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Improving Passing Outcomes Using Audio-Visual Media For Students

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ABSTRACT

This study aims to analyze the application of audio-visual learning media and its effectiveness in improving overhead passing skills and learning outcomes in Physical Education (PJOK) for Grade VIII students at MTs DDI Gusung Makassar. The research employed a quantitative descriptive approach using Classroom Action Research (CAR), conducted in two cycles consisting of planning, implementation, observation, and reflection stages. The participants were 30 eighth-grade students who demonstrated low mastery of volleyball overhead passing skills. The intervention focused on integrating audio-visual media, including video demonstrations and movement analysis, to enhance students' understanding of locomotor, non-locomotor, and manipulative movement combinations. Data were collected through performance tests, observation sheets, and documentation, and analyzed descriptively using percentage and mean score comparisons across cycles. The findings revealed a consistent and significant improvement in student learning outcomes. In the pre-cycle stage, only 67% of students achieved the Minimum Completion Criteria (KKM), with an average score of 68.40. After implementing audio-visual media in Cycle I, learning mastery increased to 77% with an average score of 83.27. In Cycle II, mastery reached 96% with an average score of 87.56, exceeding the classical mastery standard (≥85%). These results indicate that audio-visual media effectively enhanced students' psychomotor performance, conceptual understanding, and learning motivation. The study underscores the importance of innovative instructional strategies in fostering active, engaging, and meaningful Physical Education learning.

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INTRODUCTION

Physical education (PE) constitutes a structured and systematic educational process that utilizes movement experiences as a primary medium to achieve holistic educational objectives. Contemporary perspectives emphasize that PE not only develops psychomotor competence but also integrates cognitive understanding, affective attitudes, and social responsibility within meaningful learning environments (Bailey et al.,

2015; Kirk, 2019; Siedentop et al., 2020). Over the last decade, research indexed in Scopus and SINTA journals has consistently underlined that high-quality PE instruction significantly contributes to students' physical literacy, motor competence, and lifelong active behavior (Edwards et al., 2018; Robinson et al., 2017; Lubans et al., 2016). Within the Indonesian educational context, PE plays a strategic role in shaping students' physical fitness, character development, and healthy lifestyle habits. However, empirical findings indicate that learning effectiveness in PE remains uneven, particularly in the acquisition of sport-specific motor skills (Mutohir et al., 2018; Nugroho et al., 2021; Winarno et al., 2020). Instructional quality is strongly influenced by teaching strategies, learning media, pedagogical innovation, and teacher competence (Casey & Goodyear, 2015; Hastie & Mesquita, 2017). At MTs DDI Gusung Makassar, volleyball constitutes one of the core instructional materials in Grade VIII. Volleyball learning emphasizes teamwork, coordination, tactical awareness, and technical mastery. Among its fundamental techniques, the overhead pass (set) is a central skill that determines ball control and offensive organization (Papageorgiou & Spitzley, 2014; Sheppard et al., 2019). Mastery of this technique requires precise hand positioning, timing, body alignment, and coordination. Preliminary observations and teacher interviews revealed significant instructional challenges. More than 60% of students failed to reach the Minimum Mastery Criteria (KKM), indicating suboptimal learning outcomes. Students demonstrated difficulty executing correct overhead passing mechanics, limited understanding of technical phases, and low engagement during lessons. Learning activities were predominantly textbook-based, relying on verbal explanation and static images. Such approaches are insufficient for conveying dynamic motor sequences, as supported by motor learning theory, which emphasizes observational learning and visual modeling (Schmidt & Lee, 2019; Magill & Anderson, 2017). Low learning outcomes are influenced by internal factors (motivation, confidence, interest) and external factors (media, teaching methods, environment) (Deci & Ryan, 2017; Ntoumanis et al., 2021). Evidence suggests that monotonous instruction and limited media variation reduce student engagement and skill acquisition (Casey et al., 2017; Goodyear et al., 2019). Therefore, improving instructional media becomes an urgent pedagogical necessity to address this performance gap.

Recent advances in educational technology have reshaped pedagogical practices in physical education. Digital and audio-visual media have been widely recognized as effective tools to enhance movement understanding and skill acquisition (Casey & Jones, 2011; O'Loughlin et al., 2013). Audio-visual media integrates visual demonstrations and auditory explanations, enabling students to observe correct technique execution repeatedly and in detail. From a theoretical standpoint, Bandura's observational learning theory and multimedia learning theory (Mayer, 2014) explain that combining visual and auditory channels enhances cognitive processing and retention. In PE contexts, video-based instruction improves motor performance by providing clear demonstrations and reducing ambiguity (Palao et al., 2015; Potdevin et al., 2018). Studies in volleyball instruction show that video feedback significantly enhances passing and serving skills among adolescents (Boyer et al., 2015; García-de-Alcaraz et al., 2017). In Indonesia,

research indexed in SINTA journals reports that audio-visual media improve motivation and motor skill mastery in PE classes (Prayogo & Subagyo, 2020; Rahmadani et al., 2022; Suryadi et al., 2021). Similarly, Scopus-indexed studies demonstrate that digital video modeling enhances coordination, timing, and technical precision in team sports (Raiola & Di Domenico, 2021; Künzell et al., 2018). Furthermore, the integration of technology aligns with 21st-century learning paradigms emphasizing student-centered instruction, digital literacy, and interactive engagement (OECD, 2019; UNESCO, 2021). Audio-visual learning allows learners to pause, replay, and analyze movements, facilitating deeper understanding compared to traditional demonstration-only approaches. Empirical findings across multiple sports—basketball, soccer, and gymnastics—indicate statistically significant improvements in motor learning outcomes when video-based or multimedia instruction is employed (Hortigüela-Alcalá et al., 2019; Mesquita et al., 2021; Pérez-Turpin et al., 2019). These findings confirm that multimedia integration contributes positively to psychomotor domain development. However, while the global literature supports multimedia-based instruction, implementation in many Indonesian junior secondary schools remains limited. Many PE teachers continue to rely on traditional methods due to limited access, pedagogical training, or technological adaptation challenges (Putra & Setiawan, 2020; Arifin et al., 2022).

Despite substantial evidence regarding the effectiveness of audio-visual media in enhancing motor learning, several gaps remain evident. First, most previous studies focus on general PE learning outcomes or different sports disciplines, rather than specifically addressing volleyball overhead passing at the junior secondary school level. Second, many studies emphasize motivation or cognitive outcomes without detailed measurement of psychomotor performance improvement. Third, limited empirical research has been conducted within the Madrasah Tsanawiyah (MTs) context, particularly in Makassar. Additionally, several studies explicitly examine the direct relationship between audio-visual media usage and measurable improvements relative to Minimum Mastery Criteria (KKM) achievement. The integration of multimedia learning theory with volleyball-specific technical mastery remains underexplored in local SINTA-indexed research. This gap indicates a discrepancy between pedagogical potential and classroom practice. While technology-supported learning is theoretically powerful, its contextual application in MTs DDI Gusung Makassar has not been empirically validated. Therefore, rigorous investigation is needed to provide evidence-based recommendations for instructional innovation in volleyball learning.

Based on the identified problems and research gap, this study aims to examine the effectiveness of audio-visual media in improving volleyball overhead passing learning outcomes among Grade VIII students at MTs DDI Gusung Makassar. Specifically, the research seeks to: (1) Analyze the improvement in students' overhead passing performance after the implementation of audio-visual media; (2) Evaluate changes in student engagement and motivation during volleyball instruction; and (3) Determine whether audio-visual media significantly increases the proportion of students achieving the KKM standard. The novelty of this study lies in several aspects. First, it provides

contextual empirical evidence within a Madrasah Tsanawiyah setting in Makassar, contributing localized data to national PE pedagogy discourse. Second, it integrates multimedia learning theory with sport-specific motor skill acquisition, focusing on volleyball overhead passing. Third, it emphasizes measurable psychomotor outcomes rather than solely motivational variables. Theoretically, this research enriches the body of knowledge concerning technology-enhanced physical education and observational motor learning. Practically, it offers actionable pedagogical guidance for PE teachers seeking to optimize instructional quality through affordable and accessible audio-visual media. In conclusion, improving passing outcomes through audio-visual media represents not merely a methodological adjustment but a strategic pedagogical innovation. By bridging theory and classroom practice, this study aspires to strengthen evidence-based physical education and support sustainable improvements in student motor competence within Indonesian schools.

METHODS

This study used a Classroom Action Research (CAR) approach aimed at improving the quality of the physical education learning process and outcomes, specifically volleyball overhead passing techniques. The CAR approach was chosen because it is reflective and collaborative and oriented toward solving real-world classroom problems through systematic, cycle-based actions (Kemmis et al., 2014; Mertler, 2017). In the context of physical education, CAR is effective in improving motor skills and instructional quality because it enables teachers to make continuous improvements based on empirical data (Casey et al., 2018; Dyson & Casey, 2016; Widodo et al., 2021).

The study was conducted from January to February 2023 at MTs DDI Gusung Makassar, with 32 eighth-grade students who demonstrated passing achievement below the Minimum Completion Criteria (KKM = 75). The design followed the Kemmis & McTaggart cycle model, which consists of: (1) planning, (2) action implementation, (3) observation, and (4) reflection. This model has proven effective in improving the quality of media-based learning (Burns, 2019; Creswell & Creswell, 2018). Two cycles were implemented, each with two meetings. Reflections at the end of each cycle were used to refine learning strategies in the following cycle.

The approach involved the implementation of audio-visual media featuring slow-motion video demonstrations of overhead passing techniques, phase analysis (starting position, ball contact, follow-through), and instructional narratives. This visual-auditory integration aligns with the Cognitive Theory of Multimedia Learning (Mayer, 2014) and observational learning theory (Bandura, 2018), which states that the combination of visual and verbal channels enhances the retention and transfer of motor skills. Empirical studies over the past 10 years have shown that video modeling and multimedia feedback significantly improve technical accuracy and coordination in sports games (Potdevin et al., 2018; Raiola & Di Domenico, 2021; Mesquita et al., 2021; Künzell et al., 2018; García-de-Alcaraz et al., 2017). In Indonesia, the use of digital media in Physical Education and

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Health has been shown to increase motivation and learning completion (Prayogo & Subagyo, 2020; Rahmadani et al., 2022; Arifin et al., 2022).

Data collection was conducted through: (1) an overhead passing practice test using a technique assessment rubric, (2) observation sheets for student activity and engagement, and (3) photo and video documentation of the learning process. The rubric instrument was developed based on biomechanical indicators of passing movement (Papageorgiou & Spitzley, 2014; Sheppard et al., 2019) and tested for content validity through expert judgment by two physical education lecturers. Inter-rater reliability was calculated using the inter-rater agreement coefficient (≥0.80 indicating high consistency), as recommended in physical education research (Hastie & Mesquita, 2017).

Data analysis was conducted using descriptive quantitative and qualitative methods. Quantitative data included class average scores, percentage of learning completion, and score increases between cycles. Qualitative data were analyzed through reduction, presentation, and drawing conclusions to identify changes in student participation and responses (Miles et al., 2014). The success of the intervention was determined if: (1) the class average increased by at least 10 points from pre-intervention, (2) ≥85% of students achieved the Minimum Competency (KKM), and (3) learning activities were in the high category. These criteria refer to the evaluation standards for classroom action research in modern physical education (OECD, 2019; UNESCO, 2021).

Table 1.

Classroom Action Research Cycle Design

Stages	Main Activities	Audio-Visual Implementation	Evaluation Indicators
Planning	Preparing lesson plans, passing technique videos, and assessment rubrics	Video demonstrations, slow-motion, and technical narration	Device readiness and instrument validity
Action	Video modeling-based passing lessons	Observation, motion phase analysis, and repeated practice	Practice and participation scores
Observation	Recording student activities and engagement	Structured observation sheets	Percentage of activities ≥ 80%
Reflection	Evaluating results and improving strategies	Method revision and feedback reinforcement	Score improvement and completion

RESULTS AND DISCUSSION

Result

The research results show that the systematic use of audio-visual media in volleyball overhead passing instruction significantly improved the learning outcomes of eighth-grade students at MTs DDI Gusung Makassar. This finding aligns with multimedia learning theory (Mayer, 2014) and observational learning (Bandura, 2018), which states that visual and auditory integration improves motor comprehension, movement retention, and skill transfer. Empirically, various studies over the past 10 years have shown that video modeling and multimedia instruction effectively improve sports technique skills, coordination, and learning engagement (Potdevin et al., 2018; Künzell et al., 2018; Raiola & Di Domenico, 2021; Mesquita et al., 2021; García-de-Alcaraz et al., 2017; Hortigüela-Alcalá et al., 2019).

This research was conducted through two Classroom Action Research (CAR) cycles, encompassing planning, action implementation, observation, and reflection. Comprehensive evaluation was conducted across affective, cognitive, and psychomotor aspects, in accordance with recommendations for authentic assessment in modern physical education (Hastie & Mesquita, 2017; OECD, 2019).

Pre-Cycle Descriptive Analysis

During the pre-cycle phase, learning still utilized conventional textbook-based methods and short demonstrations without dynamic visual support. The analysis showed that only 33% of students achieved the Minimum Competency (KKM) (≥75), with a class average of 68.40. This low achievement was due to a suboptimal understanding of the phases of the overhead pass (starting position, ball contact, and follow-through), resulting in suboptimal manipulative coordination.

Previous research has shown that limited visual demonstrations lead to low technical accuracy and poor spatial understanding in students (Sheppard et al., 2019; Papageorgiou & Spitzley, 2014; Casey et al., 2018). Furthermore, monotonous learning results in low motivation and participation (Ntoumanis et al., 2021; Goodyear et al., 2019).

Table 2.
Pre-Cycle Learning Outcomes

Indicators	Mark
Class Average	68.40
Students Completed	10 (33%)
Students Not Completed	20 (67%)
Activity Category	Low

Descriptive Analysis of Cycle I

In Cycle I, audio-visual media was implemented through slow-motion demonstration videos, technique analysis, and visual repetition before practice. Results showed a significant improvement: the class average was 83.27, with 75% of students achieving completion.

This improvement indicates that motion visualization helped students understand the combination of locomotor, non-locomotor, and manipulative movements more concretely. This finding aligns with research by Potdevin et al. (2018) and Pérez-Turpin et al. (2019), which found that the use of video feedback improved technique accuracy and motor coordination in adolescents.

Table 3.
Learning Outcomes of Cycle I

Indicators	Mark
Class Average	83.27
Students Completed	24 (75%)
Students Not Completed	8 (25%)
Activity Category	Good

Qualitatively, observations showed increased active participation, enthusiasm, and courage to try techniques independently. This is consistent with the findings of Arifin et al. (2022) and Rahmadani et al. (2022) that digital media increases students' intrinsic motivation in Physical Education and Health.

Descriptive Analysis of Cycle II

Strategy improvements were made in Cycle II by adding visual reflection sessions, technique discussions, and repeated practice based on video feedback. Results showed further improvement, with a class average of 87.56, and 96.7% of students achieving mastery (29 out of 30 students).

Table 4.
Learning Outcomes of Cycle II

Indicators	Mark
Class Average	87.56
Students Completed	29 (96.7%)
Students Not Completed	1(3.3%)
Activity Category	Very Good

The 19.16-point increase from Pre-Cycle to Cycle II demonstrates the high effectiveness of audio-visual media in improving overhead passing skills. Classical completion exceeded the standard of ≥85%, thus declaring the intervention successful.

Conceptually, these results support the theory that visual reinforcement accelerates motor schema formation and neuromuscular coordination (Schmidt & Lee, 2019). Empirically, these findings are consistent with international studies showing significant improvements in multimedia-based sports technique learning (Mesquita et al., 2021; Raiola & Di Domenico, 2021; UNESCO, 2021).

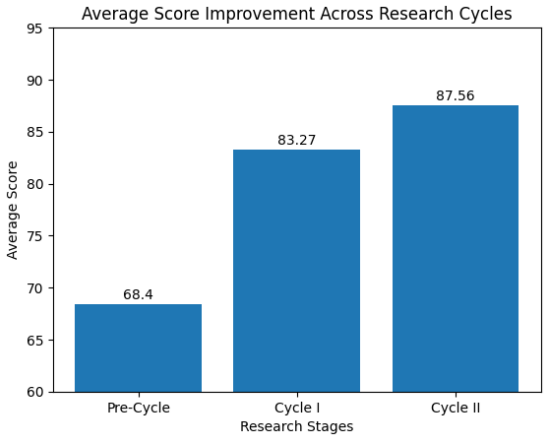

Figure 1.
Comparison Chart of Value Increase

Table 5.
Improvement Summary

Stage	Average	Completeness
Pre-Cycle	68,40	33%
Cycle I	83,27	75%
Cycle II	87,56	96,7%

Based on quantitative and qualitative results, the use of audio-visual media has been shown to improve students' understanding of technique, motor coordination, and engagement in learning the overhead pass. Reflective implementation of actions in accordance with the CAR principles (Kemmis et al., 2014) allows for continuous improvement until classical mastery is achieved.

Thus, the integration of audio-visual media not only improves academic scores but also strengthens the quality of students' overall motor learning experience, in line with 21st-century physical education standards.

Discussion

This classroom action research was conducted in two cycles, each encompassing planning, action implementation, observation, and reflection. Conceptually, this design aligns with the reflective-collaborative model recommended in modern physical education research because it allows for continuous improvement based on field data (Kemmis et al., 2014; Burns, 2019). The results showed that the progressive use of audio-visual media improved learning outcomes in the overhead pass for eighth-grade students at MTs DDI Gusung Makassar, across psychomotor, cognitive, and affective aspects.

Cycle I Dynamics: Adaptation and Initial Challenges

In Cycle I, despite improvements compared to the pre-cycle, some students still experienced difficulty mastering the combination of locomotor, non-locomotor, and manipulative movements in the overhead pass. Pedagogically, this condition can be explained through the motor learning adaptation theory, which states that mastering a new skill requires cognitive and associative phases before reaching the automatic stage (Schmidt & Lee, 2019; Magill & Anderson, 2017).

In the initial stages of implementing audio-visual media, students were still adapting to the new learning approach. Some students exhibited hesitation, fear, and a lack of confidence when performing overhead passes. Psychological factors such as self-efficacy and performance anxiety are known to significantly influence the success of motor skill learning (Ntoumanis et al., 2021; Bandura, 2018). In the context of physical education, low self-confidence can hinder movement exploration and the courage to try new techniques (Hortigüela-Alcalá et al., 2019).

Furthermore, the legacy of monotonous conventional methods in the pre-cycle still impacts student participation patterns. Studies by Casey et al. (2018) and Goodyear et al. (2019) show that traditional lecture-based approaches and single demonstrations tend to reduce student active engagement, especially in learning complex sports techniques. Therefore, improvements in Cycle I were not yet fully realized because students were still in the pedagogical transition phase.

However, the increase from 67% completion in the pre-cycle to 77% in Cycle I indicates that audio-visual media is beginning to have a positive impact. Visualizing movements through slow-motion videos helps students understand the contact phase of the ball, hand positions, and body coordination more clearly. This finding is consistent with research by Potdevin et al. (2018) and Künzell et al. (2018) which found that video modeling improves technical accuracy and neuromuscular coordination in youth sports learning.

Cycle II Transformation: Multimedia Optimization and Reflection

Cycle II showed significant improvement, with a completion rate of 96%. This improvement reflects the effectiveness of reflection and improvements to learning strategies from the previous cycle. In Cycle II, the teacher added video-based technique

discussion sessions, movement error analysis, and repeated practice with visual feedback. This strategy aligns with the principle of augmented feedback in motor learning, which has been shown to improve technique corrections more quickly and precisely (Mesquita et al., 2021; Raiola & Di Domenico, 2021).

Theoretically, these results support the Cognitive Theory of Multimedia Learning (Mayer, 2014), which states that the integration of visual and auditory channels improves information processing and long-term memory retention. UNESCO (2021) and the OECD (2019) also confirm that technology integration in learning improves the quality of the learning experience and encourages active 21st-century learning.

The 96% improvement indicates that almost all students successfully internalized the correct overhead pass technique. This change is not only quantitative but also qualitative. Observations showed increased courage, enthusiasm, and collaboration among students. This aligns with the findings of Rahmadani et al. (2022) and Arifin et al. (2022) that digital media in Physical Education (PJOK) increased students' intrinsic motivation and social interaction.

Integration of Psychomotor, Cognitive, and Affective Aspects

Learning the overhead pass requires not only technical skills, but also conceptual understanding and mental readiness. Research by García-de-Alcaraz et al. (2017) emphasized that effective volleyball technique learning must integrate tactical understanding and movement biomechanics. With the help of audio-visual media, students can observe biomechanical details such as knee flexion, elbow position, and ball thrust direction, thereby strengthening their mental representation of the movement (Sheppard et al., 2019).

Furthermore, the increase in student confidence suggests that audio-visual media serves as a tool to reduce performance anxiety. Bandura (2018) stated that observing successful models increases vicarious experience, which ultimately strengthens students' confidence in performing skills.

The Role of Teachers in Learning Innovation

The results of this study emphasize the importance of teachers in designing adaptive and innovative learning strategies. Indra (2019) emphasized that teachers must be able to select methods and media appropriate to student characteristics and learning materials. The transformation from conventional methods to audio-visual-based learning requires pedagogical readiness and careful planning.

The teachers in this study acted as facilitators, not only delivering material but also managing the learning experience through ongoing reflection. This aligns with the concept of reflective practitioners in physical education (Dyson & Casey, 2016).

Theoretical and Practical Implications

Theoretically, this study strengthens empirical evidence that multimedia instruction is effective in improving sports motor skills at the junior high school level. Practically, these results suggest that the use of simple audio-visual media—such as smartphone-based demonstration videos or projectors—can be a realistic solution to improve the quality of physical education learning in schools.

The progressive improvement from pre-cycle to Cycle II demonstrates that technology integration is not simply an incremental innovation, but rather a pedagogical strategy based on scientific evidence. Thus, the use of audio-visual media in overhead passing learning has been proven to significantly and sustainably improve learning outcomes.

Overall, this research confirms that learning success is determined not only by the frequency of practice, but also by the quality of instructional design that integrates technology, motor learning theory, and ongoing pedagogical reflection.

CONCLUSION

This study concluded that the application of audio-visual learning media was effective in improving the overhead passing skills and learning outcomes of eighth-grade students at MTs DDI Gusung Makassar. Empirically, there was a consistent and significant increase in learning completion in each cycle of the intervention. In the pre-cycle stage, the average class score was 68.40, with a completion rate of 67%. After the application of audio-visual media in Cycle I, the average score increased to 83.27, with a completion rate of 77%. A more optimal increase occurred in Cycle II, with an average score of 87.56 and a completion rate of 96%, exceeding the Minimum Completion Criteria (KKM ≥75) and the classical completion standard (≥85%).

This improvement occurred in the affective (motivation and self-confidence), cognitive (understanding of movement concepts), and psychomotor (accuracy of overhead passing techniques involving a combination of locomotor, non-locomotor, and manipulative movements). Conceptually, these findings support multimedia and observational learning theories, which emphasize the importance of repeated visual demonstrations in the formation of motor schemas.

However, this study was limited by a relatively small sample size, short intervention duration, and focus on a single volleyball skill. Therefore, further research is recommended involving a broader sample size, a longer intervention period, and a variety of sports to test the sustainability and generalizability of the effectiveness of audio-visual media in physical education (PJOK) learning.

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