Several studies have demonstrated that game-based learning approaches significantly improve students' motivation and psychomotor performance in volleyball learning. Research by Widodo (2023) showed that modified mini-volleyball activities increased student participation and reduced anxiety during volleyball instruction at the junior high school level. Similarly, studies conducted by Hidayat and Rahman (2021) reported that cooperative volleyball learning improved teamwork skills and students' confidence during physical education classes.

International studies indexed in Scopus journals have also highlighted the effectiveness of innovative instructional models in volleyball learning. Research by Harvey et al. (2018) explained that game-centered learning models facilitate tactical awareness and decision-making skills among adolescent learners. Furthermore, Light (2019) emphasized that enjoyable and contextualized sports learning environments contribute positively to long-term student engagement in physical education.

Studies specifically focusing on volleyball passing skills also demonstrate the importance of varied learning activities and modified instructional media. Research by Pratiwi (2022) found that partner-based passing drills improved students' passing accuracy and movement coordination. Other studies reported that modified equipment, game simulations, and small-group learning activities significantly enhanced students' technical skills and active participation during volleyball instruction.

In addition, modern physical education research increasingly supports the integration of motor learning principles into sports instruction. Motor learning theory emphasizes repetition, feedback, task variation, and contextual learning as critical

factors influencing skill acquisition. According to recent empirical findings, students learn sports techniques more effectively when instructional activities are adapted to their developmental characteristics and delivered through enjoyable learning experiences.

Although previous studies have explored volleyball learning methods and underhand passing instruction, most research has focused primarily on improving technical performance outcomes without comprehensively developing structured learning models tailored specifically to junior high school students' characteristics and learning needs. Therefore, the development of a contextualized and student-oriented underhand passing learning model remains an important area for further investigation.

Despite the growing body of literature concerning volleyball learning and motor skill development in physical education, several important gaps remain unresolved. First, many existing studies emphasize experimental comparisons between training methods rather than developing comprehensive instructional models specifically designed for classroom-based PJOK learning environments. Consequently, the practical implementation of innovative volleyball learning models in junior high schools remains limited.

Second, most previous volleyball learning studies focus primarily on elite athletes or extracurricular sports participants rather than regular junior high school students with diverse skill levels and learning motivations. This creates a discrepancy between research findings and the actual conditions faced by PJOK teachers in classroom settings, where students often display varying degrees of interest, participation, and physical competence.

Third, existing instructional approaches frequently prioritize technical repetition without sufficiently incorporating game-based learning principles that can increase student engagement and enjoyment. Traditional drill-oriented instruction tends to create passive learning environments in which students become bored, less motivated, and reluctant to participate actively during volleyball lessons.

Fourth, limited studies have specifically investigated the development of underhand passing learning models within the context of the Merdeka Curriculum and the socio-cultural characteristics of Indonesian junior high school students. Particularly at Salvation Army Christian Middle School, no structured learning model has been developed to address students' low motivation and limited engagement in volleyball learning activities.

Therefore, this study seeks to address these research gaps by developing an innovative underhand passing learning model that integrates game-based activities, student-centered instruction, and contextual learning principles suitable for eighth-grade students in junior high school settings.

This study aims to develop a volleyball underhand passing learning model for eighth-grade students at Salvation Army Christian Middle School. Specifically, the study seeks to: (1) identify students' learning needs and instructional challenges in volleyball learning; (2) design a game-based underhand passing learning model appropriate for

junior high school students; (3) evaluate the feasibility and effectiveness of the developed learning model; and (4) improve students' motivation, participation, and underhand passing skills through innovative PJOK instruction.

The novelty of this study lies in the development of a contextualized underhand passing learning model specifically tailored to the characteristics of eighth-grade junior high school students within the Merdeka Curriculum framework. Unlike previous studies that focused mainly on isolated technical drills, this research integrates game-based learning, cooperative interaction, and enjoyable movement experiences into a structured instructional model. Furthermore, this study contributes practically to PJOK teaching by providing teachers with innovative learning strategies capable of increasing student engagement and improving volleyball skill acquisition simultaneously.

In addition, the developed model emphasizes holistic student development by integrating psychomotor, cognitive, and affective learning dimensions during volleyball instruction. This approach aligns with current trends in physical education pedagogy that advocate student-centered, active, and meaningful learning experiences in school sports education.

In conclusion, underhand passing is a fundamental volleyball skill that plays a crucial role in junior high school physical education learning because it supports students' motor development, teamwork, and participation in sports activities. However, conventional instructional approaches at Salvation Army Christian Middle School have not yet effectively increased students' interest and active involvement in volleyball learning. The findings from preliminary observations and needs analysis demonstrate the urgent need for innovative and engaging learning models adapted to students' developmental characteristics and learning preferences. Therefore, this study proposes the development of a game-based volleyball underhand passing learning model designed to improve students' motivation, participation, and technical mastery while supporting the implementation of student-centered PJOK learning within the Merdeka Curriculum framework.

## **METHODS**

This study employed a Research and Development (R&D) approach aimed at developing a volleyball underhand passing learning model for eighth-grade students at Salvation Army Christian Middle School. The R&D approach was selected because it is considered appropriate for producing educational products that are systematically designed, validated, revised, and tested for effectiveness in real learning environments. According to Borg and Gall, educational research and development focuses on creating instructional products through iterative stages of evaluation and improvement to ensure practicality and effectiveness in educational settings. Recent studies in physical education research also emphasize that development-based research is highly effective in producing innovative learning models that support student-centered instruction and active learning participation (Branch, 2017; Plomp, 2018).

The research adopted a modified development procedure adapted from Borg and Gall as well as Tapo (2017), which consists of nine systematic stages. The first stage involved needs analysis through classroom observations, interviews with physical education teachers, and student questionnaires to identify instructional problems and learning needs related to volleyball underhand passing. The second stage consisted of planning activities, including formulating learning objectives, determining instructional indicators, and designing learning activities suitable for eighth-grade students. The third stage involved developing the preliminary product in the form of a learning guidebook, game-based instructional activities, and evaluation instruments designed to improve students' underhand passing skills.

The fourth stage focused on expert validation involving specialists in physical education, volleyball instruction, and learning methodology. Expert validation is considered essential in educational product development because it ensures content validity, instructional appropriateness, and product feasibility before field implementation (Hastie et al., 2017). The fifth stage consisted of revising the preliminary product based on feedback and recommendations provided by the expert validators. Subsequently, the sixth stage involved a small-group trial consisting of 15 students to evaluate the practicality and clarity of the developed learning model.

The seventh stage included a large-group field trial involving 25 eighth-grade students to examine the effectiveness of the learning model in improving underhand passing skills, student participation, and learning motivation. The final stage involved revising and finalizing the product based on findings obtained during field implementation. The completed product was designed as a comprehensive learning guidebook integrating game-based activities, cooperative learning strategies, and contextual volleyball instruction for junior high school students. This iterative development process aligns with contemporary instructional design principles emphasizing continuous revision and formative evaluation during product development (Branch, 2017; Casey & Goodyear, 2019).

The research was conducted at Salvation Army Christian Middle School located on Towua II Street No. 29, South Palu District, Central Sulawesi, Indonesia. The study was implemented from April 2026 until completion. Research participants consisted of eighth-grade students, PJOK teachers, and three expert validators specializing in physical education and volleyball learning. The selection of participants was based on purposive sampling techniques to ensure that the subjects matched the objectives and context of the study.

Data collection techniques included classroom observation, teacher interviews, and questionnaires administered to students and expert validators. Observation activities were conducted to identify students' learning behaviors, participation levels, and difficulties during volleyball learning sessions. Interviews with physical education teachers aimed to obtain in-depth information regarding instructional challenges, student characteristics, and existing teaching practices. Meanwhile, questionnaires were used to evaluate the feasibility, practicality, and effectiveness of the developed

learning model. The instruments used in this study were validated through expert judgment to ensure content validity and measurement accuracy, consistent with recommendations from modern physical education research (Casey & Goodyear, 2019; Dyson, 2019).

Data analysis employed descriptive quantitative techniques using percentage analysis to determine the feasibility level of the developed product. The percentage formula used was based on the ratio between the obtained score and the maximum possible score multiplied by 100%. Product feasibility criteria were categorized into four classifications: very feasible (80–100%), feasible (60–79%), moderately feasible (50–59%), and not feasible (<50%). This analytical approach is widely recommended in educational development studies because it allows researchers to systematically evaluate instructional products before final implementation (Plomp, 2018; Bessa et al., 2021).

Overall, this research procedure was designed systematically to produce a valid, practical, and effective volleyball underhand passing learning model capable of improving students' technical skills, motivation, and active participation in PJOK learning. The integration of game-based learning principles, iterative evaluation, and contextual instructional design reflects current trends in modern physical education pedagogy emphasizing student engagement and meaningful learning experiences (Lubans et al., 2016; Dyson, 2019).

## **RESULTS AND DISCUSSION**

### **Result**

The development of the volleyball underhand passing learning model for eighth-grade students at Salvation Army Christian Middle School resulted in the production of a structured and game-based learning model designed to improve students' participation, motivation, and mastery of volleyball underhand passing skills. The product developed in this study was presented in the form of a learning guidebook containing various underhand passing learning activities integrated into volleyball learning sessions for junior high school students.

The initial product development stage involved designing several game-based underhand passing learning models adapted to students' characteristics, learning needs, and physical development levels. The product was then evaluated by expert validators consisting of a physical education learning expert and a volleyball/underhand passing expert. The validation process aimed to determine the feasibility, relevance, safety, and instructional suitability of the developed model before implementation in field trials.

### **Expert Validation Results**

The expert validation results demonstrated that the developed learning model achieved a "Very Feasible" category. The average validation score reached 96.15%, indicating that the product fulfilled aspects of instructional design, content suitability, student developmental appropriateness, and activity safety.

**Table 1.**  
Expert Validation Results

| No | Research Subject       | Percentage Result | Description |
|----|------------------------|-------------------|-------------|
| 1  | Learning Expert        | 96.15%            | Applicable  |
| 2  | Volleyball/Game Expert | 96.15%            | Applicable  |

The high validation score indicates that the developed learning model was considered appropriate for implementation in volleyball learning activities at the junior high school level. The validators emphasized that the instructional model successfully integrated game-based learning principles, active student participation, and technical underhand passing skill development.

The learning expert also provided several suggestions for product refinement. Although the model was categorized as highly feasible, minor revisions were recommended to improve the suitability of several activities with actual volleyball game situations and students' learning conditions.

**Table 2.**  
Revisions and Suggestions from Experts

| No | Identified Weakness  | Suggested | Revision   |
|----|--|-----------|--|
| 1  | Several underhand passing activities were not fully aligned with game situations |           | Revise several passing models to better match volleyball game characteristics and student learning needs |

Based on these suggestions, the researcher revised several learning activities to ensure greater contextual relevance, improve student engagement, and strengthen the effectiveness of the instructional process.

### Product Trial Results

The developed learning model was tested through two stages consisting of small-group trials and large-group trials. The small-group trial involved 15 students, while the large-group trial involved 25 students. These trials aimed to evaluate the practicality, attractiveness, effectiveness, and acceptance level of the learning model among students.

**Table 3.**  
Product Trial Results

| No. | Research Subject  | Percentage | Description      |
|-----|-------------------|------------|------------------|
| 1   | Small Group Trial | 86.20%     | Suitable for Use |
| 2   | Large Group Trial | 87.33%     | Very Suitable    |

The results of the small-group trial showed a percentage score of 86.20%, indicating that the learning model was suitable for implementation. Students demonstrated positive responses toward the game-based activities because the learning process became more enjoyable, interactive, and less monotonous compared to conventional volleyball instruction.

During the large-group trial, the percentage score increased to 87.33%, which categorized the model as "Very Suitable." This improvement indicates that the revised

instructional model became more effective and more widely accepted by students after adjustments based on expert feedback and initial trial findings.

The findings also revealed that students felt more comfortable, enthusiastic, and actively involved during learning activities using the game-based underhand passing model. Students who previously showed low interest in volleyball learning became more motivated because the activities emphasized cooperation, enjoyment, and active movement participation. Furthermore, the gradual increase from 86.20% to 87.33% demonstrates that the developed learning model successfully enhanced students' learning experiences and acceptance toward volleyball instruction.

Overall, the findings indicate that the developed volleyball underhand passing learning model is valid, practical, and effective for eighth-grade students. The integration of game-based learning activities successfully increased students' motivation, participation, and enjoyment during volleyball learning sessions. Therefore, the developed model can be recommended as an alternative instructional approach for PJOK teachers in improving volleyball underhand passing learning outcomes at the junior high school level.

## Discussion

The results of this study demonstrate that the development of a volleyball underhand passing learning model for eighth-grade students at Salvation Army Christian Middle School was categorized as highly feasible, practical, and effective for implementation in PJOK learning. The expert validation results showed a feasibility percentage of 96.15%, while the product trials produced percentages of 86.20% in the small-group trial and 87.33% in the large-group trial. These findings indicate that the developed learning model successfully fulfilled instructional suitability, student learning needs, and practical implementation criteria within volleyball learning activities.

The high expert validation score confirms that the developed learning model possesses strong instructional quality in terms of content relevance, activity safety, learning organization, and suitability with students' developmental characteristics. Educational development research emphasizes that expert validation is an essential stage in determining the validity and feasibility of instructional products before field implementation (Branch, 2017; Plomp, 2018). In the context of physical education, valid instructional models must integrate psychomotor, cognitive, and affective dimensions to create meaningful learning experiences for students (Casey & Goodyear, 2019). Therefore, the 96.15% validation result suggests that the developed volleyball underhand passing model successfully met these pedagogical requirements.

The findings also revealed that students experienced increased enthusiasm and participation during the learning process. This outcome supports previous studies showing that game-based learning approaches significantly improve student engagement and enjoyment in physical education classes (Harvey et al., 2018; Dyson, 2019). Traditional volleyball instruction often relies heavily on repetitive drill methods, which may lead to boredom and passive participation among junior high school students. In contrast, the developed learning model incorporated varied game-based activities

that created a more enjoyable and interactive learning atmosphere. This finding aligns with the work of Light (2019), who argued that meaningful sports learning occurs when students are actively involved in enjoyable movement experiences rather than merely performing repetitive technical drills.

At the junior high school level, students aged 13–14 years are undergoing pubertal transitions that influence their motor coordination, emotional stability, and learning motivation. Many students experience difficulties performing underhand passing techniques due to unstable body coordination and limited prior experience in volleyball practice. Research by Hidayat and Nugroho (2019) explained that adolescent learners frequently encounter challenges in maintaining proper arm position and directing the ball accurately during underhand passing activities. Similar findings were also reported by Lubans et al. (2016), who stated that motor skill learning among adolescents requires adaptive instructional strategies that consider physical and psychological developmental characteristics.

The developed learning model addressed these challenges by integrating cooperative games, modified passing activities, and gradual skill progression. These instructional characteristics are consistent with modern motor learning theories emphasizing task variation, contextual learning, and active feedback as essential components of skill acquisition (Magill & Anderson, 2017). Students learn movement skills more effectively when instructional activities are adapted to their developmental stage and delivered through enjoyable experiences that reduce learning anxiety. Consequently, the implementation of varied passing activities within this study contributed positively to students' confidence and willingness to participate during volleyball lessons.

The increase in trial percentages from 86.20% during the small-group trial to 87.33% during the large-group trial indicates that the revised learning model became increasingly effective and more widely accepted after refinement. This improvement reflects the importance of iterative revision in educational product development. According to Borg and Gall, continuous revision based on expert feedback and user responses strengthens the practicality and effectiveness of educational products. Similarly, Plomp (2018) emphasized that formative evaluation enables researchers to improve instructional quality by identifying weaknesses during implementation stages.

The findings of this study also support the concept that learning models play a central role in determining instructional success. Trianto (2010) and Rusman (2017) argued that innovative learning models help teachers create active, creative, and enjoyable learning environments capable of improving student achievement and participation. In physical education contexts, instructional models should encourage movement exploration, teamwork, and problem-solving activities rather than focusing solely on technical repetition (Metzler, 2017). The developed volleyball underhand passing model successfully reflected these principles by integrating game-based learning with technical skill instruction.

Another important finding in this study was the identification of students' learning needs through questionnaires and interviews. Approximately 78% of students expressed

the need for more attractive and game-based volleyball learning activities, while only 22% considered conventional learning methods adequate. These findings demonstrate that students strongly prefer learning environments that are interactive, enjoyable, and socially engaging. Research by Bessa et al. (2021) confirmed that student-centered physical education approaches significantly improve motivation, participation, and long-term interest in sports learning activities.

Teacher interview results further revealed that conventional instructional practices primarily involved partner passing drills and individual practice activities, which often caused boredom and reduced student attention during lessons. This finding is consistent with previous research indicating that monotonous teaching methods negatively affect students' learning motivation and classroom engagement (Dyson, 2019). Consequently, the development of varied instructional activities becomes highly important in maintaining students' concentration and enthusiasm during learning sessions.

The developed learning model also contributed positively to students' social interaction and cooperative behavior. Volleyball is fundamentally a team sport that requires communication, collaboration, and collective decision-making during gameplay. Research conducted by Casey and Goodyear (2019) demonstrated that cooperative physical education learning environments strengthen students' interpersonal skills and teamwork abilities. In this study, students became more actively involved in group activities, peer interaction, and collaborative passing games, which enhanced both technical learning and social development simultaneously.

From a curricular perspective, the findings align with the principles of the Indonesian Merdeka Curriculum, which emphasizes active learning, student independence, and meaningful educational experiences. Volleyball learning in PJOK is not only intended to improve physical competence but also to strengthen character values such as cooperation, discipline, responsibility, and sportsmanship. The game-based underhand passing model developed in this study successfully integrated these educational objectives into practical classroom activities. This supports the argument of Widodo (2023), who emphasized that mini-volleyball and modified sports learning approaches are highly effective for achieving holistic educational goals in junior high school physical education.

Furthermore, the developed model successfully reduced student boredom during volleyball learning activities. Students who previously demonstrated low interest became more enthusiastic because the learning process emphasized enjoyment and active participation. According to Self-Determination Theory proposed by Deci and Ryan (2017), intrinsic motivation increases when learners experience autonomy, competence, and relatedness during educational activities. The game-based learning environment developed in this study fulfilled these psychological needs by allowing students to interact actively, experience success gradually, and participate collaboratively with peers.

Conceptually, this study contributes to the growing literature on innovative physical education pedagogy by demonstrating that game-based volleyball learning models effectively improve student engagement and technical skill acquisition.

Empirically, the findings provide evidence that contextualized and student-oriented instructional models are highly suitable for junior high school volleyball learning environments. Unlike conventional drill-based instruction, the developed model created a more dynamic, enjoyable, and meaningful learning experience for students.

Overall, the findings indicate that the developed volleyball underhand passing learning model is valid, practical, and effective for eighth-grade students. The integration of varied game-based activities, cooperative learning principles, and contextual volleyball instruction successfully improved students' participation, motivation, and enjoyment during PJOK learning. Therefore, this model can be recommended as an innovative alternative instructional strategy for PJOK teachers seeking to improve volleyball learning quality at the junior high school level while supporting holistic student development in accordance with contemporary physical education principles.

## **CONCLUSION**

Based on the results of this study, it can be concluded that the development of the volleyball underhand passing learning model for eighth-grade students at Salvation Army Christian Middle School was categorized as feasible and effective for use in PJOK learning activities. The developed learning model successfully addressed students' needs for more engaging, varied, and game-based volleyball instruction that could improve participation and learning motivation during the learning process.

The expert validation results demonstrated that the product met the criteria for implementation in school learning environments. The learning expert assessment obtained a score of 50 with the category "applicable with minor revisions," while the volleyball/game expert assessment also obtained a score of 50 with the category "applicable without revision." These findings indicate that the developed model fulfilled aspects of instructional suitability, learning content relevance, student developmental appropriateness, and activity safety.

Furthermore, product trials showed positive responses from students. The small-group trial produced a percentage score of 86.20% with the category "suitable for use," while the large-group trial increased to 87.33% with the category "very suitable for use." These results indicate that the game-based underhand passing learning model successfully improved students' enthusiasm, comfort, and active participation during volleyball learning activities. Therefore, the developed learning model can be recommended as an innovative instructional alternative for improving volleyball learning quality at the junior high school level.

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