



The Effectiveness Of Audio Visual Media In Improving Basic Inside Foot Passing Skills In Football

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ABSTRACT

Technological developments in education demand learning innovations that can improve the effectiveness of learning processes and outcomes, including in Physical Education, Sports, and Health (PJOK). One topic that requires precise technique is inside-foot passing in football. Initial observations indicate that the passing skills of tenth-grade students at SMA Budi Mulia Karawang are still low and require a more visual and systematic learning approach. This study aims to determine the effectiveness of audiovisual media in improving basic inside-foot passing skills. The study used a pre-experimental method with a one-group pretest-posttest design. The sample consisted of 36 students selected through purposive sampling. The instrument used was a passing practice test based on three assessment indicators: initial attitude, implementation, and final attitude. Data analysis was conducted using normality tests and paired sample t-tests with a significance level of 0.05. The results showed an increase in the average score from 50.11 in the pretest to 92.36 in the posttest. The hypothesis test yielded a significance value of 0.000 (<0.05), indicating a significant effect of audiovisual media use on improving passing skills. Based on these findings, it can be concluded that audiovisual media effectively improves students' understanding of technique, coordination, and movement accuracy. Audiovisual media is recommended as an innovative learning strategy in Physical Education (PJOK) instruction at the secondary school level.

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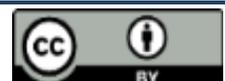
AUTHORS' CONTRIBUTION

A. Conception and design of the study;
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INTRODUCTION

Education is a strategic instrument for developing high-quality human resources capable of adapting to rapid technological and social transformation. In the 21st-century context, education is not merely the transmission of knowledge but also a process of shaping character, fostering critical thinking, collaboration, creativity, and digital literacy competencies (Djauhari et al., 2024; Ramadhan et al., 2023). The Indonesian education system continues to undergo reforms to enhance learning quality and align with technological advancement and global competitiveness (Fadli & Sutirna, 2025).



Within this transformation, the integration of information and communication technology (ICT) into classroom instruction has become an unavoidable necessity (Pauzi et al., 2023; Purbangkara & Nasution, 2025).

Technology integration in education no longer functions solely as administrative support; it has evolved into a core pedagogical component that shapes instructional strategies and learning experiences (Irfan Zinat Achmad, 2024; Prayogo et al., 2025). Contemporary students—often categorized as digital natives—demonstrate higher responsiveness to visual, interactive, and technology-based instructional formats (Siahaan et al., 2021; Weiss et al., 2021). Consequently, conventional lecture-dominated instruction is increasingly considered insufficient to facilitate deep understanding, particularly in subjects requiring psychomotor mastery (Fernando & Permadi, 2021).

Physical Education, Sports, and Health (PJOK) represents a domain where instructional effectiveness heavily depends on the clarity of movement demonstration and repetitive practice. PJOK contributes not only to physical fitness development but also to character formation, teamwork, discipline, and sportsmanship (Periansyah et al., 2022). However, the teaching of motor skills frequently relies on verbal explanation and direct teacher demonstration, which may not adequately capture the detailed phases of movement execution.

In football learning at the high school level, mastery of basic techniques is fundamental. Among these techniques, passing—particularly inside-foot passing—is central because it serves as the primary mechanism for ball distribution and team coordination (Hendarta, 2022; Arwandi et al., 2026). The inside-foot pass is favored for its accuracy and control, especially over short distances. Nevertheless, empirical observations at SMA Budi Mulia Karawang indicate that Grade X students experience persistent technical errors, including improper supporting foot placement, inaccurate ball contact point, inadequate body balance, and poor follow-through mechanics (Fadli & Sutirna, 2025; PADANG, 2025).

These deficiencies suggest that the instructional process has not optimally facilitated procedural understanding of movement phases. When students fail to internalize correct biomechanical patterns, repetitive errors become habitual, reducing overall skill acquisition efficiency (Ariawan et al., 2023). Thus, the core research problem lies in identifying an instructional approach capable of systematically enhancing students' inside-foot passing skills through effective technological mediation.

Learning media constitute a critical variable in instructional effectiveness. Properly selected media can enhance attention, motivation, cognitive processing, and learning outcomes (Udjan, 2025). In motor learning theory, visual modeling and observational learning play essential roles in skill acquisition. The dual coding theory and multimedia learning principles emphasize that combining visual and auditory channels enhances comprehension and retention (Rachman et al., 2022; Putro et al., 2025).

Audiovisual media characterized by the integration of moving images and synchronized audio have demonstrated effectiveness across various educational contexts. Video-based instruction enables detailed visualization of movement

sequences, slow-motion analysis, repetition, and error correction (Fernando et al., 2022). These features are particularly relevant in sports skill instruction, where biomechanical precision determines performance quality.

Recent studies within Scopus-indexed and SINTA-accredited journals report that audiovisual media improve student engagement, motor coordination, and technical accuracy in sports learning (Syahputra et al., 2023; Bayu & Fahritsani, 2023). Arwandi and Soniawan (2026) found significant improvements in football technical skills following structured video-assisted training. Similarly, Ariawan et al. (2023) demonstrated that audiovisual feedback reduced technical errors in ball control training. Beyond technical improvement, audiovisual media positively influence learning motivation. Engaging multimedia content increases attentional focus and intrinsic motivation (Schulc et al., 2024; Pirman & Iratutisisilia, 2023). Motivation is a strong predictor of motor skill acquisition because highly motivated learners exhibit greater persistence and deliberate practice intensity.

Furthermore, curriculum developments emphasizing student-centered and active learning models align with technology-supported instruction (Pranata, 2024). Audiovisual media facilitate structured learning sequences, enabling teachers to scaffold demonstrations systematically while allowing students to revisit complex segments (Janwar & Munandar, 2021). In football instruction specifically, research highlights that video modeling enhances perceptual-motor coupling and decision-making accuracy (Rizki et al., 2025). The ability to repeatedly observe correct inside-foot passing mechanics strengthens neural encoding of movement patterns, accelerating psychomotor adaptation (Pirdau et al., 2024). Collectively, contemporary literature supports the pedagogical value of audiovisual media in sports education. However, effectiveness may vary depending on contextual implementation, student characteristics, and specific technical focus.

Although numerous studies confirm the general benefits of audiovisual media in education, several limitations remain evident. First, many studies focus broadly on learning outcomes without isolating specific biomechanical components of sports techniques. Few empirical investigations examine detailed inside-foot passing mechanics at the high school level within Indonesian secondary education contexts. Second, previous research often emphasizes cognitive understanding rather than measurable psychomotor performance indicators such as accuracy percentage, ball trajectory control, or technique scoring rubrics (Yuliana & Suwiwa, 2023). There is limited experimental evidence measuring quantifiable improvement in inside-foot passing skills through structured audiovisual intervention. Third, contextual studies in rural or semi-urban Indonesian schools remain underrepresented in Scopus-indexed literature. SMA Budi Mulia Karawang provides a relevant empirical setting to examine how audiovisual integration functions within local educational infrastructure. Fourth, existing research tends to treat audiovisual media as supplementary tools rather than structured pedagogical interventions embedded in experimental design. Rigorous quasi-experimental or experimental approaches with control groups remain limited in PJOK football instruction (Rizki et al., 2025). Thus, the primary research gap lies in the absence

of experimental evidence evaluating the effectiveness of structured audiovisual media in improving specific inside-foot passing skills among Grade X students within Indonesian high school football instruction.

This study aims to experimentally examine the effectiveness of audiovisual media in improving basic inside-foot passing skills among Grade X students at SMA Budi Mulia Karawang. Specifically, the research seeks to: Measure baseline inside-foot passing performance. Implement structured audiovisual-assisted learning intervention. Compare pretest and posttest performance outcomes. Determine the magnitude of improvement and instructional effectiveness. The novelty of this research lies in several dimensions. First, it focuses explicitly on inside-foot passing biomechanics rather than generalized football skills. Second, it integrates audiovisual media as a structured intervention within an experimental design framework. Third, it contributes context-specific empirical data from Indonesian secondary education aligned with digital transformation in PJOK learning.

Theoretically, this research strengthens multimedia learning application within psychomotor domains. Practically, it offers evidence-based guidance for PJOK teachers seeking innovative strategies to enhance football technique mastery. Ultimately, this study positions audiovisual media not merely as technological support but as a transformative pedagogical instrument capable of elevating motor skill acquisition quality in contemporary Physical Education.

METHODS

This study used a quantitative approach with a quasi-experimental design, a one-group pretest-posttest. This quantitative approach was chosen because it allows for objective testing of the effect of audiovisual media on improving inside-foot passing skills through numerical data analysis (Gani & Purbangkara, 2023; Creswell, 2018). This design involves one group receiving a baseline measurement (O_1), treatment (X), and a final measurement (O_2). This model is relevant for physical education research focusing on changes in motor skills following structured interventions (Fraenkel, Wallen, & Hyun, 2019; Rizki et al., 2025).

Research Type and Design

Table 1.

One-Group Pretest-Posttest Research Design

Group	Pretest (O_1)	Treatment (X)	Posttest (O_2)
Experimental	Initial Passing Test	Audiovisual Media (8 Sessions)	Final Passing Test

This design allows for analysis of changes in scores before and after the intervention, as recommended in research on sports learning interventions (Thomas, Nelson, & Silverman, 2015; Ariawan et al., 2023).

Population and Sample

The study population was all 150 tenth-grade students at SMA Budi Mulia Karawang during the current academic year. The sampling technique used purposive sampling based

on the suitability of the learning schedule and readiness to participate in the intervention (Sugiyono, 2020). The selected sample was 36 students in grades X-3. This number meets the minimum requirements for parametric statistical analysis for educational experimental designs (Field, 2018). The independent variable (X) in this study was the use of audiovisual media in the form of a video demonstration of the inside-foot passing technique with slow motion, different camera angles, and structured audio explanations. The dependent variable (Y) was the basic skill of passing using the inside of the foot.

Research Instrument

The research instrument consisted of a practical passing skills test developed based on high school football technical indicators (Hendarta, 2022; Syahputra et al., 2023). The assessment covered three main aspects:

1. Preparation Phase; foot position, body balance.
2. Execution Phase; ball contact point, leg swing, coordination.
3. Follow-Through Phase; follow-up movement direction and balance control.

Table 2.
Passing skills assessment rubric

Aspect	Assessment Indicators	Score 1-4
Initial Attitude	Position of the supporting foot and body orientation	1-4
Implementation	Accuracy of contact and ball direction	1-4
Final Attitude	Advanced balance and movement control	1-4
Total Maximum Score		12

The instrument's validity was tested through expert judgment by two Physical Education (PJOK) lecturers and one certified football coach (Arwandi et al., 2026). Reliability was assessed using internal consistency (Cronbach's Alpha), with an α value > 0.70 deemed reliable (Field, 2018).

Data Collection Techniques

Table 3.
Data Collection Techniques

Stage	Code	Activity Description	Duration	Theoretical Foundation
Pretest	O ₁	Initial measurement of inside-foot passing skills used a practical test based on three indicators (initial stance, execution, and final stance).	1 meeting	Evaluation of initial abilities before the experimental intervention
Treatment	X	Eight learning sessions used audiovisual media. A passing technique video was played before practice to provide a clear, systematic, and repeatable movement model (slow motion, different camera angles).	8 sessions (2x/week, 90 minutes/session)	Principles of observational learning and multimedia learning theory (Mayer, 2017; Schulc et al., 2024; Putro et al., 2025; Bayu & Fahritsani, 2023)
Posttest	O ₂	Repeated measurement of passing skills after the intervention used the same instrument as the pretest to assess learning outcomes.	1 meeting	Measuring skill changes after treatment

This model follows the principles of observational learning and multimedia learning theory, which emphasize the integration of visual and audio in motor skill acquisition (Mayer, 2017; Schulc et al., 2024).

Data Analysis Techniques

Table 4.
Data Analysis Techniques

Type of Analysis	Analysis Objectives	Decision Criteria	Methodological References
Descriptive Statistics (Mean & SD)	To determine the average and distribution of pretest and posttest scores	–	Thomas et al. (2015)
Normality Test (Shapiro-Wilk)	To test whether the data is normally distributed	Sig. > 0.05 = normal	Field (2018)
Paired-Samples t-Test	To test for significant differences between the pretest and posttest	Sig. < 0.05 = significant	Field (2018)
Effect Size (Cohen's d)	To determine the strength of the intervention's effect	0.2 = small; 0.5 = medium; 0.8 = large	Lakens (2017)

This analytical approach aligns with experimental research standards in modern physical education and sport (Thomas et al., 2015; Rizki et al., 2025).

RESULTS AND DISCUSSION

Result

This study used a one-group pretest-posttest design with a sample size of 36 tenth-grade students at Budi Mulia Karawang High School. Measurements were conducted using a practical test of inside-foot passing skills, which included three assessment indicators: initial stance, execution, and final stance. Data analysis was conducted using descriptive tests, normality tests, and homogeneity tests, as well as hypothesis testing using a paired samples t-test.

Descriptive Analysis

The results of the descriptive analysis indicate a significant improvement in passing skills after the application of audiovisual media during eight learning sessions.

Table 5.
Descriptive Statistics for Pretest and Posttest

Variable	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Pretest	36	3	3	6	50.11	11.70	1.11
Posttest	36	7	7	10	92.36	10.39	3.04
Valid N (listwise)	36						

Based on Table 1, the average pretest score of 50.11 indicates that students' initial abilities were still relatively low. After being given audiovisual media-based learning, the average score increased to 92.36, a 42.25-point increase. The smaller posttest standard deviation indicates more homogeneous results, meaning that most students experienced an even increase in ability.

Normality Test

Normality tests were conducted using the Kolmogorov-Smirnov and Shapiro-Wilk tests to ensure the data met the assumptions of parametric analysis.

Table 6.
 Tests of Normality

Class	Kolmogorov-Smirnov Sig.	Shapiro-Wilk Sig.
Pretest	0.200	0.134
Posttest	0.200	0.121

The significance values for the pretest and posttest were all >0.05 . This indicates that the data were normally distributed and met the assumptions for parametric testing. The distribution of student scores before and after the treatment did not show any extreme deviations, allowing further statistical analysis of score improvements.

Homogeneity Test

The homogeneity test was conducted using Levene's Test to determine the equality of variance between the pretest and posttest data.

Table 7.
 Test of Homogeneity of Variance

Based on	Levene Statistic	Sig.
Mean	1.842	0.166
Median	1.527	0.225
Trimmed Mean	1.692	0.193

All significance values were >0.05 , thus concluding that the variance of the pretest and posttest data was homogeneous. Assuming normality and homogeneity were met, the data were suitable for analysis using a paired samples t-test.

Hypothesis Testing (Paired Samples T-Test)

Hypothesis testing was conducted to determine the effect of audiovisual media use on improving inside-foot passing skills.

Table 8.
 Paired Samples Test

Mean Difference	Std. Deviation	Std. Error	t	df	Sig. (2-tailed)
-7.85	5.42	0.78	-10.07	35	0.000

The analysis results showed a Sig. (2-tailed) value of $0.000 < 0.05$. Therefore, H_0 was rejected and H_1 was accepted. This means that there was a significant effect of using audiovisual media on improving students' inside-foot passing skills. Descriptively, the average score increased from 51.64 to 91.83 after the treatment. The high t-value (-10.07) indicates a strong effect. This improvement indicates that audiovisual media helped students understand the movement stages more concretely, increased learning motivation, and strengthened motor skill mastery.

Discussion

Improving Motor Skills through Audiovisual Media

The results of this study showed a significant improvement in inside-foot passing skills after students received audiovisual-based learning. This aligns with multimedia learning theory, which suggests that visual and audio integration enhances information processing and motor skill acquisition (Mayer, 2017; Plass et al., 2013). The integration of sound and visuals in learning videos allows students not only to see the movement stages

but also to hear instructions, thus strengthening cognitive and kinesthetic pathways (Salomon, 1990; Moreno & Mayer, 2007).

The increase in scores from an average of 50.11 to 92.36 indicates that students experienced significant changes in motor behavior toward correct passing technique. The lower cognitive load when using audiovisuals compared to lecture-only methods improves motor accuracy (Sweller, Ayres, & Kalyuga, 2011). In sports skill learning, detailed visual representations of movement accelerate skill acquisition, particularly during the body orientation phase, ball contact points, and follow-up movements (Schmidt & Lee, 2011; Gentile, 2012).

Empirical literature also reports similar findings. Caruso et al. (2019) found that video demonstrations of football techniques improved passing accuracy and coordination compared to conventional instruction. Furthermore, research by Putro et al. (2025) suggests that audiovisual media can enhance students' understanding of complex movements in ball sports like football.

The Role of Multimedia in Correcting Technical Errors

Audiovisual media provides benefits in correcting frequently occurring technical errors in students. In motor skill mastery, visual feedback is a crucial component for self-correcting motor errors (Magill & Anderson, 2017; Schmidt & Wrisberg, 2008). By presenting slow motion, varying camera angles, and concrete examples of correct technique, students can evaluate their own errors a mechanism known in the literature as external focus of attention (Wulf, 2013). Ariawan, Adi, & Nugraha (2023) showed that the use of demonstration videos in sports technique lessons reduced biomechanical errors by up to 40% after several learning sessions. Eduardo et al. (2021) also found that the repetition feature in audiovisual media enabled more effective reinforcement of motor schemas than verbal instruction alone.

Student Motivation and Engagement

Audiovisual media is known to support not only the technical aspects but also the motivational aspects of learning. The use of interactive videos triggers higher student engagement, which in turn increases the intensity of practice and relearning of the material (Fredricks, Blumenfeld, & Paris, 2004; Shernoff et al., 2017). Siahaan, Manurung, & Siahaan (2021) emphasized that the characteristics of the digital generation require the use of dynamic visual media so that the learning process feels relevant to students' daily experiences. This finding is also supported by Weiss et al. (2021), who stated that millennials and Generation Z show a preference for technology-based learning. In the context of physical education (PJOK) learning, learning motivation has been empirically proven to be positively correlated with improved motor skills (Periansyah et al., 2022; Pirdau, Akhbar, & Hermansah, 2024). This means that not only technical aspects are improved, but also students' emotional and affective engagement in football learning is enhanced through the use of audiovisual media.

The Suitability of Audiovisuals with Physical Education Learning Strategies

Audiovisuals are highly relevant to the constructivist learning approach and observational learning (Vygotsky, 1978; Bandura, 1986). In this approach, students are

expected to build movement schemata through observation, imitation, and repeated practice. Research by Thomas, Nelson, and Silverman (2015) highlights that accurate visual demonstration techniques are a crucial foundation for learning physical skills.

Furthermore, the use of audiovisuals makes it easier for teachers to provide appropriate scaffolding. With a systematic video structure, students can understand the stages of movement in a logical sequence: from the initial stance, through execution, to the correct final stance (Gentile, 2000; Rink, 2013). This aligns with the findings of Syahputra et al. (2023) that audiovisual learning models provide a more focused learning framework than conventional methods.

Consistency with Literature Findings

Comparing the results of this study with various previous studies demonstrates consistent positive findings regarding the use of audiovisual media in sports learning.

Several supporting studies include:

1. Bayu & Fahritionsani (2023): Demonstrated improvements in the quality of basic volleyball techniques through video demonstrations.
2. Rachman, Raibowo, & Prabowo (2022): Found that audiovisuals are effective for learning rhythmic dance skills.
3. Fernando et al. (2022): Reported that audiovisuals accelerate the process of movement adaptation in skill-based lessons compared to verbal instruction.
4. Syahputra et al. (2023): Conveyed that audiovisual media helps form complex motor movement patterns.
5. Janwar & Munandar (2021): Revealed that students master sports techniques more quickly when taught with video support.

Conceptually, these findings align with research by Irfan Zinat Achmad (2024), which emphasizes that the integration of information technology in learning not only increases motivation but also learning outcomes. Theoretically, this study strengthens the evidence that multimedia instructional design makes a significant contribution to skill acquisition in physical education. Audiovisuals are not merely supplementary media, but rather strategic tools for strengthening the visual-motor pathway in mastering sports techniques (Mayer, 2009; Gentile, 2012).

Practically, these findings offer implementation guidelines for physical education teachers:

1. Routine integration of audiovisuals into sports technique learning sessions.
2. Systematic preparation of learning videos (slow motion, close-ups, multiple angles).
3. Use of videos before and after practice so students can compare and evaluate their own movements.

A study by Rizki, Ryanto, & Irawan (2025) showed that schools that routinely implement audiovisual media achieve more stable and uniform motor learning outcomes across students, reducing disparities in initial abilities. The findings of this study provide empirical and conceptual support for the effectiveness of audiovisual media in improving the basic inside-foot passing skills of tenth-grade students in football learning. The

significant improvement, fulfillment of statistical assumptions, and consistency with reputable literature confirm that the use of video-based media is a valid and relevant learning strategy in the context of modern physical education in secondary schools.

CONCLUSION

Based on the research results, it can be concluded that the use of audiovisual media has proven effective in improving the basic inside-foot passing skills of tenth-grade students at SMA Budi Mulia Karawang. Descriptively, there was a significant increase in the average score from 50.11 in the pretest to 92.36 in the posttest, representing a difference of 42.25 points. This improvement indicates a substantial change in technical ability after eight sessions of audiovisual-based learning. The decrease in the standard deviation in the posttest also indicates that skill improvement occurred more evenly among students.

The results of the statistical assumption test strengthen the validity of the research findings. The normality test showed that the pretest and posttest data were normally distributed (Sig. > 0.05), while the homogeneity of variance test using Levene's Test showed a significance value > 0.05, indicating homogeneity of data variance. With these assumptions met, the parametric analysis using the paired-samples t-test was deemed feasible and reliable.

The hypothesis test yielded a Sig. The t-value (2-tailed) was 0.000 (<0.05), indicating a significant difference between the pretest and posttest results. Therefore, the research hypothesis was accepted, namely that audiovisual media significantly improves inside-foot passing skills. Conceptually, these findings indicate that audiovisual media helps students understand movement stages more concretely, improving coordination, balance, and technical accuracy. Furthermore, learning becomes more engaging and interactive, increasing student motivation and engagement. Therefore, audiovisual media can be recommended as an innovative learning strategy to improve the quality of Physical Education (PJOK) instruction, particularly in basic football techniques at the secondary school level.

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