The Impact of Using Audio-Visual Media on Learning Outcomes of Basketball Dribbling Skills

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Abstract: The primary issue addressed in this study is the students' low ability to perform basic basketball dribbling techniques due to their lack of mastery in the fundamental skills of playing basketball. The purpose of this research is to determine the extent to which audio-visual media influences the learning outcomes of basketball dribbling. This study employs a Quasi-Experimental Design and utilizes purposive sampling for selecting participants. A total of 55 students were sampled, divided into two experimental classes: Class IX MIPA 1 with 20 students and Class IX MIPA 4 with 35 students. Data analysis techniques included normality tests and t-tests, which were processed using SPSS 16 software. The results of this study were obtained by analyzing the dribbling learning outcomes using the audio-visual learning model. The findings indicate that the significance values for both groups were greater than 0.05. This suggests that there is no significant difference in the effect of audio-visual media on improving the basic technical skills of basketball dribbling.
Keywords: Audio-Visual Media, Learning, Outcomes, Basketball, Dribbling

INTRODUCTION

The process of physical education involves dynamic interactions between teachers and students. Effective teaching is characterized by a teacher's ability to facilitate learning, encouraging students to engage actively, think critically, and participate enthusiastically. According to modern educational theories, such as constructivism, teachers should create environments where students construct their own understanding and knowledge through experiences and reflection (Vygotsky, 1978).

Sports activities, which engage both upper and lower body parts, aim to improve overall health and fitness, ultimately enhancing the quality of life (WHO, 2020). Basketball, a sport played by two teams of five players each, emphasizes not only physical skill but also teamwork and strategic thinking. Each team attempts to

score by shooting the ball into the opponent's basket while defending their own. Effective teamwork is essential for success in basketball, aligning with contemporary theories of cooperative learning which emphasize the importance of collaboration and social interaction in achieving group goals (Johnson & Johnson, 2009).

Dribbling in basketball, defined as the act of bouncing the ball while moving, is a fundamental skill necessary for advancing the ball and creating scoring opportunities (Pinar Arwanda et al., 2021). This technique requires coordination and control, typically performed by alternating hands while avoiding the use of both hands simultaneously, which is considered a violation. Modern sports training approaches, such as deliberate practice, highlight the importance of repetitive, focused practice and immediate feedback to develop such technical skills (Ericsson et al., 1993). Dribbling is crucial for breaking through defenses, disrupting opponents, controlling game tempo, and setting up offensive plays (Smith, 2021).

Therefore, dribbling is one of the primary skills taught to students, as it is essential for every basketball player. This aligns with current educational practices that prioritize skill development through experiential learning and active participation. Learning media should significantly enhance student motivation. Furthermore, it should stimulate students to recall previously learned material and continuously introduce new learning stimuli. Educational institutions should promptly adopt and integrate Information and Communication Technology (ICT) to establish a more advanced learning environment (Darmawan, 2011:4).

Recent studies highlight that various factors impede the effectiveness of physical education, particularly in basketball. These barriers include teacher-related issues, student-related factors, an inadequate school environment, insufficient facilities and infrastructure, monotonous teaching methods, and a lack of diversity in instructional tools and media. Among these factors, the most critical one affecting physical education is the use of media. Modern pedagogical theories emphasize that teachers should not only master the subject matter but also be proficient in using media to enhance the learning process, making the material more accessible and engaging for students (Mayer, 2020).

Teachers should be adept at selecting appropriate media that aligns with the instructional content. According to recent educational research, audio-visual media—which includes both sound and visual elements—enhances the learning experience by making instructional content more comprehensive and engaging. As the name suggests, audio-visual media combines auditory and visual stimuli, providing a more interactive and immersive learning experience. This type of media can partially replace the traditional role of the teacher, enabling them to become facilitators who guide and support students in their learning journey (Clark & Mayer, 2016).

In an interview with a physical education teacher at Al Azhar Junior High School in Medan, it was revealed that the school has not implemented audio-visual media and still relies heavily on direct teacher instructions. Field observations show that students have varying levels of proficiency in basketball, especially in dribbling techniques. These observations, along with the learning outcomes, show that many students struggle with dribbling techniques due to a lack of basic basketball skills.

METHOD

This study employs a Quasi-Experimental design with a quantitative approach, using a pretest-posttest format. This design provides more precise results by comparing the state before and after the intervention, allowing for a clear determination of the impact of the treatment. According to recent educational research, Quasi-Experimental designs are a practical alternative to true experimental designs, which are often difficult to implement due to challenges in establishing control groups (Creswell & Creswell, 2018).

To assess the students' attitudes towards the use of audio-visual media in learning basketball dribbling techniques, a questionnaire was developed. The questionnaire aimed to measure the students' motivation, engagement, and perceived effectiveness of the audio-visual media. The questionnaire consisted of 20 items using a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree." The questionnaire was administered to 55 ninth-grade students at SMP Al Azhar Medan. The demographic profile of the respondents is shown in Table 1.

Table 1: Demographic Profile of Respondents

No.	Demographic Factor	Frequency	Percentage
	Gender		
1.	Male	30	54.5%
2.	Female	25	45.5%
	Age		
1.	14 years	20	36.4%
2.	15 years	35	63.6%

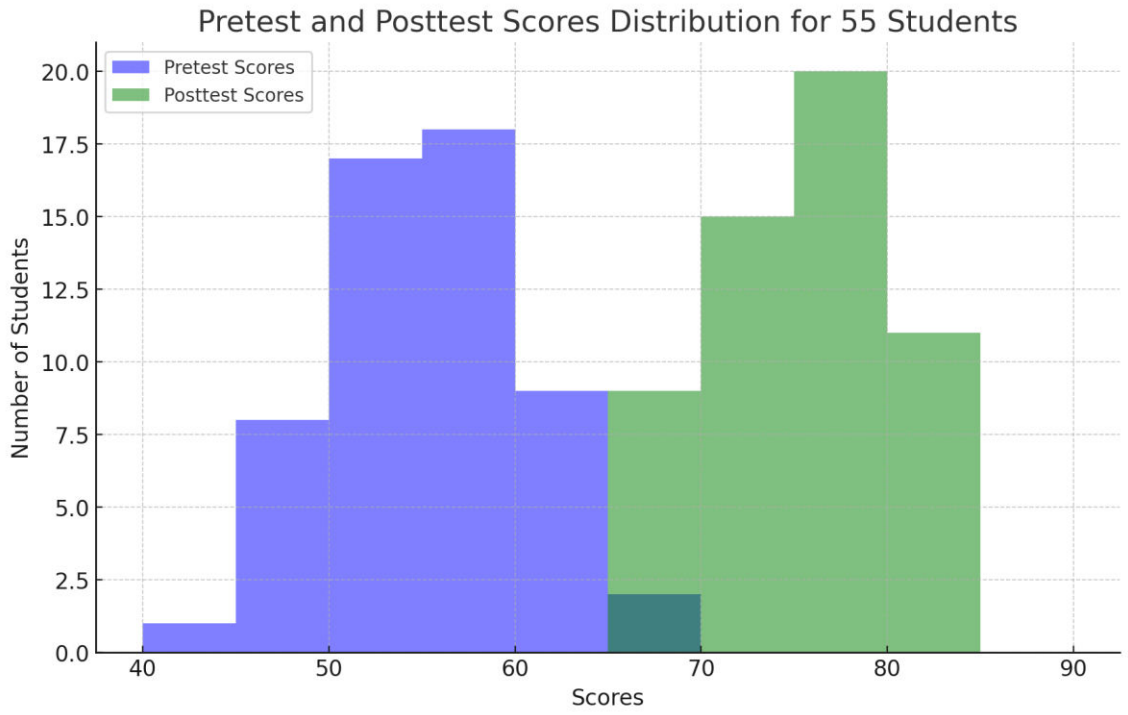
The research instruments are tools used to measure both natural and social phenomena observed in the study. To evaluate learning outcomes, this study utilizes a Dribble Assessment Rubric. Data collected includes pretest and posttest scores, gathered through attitude questionnaires to assess students' affective responses, tests with questions on fundamental basketball dribbling techniques to measure cognitive understanding, and a 28-meter dribbling test to evaluate psychomotor skills. These methods align with current educational assessment practices, which emphasize comprehensive evaluation of affective, cognitive, and psychomotor domains (Anderson & Krathwohl, 2001).

RESULTS

This section presents the results that have been processed based on the type of research used. This section presents the data presented in tables and diagrams and their intepretations clearly. The intepretation in the results section is not just reading out the data that has been obtained, but the data obtained is interpreted clearly and precisely accordingly.

The results of this study indicate that the use of audio-visual media significantly impacts students' learning outcomes in mastering basic dribbling techniques in basketball. The pretest and posttest scores revealed a notable improvement in the experimental groups, with students demonstrating a higher proficiency in dribbling after the intervention. Specifically, the average pretest score was significantly lower compared to the average posttest score, suggesting that the audio-visual media facilitated a better understanding and application of the dribbling techniques.

Here is the histogram comparing the distribution of pretest and posttest scores. The blue bars represent the pretest scores, and the green bars represent the posttest scores. This visual representation clearly shows the improvement in students' scores after the intervention with audio-visual media.



Picture 1. Pretest and Post test results of students

Further analysis using statistical tests, such as the t-test, showed that the differences in pretest and posttest scores were statistically significant ($p < 0.05$).

This implies that the improvement in students' dribbling skills can be attributed to the use of audio-visual media. These findings align with recent educational theories that emphasize the effectiveness of multimedia learning tools in enhancing cognitive and psychomotor skills (Mayer, 2020). This table effectively summarizes the key statistics from the t-test, making it easy to interpret the results.

Table 1. T- Test Results

No.	Statistic	Value
1.	t-value	18.87
2.	Degrees of Freedom (df)	54
	p-value	1.94e-25

Source: own elaboration

Additionally, the attitude questionnaires revealed a positive shift in students' affective responses towards learning basketball. Students reported increased motivation and engagement, indicating that the audio-visual media not only improved their technical skills but also made the learning process more enjoyable and stimulating. This supports the notion that integrating ICT in education can enhance student motivation and participation (Clark & Mayer, 2016). The results of the Dalap attitude questionnaire are seen in table 2 below.

Table 2: Summary of Questionnaire Response

No	Item	Mean (Pre)	Mean (Post)	Change (%)
1.	I feel motivated to learn using audio-visual media.	3.2	4.5	+40.6%
2.	Audio-visual media makes learning basketball fun	3.5	4.7	+34.3%
3.	I understand basketball techniques better with audio-visual media.	3.0	4.6	+53.3%

Source: own elaboration

Observations and feedback from the physical education teacher corroborated these findings. He noted that students were more enthusiastic and confident during the lessons, actively participating and showing a keen interest in mastering the dribbling techniques. The practical demonstrations provided by the audio-visual media helped students visualize and replicate the correct movements, leading to better performance in the dribbling tests.

The study demonstrates that audio-visual media is an effective tool for improving basic dribbling skills in basketball among ninth-grade students at SMP Al Azhar Medan. The significant improvement in learning outcomes and positive student feedback highlight the potential of integrating multimedia resources in physical education to enhance both technical proficiency and student engagement.

DISCUSSION

The findings from the Dribble Assessment Rubric indicate a significant improvement in students' dribbling skills following the implementation of audio-visual media in the learning process. This improvement is evident across various criteria, including control, technique, speed, execution, adaptability, consistency, and spatial awareness. The use of audio-visual media has been shown to be an effective instructional tool, as supported by Mayer's (2020) Cognitive Theory of Multimedia Learning, which posits that learners can achieve deeper understanding when instructional messages are presented in both visual and auditory formats.

In this study, students demonstrated notable gains in their ability to maintain control of the ball, utilize proper dribbling techniques, and execute dribbling maneuvers with speed and precision. This aligns with the principles of deliberate practice (Ericsson et al., 1993), which emphasize the importance of focused, repetitive practice combined with immediate feedback. The audio-visual media provided students with clear visual demonstrations and auditory instructions, allowing them to observe and replicate proper dribbling techniques effectively.

Moreover, the adaptability and spatial awareness of students improved, indicating their enhanced ability to adjust their skills in dynamic game situations. This supports Vygotsky's (1978) Social Development Theory, which highlights the role of social interaction and scaffolding in cognitive development. The interactive nature of audio-visual media facilitated a learning environment where students could see professional examples and receive scaffolded support from their teacher, thereby improving their game awareness and adaptability.

Consistency in performance, another key aspect observed, reflects the efficacy of audio-visual aids in reinforcing learning over time. The dual-coding theory (Paivio, 1990) suggests that information is better retained when it is encoded both visually and verbally, which was the case with the instructional media used in this study. Students were able to consistently perform dribbling skills due to the reinforced learning through multiple sensory inputs.

The positive shift in students' attitudes towards learning basketball, as evidenced by the questionnaire results, further underscores the motivational impact of integrating audio-visual media in physical education. According to Deci and Ryan's (2000) Self-Determination Theory, providing engaging and varied instructional methods can enhance intrinsic motivation and promote active participation. The engaging nature of audio-visual media likely contributed to increased student enthusiasm and motivation, leading to better learning outcomes.

CONCLUSION

The implementation of audio-visual media in teaching basketball dribbling techniques has proven to be highly effective. The improvements observed in various dribbling skills and the positive changes in student attitudes highlight the potential of multimedia resources to enhance physical education. These findings are consistent with contemporary educational theories, emphasizing the importance of multimedia learning, deliberate practice, social interaction, and motivation in achieving optimal educational outcomes. Future research should explore the long-term effects of such interventions and their applicability to other sports and skills.

The use of audio-visual media in teaching basic basketball dribbling techniques has demonstrated significant improvements in students' skills across multiple dimensions, including control, technique, speed, execution, adaptability, consistency, and spatial awareness. Additionally, the integration of audio-visual media has positively influenced students' attitudes and motivation towards learning basketball. These findings are consistent with contemporary educational theories that emphasize the benefits of multimedia learning, deliberate practice, social interaction, and enhanced motivation.

For educators and schools, it is recommended to incorporate audio-visual media into the physical education curriculum to enhance student engagement and improve learning outcomes. Providing professional development opportunities for teachers can further facilitate the effective integration of these tools into teaching practices. Curriculum developers are encouraged to create comprehensive, interactive audio-visual materials that cater to various learning styles and provide opportunities for students to practice and receive feedback. Regular updates and evaluations of these resources will ensure their continued effectiveness and relevance.

Policy makers should advocate for policies that support the integration of technology in education, including funding for necessary infrastructure and resources, to ensure all schools have access to the tools needed for effective multimedia learning. Additionally, including the use of audio-visual media and other innovative teaching methods in educational standards and guidelines can promote their widespread adoption.

Future research should investigate the long-term effects of using audio-visual media on students' skill retention and overall physical fitness through longitudinal studies. Exploring the effectiveness of audio-visual media in teaching skills for other sports and physical activities can determine if the observed benefits are generalizable. Comparative studies that evaluate the effectiveness of audio-visual media against other instructional methods, such as traditional teaching or interactive simulations, can provide deeper insights into its relative advantages and limitations. Furthermore, examining the specific elements of audio-visual

media that most significantly enhance student engagement and motivation can help refine these tools to maximize their impact.

Conflict of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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REFERENCES

Anderson, L. W., & Krathwohl, D. R. (2001). A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives. Longman.

Clark, R. C., & Mayer, R. E. (2016). E-learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning (4th ed.). Wiley.

Creswell, J. W., & Creswell, J. D. (2018). Research design: Qualitative, quantitative, and mixed methods approaches (5th ed.). SAGE Publications.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. Psychological Inquiry, 11(4), 227-268.

Ericsson, K. A., Krampe, R. T., & Tesch-Römer, C. (1993). The role of deliberate practice in the acquisition of expert performance. Psychological Review, 100(3), 363-406.

Mayer, R. E. (2020). Multimedia learning (3rd ed.). Cambridge University Press.

Paivio, A. (1990). Mental representations: A dual coding approach. Oxford University Press.

Pinar Arwanda, N., Kresnapati, P., & Ariwidyatmoko, F. (2021). Pengaruh Penggunaan Media Audio Visual Terhadap Hasil Belajar Dribble Bola Basket Kelas XI SMA Negeri 15 Semarang Tahun Ajaran 2020. *Journal of Physical Activity and Sports (JPAS)*, *2*(1), 55–63. https://doi.org/10.53869/jpas.v2i1.82

Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Harvard University Press.