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The Influence of Interactive Visual Media in Learning Basic Volleyball Techniques on Students' Learning Interest

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A. Conception and design of the study; **B.** Acquisition of data; **C.** Analysis and interpretation of data; **D.** Manuscript preparation; **E.** Obtaining funding

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ABSTRACT

This study aimed to determine the effect of the use of interactive visual media on students' learning interest in basic volleyball techniques at SMA Negeri 9 Makassar. The method used was a quasi-experimental study with a pretest-posttest control group design. The sample consisted of 40 students divided into two groups: an experimental group (n=20) receiving treatment using interactive visual media, and a control group (n=20) using conventional learning methods. The descriptive analysis showed that the average learning interest score in the experimental group increased from 67.40 (SD = 6.12) in the pretest to 85.10 (SD = 5.73) in the posttest. Meanwhile, in the control group, the score increased from 66.85 (SD = 5.89) to 72.45 (SD = 6.18). The t-test results showed a significant difference between the two groups in the posttest, with a p-value of 0.000. The effect size calculation using Cohen's d yielded a value of 2.12, which is considered a large effect size. These findings indicate that the use of interactive visual media can significantly increase student interest in learning basic volleyball techniques. This media provides a more engaging learning experience, facilitates technical understanding through visualization, and encourages active student participation. Therefore, interactive visual media is recommended as an effective learning strategy in physical education at the secondary school level.

Keywords : Interactive Visual Media; Learning Interest; Volleyball; Physical Education Learning; Basic Techniques.

INTRODUCTION

Physical education, sports, and health (PJOK) in secondary schools plays a crucial role in developing students' physical fitness, motor skills, and social-emotional aspects. Sports activities such as volleyball are an effective medium not only for fitness but also for developing teamwork, discipline, and student learning interests (Pratama, 2025).

In today's digital era, advances in information and communication technology (ICT) have enabled the emergence of various learning media that are more flexible, interactive, and engaging for students. Visual-interactive learning media is one innovation that utilizes visual displays, animations, videos, or interactive applications to increase student attention, motivation, and participation in learning (Indartiwi, Wulandari, & Novela, 2020; Ritonga, 2025).

In the context of sports learning, particularly volleyball, mastery of basic techniques such as passing, smashing, serving, and blocking is crucial as a foundation for students to play effectively and enjoyably. However, in reality, much basic technique learning is still conducted conventionally the teacher demonstrates, students imitate, and then practice in the field which tends to be monotonous and uninteresting for some students (Budiman, 2024; Hardika, 2024). Thus, the application of visual-interactive media in sports learning has the potential to improve the learning process, increase student interest in learning, and strengthen mastery of basic volleyball techniques.

More specifically, previous research has shown that interactive video-based or application-based learning media can improve student learning outcomes in volleyball. For example, research by Hardika (2024) found that interactive multimedia products based on EdPuzzle are effective in volleyball learning. Rais (2023) developed interactive learning media based on Adobe Flash Professional for volleyball and found improved student learning outcomes. Fernando (2022) developed interactive Android-based learning media for volleyball and found that the media was valid, practical, and received positive responses from students. Meanwhile, regarding student learning interest, research shows that student interest in volleyball learning remains in the medium or low category. For example, Wulandari (2023) found that the majority of students had moderate interest in volleyball learning in high school. Mardiyah (2019) in her research at SMAN 1 Karanganom showed that eleventh-grade students' interest in volleyball was in the "moderate" category with the highest frequency.

In the context of physical education, visual-interactive media can be a stimulus that increases students' interest in learning. A study in elementary schools showed that the implementation of interactive learning media had a significant impact on students' interest in learning (Narbito, 2025). Similarly, Pratama's (2025) research revealed the role of learning media in fostering students' interest in physical activity at school. Thus, there is a significant relationship between the implementation of visual-interactive media, learning basic volleyball techniques, and students' interest in learning that needs to be studied more deeply in the secondary school environment, particularly at SMA Negeri 9 Makassar.

Based on the description above, several objective issues arise that require attention: First, the teaching of basic volleyball techniques in secondary schools generally still uses conventional methods that may be uninteresting for students, resulting in low learning interest, Second, although interactive learning media has been developed and proven effective in various sports learning contexts, the specific use of visual-interactive media in basic volleyball techniques in schools such as SMA Negeri 9 Makassar has not been widely reported, Third, while student learning interest in sports learning, particularly volleyball, has been researched, the influence of visual-interactive media on this interest has not been specifically identified in the context of SMA Negeri 9 Makassar, Fourth, there is a need to improve the effectiveness of basic volleyball techniques learning while simultaneously increasing student learning interest so that learning not only flows but also motivates students, engages them actively, and enjoys them. Therefore, this study aims to answer: Does the application of interactive visual media in basic volleyball techniques learning affect student learning interest at SMA Negeri 9 Makassar?

Although there has been a significant amount of research related to interactive learning media in sports and volleyball instruction, several gaps remain to be addressed: (1) Many studies focus on media development and its effectiveness in improving technical understanding or skills (e.g., Hardika, 2024; Rais, 2023; Fernando, 2022), but few explicitly link visual-interactive media to student learning interest in basic volleyball techniques at the high school level, (2) Research on learning interest in volleyball tends to be descriptive (e.g.,

Wulandari, 2023; Mardiyah, 2019) without the intervention of interactive learning media as an independent variable, (3) The research context at SMA Negeri 9 Makassar (South Sulawesi) has not been extensively explored empirically, particularly regarding interactive visual media in basic volleyball techniques instruction. The unique cultural conditions, school facilities, and student characteristics in Makassar may differ from previous research locations in Java or other regions, and (4) Research combining visual-interactive media, basic volleyball techniques, and student learning interest within a single experimental framework is still limited. Therefore, this study aims to fill this gap by providing an empirical contribution in the local context of SMA Negeri 9 Makassar.

This study offers several novelties, as follows: First, this study applies visual-interactive media specifically to the learning of basic volleyball techniques, rather than simply general games or sports. This clarifies the focus on the fundamental technical aspects (such as passing, serving, smashing), which are often challenging in volleyball learning, Second, this study combines two important variables: visual-interactive media as an intervention and student learning interest as the primary outcome, which have received limited attention in many previous studies, Third, this study was conducted at a high school, SMA Negeri 9 Makassar, which, geographically and culturally, can provide specific contributions to the underexplored context of South Sulawesi, and Fourth, this research is expected to provide practical recommendations for physical education teachers at SMA Negeri 9 Makassar and similar schools regarding the effective implementation of visual-interactive learning media to increase student interest and mastery of basic volleyball techniques. Therefore, this research is expected to not only add to the literature but also provide practical implications for sports instruction in schools.

Based on the background, theoretical review, and identification of previous research, this study aims to determine the effect of visual-interactive media in teaching basic volleyball techniques on students' learning interest at SMA Negeri 9 Makassar. Therefore, the research question is formulated as follows: "Does the use of visual-interactive media in teaching basic volleyball techniques have a significant effect on students' learning interest at SMA Negeri 9 Makassar?"

This research is expected to provide the following benefits: theoretically, it enriches the study of sports learning media, particularly volleyball; practically, it provides alternative media for physical education teachers to increase learning interest and mastery of basic volleyball techniques; and it provides input for the school in developing more engaging and effective learning tools. Thus, this research is expected to proceed through an appropriate design, valid instruments, and accurate analysis, resulting in reliable findings.

METHODS

Research Type and Design

This study employed a quantitative method with a quasi-experimental approach. The research design adopted a Pretest–Posttest Control Group Design, with two groups: an experimental group using interactive visual media in learning basic volleyball techniques, and a control group using conventional learning methods. This approach allows for comparison of changes in students' learning interest before and after the media intervention, as well as comparisons between groups (Verawati, 2024).

This design was chosen because it allows for direct observation of the effect of interactive visual media on students' learning interest in the context of learning basic volleyball techniques, while maintaining practical school conditions (not all students can be

fully randomized as in an RCT). This quantitative approach aligns with the research framework for examining the influence and relationships between variables (see Kamerino et al., 2012).

Research Variables

This study has two main variables:

1. Independent variable (X): Interactive Visual Media in learning basic volleyball techniques. This media is in the form of interactive videos/animations/visuals that demonstrate basic volleyball techniques (serves, overhand/underhand passes, smashes, blocks) and is equipped with student-visual interaction features (e.g., selecting technique sequences, replays, short quizzes).
2. Dependent variable (Y): Student Learning Interest in Learning Basic Volleyball Techniques at SMA Negeri 9 Makassar.

Operationally, the independent variable is the treatment given to the experimental group (the use of interactive visual media), while the control group received basic volleyball techniques learning using conventional methods without interactive media. The dependent variable is measured using a quantitative instrument that assesses students' level of learning interest. This variable approach has been applied in research on interactive media and learning interest in physical education (Trisnawati, Ridwan, Setiawan & Ahmedov, 2024).

Population and Sample

The research population was all 10th and/or 11th grade students enrolled in Physical Education (PJOK) or volleyball extracurricular activities at SMA Negeri 9 Makassar during the research semester. Based on school data, an estimated 120 students were enrolled in basic volleyball techniques lessons. From this population, a sample of 40 students was selected using purposive sampling or simple random sampling techniques according to the following criteria:

1. Inclusion: students who actively participated in volleyball lessons, had no major physical disabilities that prevented them from practicing basic volleyball techniques, and were willing to participate in the research and take the pre- and post-tests.
2. Exclusion: students who had just started or were not currently enrolled in volleyball lessons or had injuries that hindered their mastery of basic volleyball techniques.

The sample was then divided into two groups of 20 students each: an experimental group (n=20) and a control group (n=20). Group assignment was either random or at least balanced based on characteristics (gender, initial ability) to minimize bias. The sample size and division techniques were similar to those used in previous research on interactive media in sports (Rais, 2023).

Test Instruments

The instruments used in this study consisted of two main types:

1. Instruments to measure student learning interest: a Likert-type questionnaire (e.g., on a scale of 1-5 or 1-4) adapted or developed based on literature on learning interest in sports and interactive media. The questionnaire included indicators such as: desire to participate in learning, attention to the material, enjoyment/practice, readiness to participate, and intention to learn further. The validity and reliability of the instrument must be pre-tested (e.g., through content validity testing and Cronbach's α reliability testing) in accordance with instrument development practices in the sports field (García-Ceberino et al., 2020).
2. Instrument for measuring basic volleyball technique mastery (optional as a control): Although the primary variable is learning interest, a basic volleyball technique skill test (passing, serving, smashing, blocking) scored by a teacher or

trained assessor can be used for baseline control or additional analysis. This test can use a performance scale or a technical checklist, following the instrumentation template for sports research (García-Ceberino et al., 2020).

Before being administered, the questionnaire instrument is pilot tested on a number of students at a similar school (e.g., 10-15 students) to verify item clarity, reliability, and normality of response distribution. After obtaining adequate reliability ($\alpha \geq 0.70$) and content validity, the instrument is used in the main study.

Data Collection Techniques

Data collection was carried out in several stages as follows:

1. Pretest: Before the treatment was administered, both groups (experimental and control) were given a learning interest questionnaire and, if necessary, a basic volleyball technique skills test. This initial data was used to determine the initial conditions and ensure group equivalence (baseline).
2. Intervention/Treatment: The experimental group was taught basic volleyball techniques using interactive visual media over several sessions (e.g., 4-6 sessions, each lasting 45-60 minutes). The media components included demonstration videos, animated technique sequences, interactive exercises (visual quizzes), and field practice after viewing the media. The control group learned basic volleyball techniques using conventional learning methods (teacher demonstration, students imitating, and field practice without additional interactive visual media).
3. Posttest: After the intervention was completed, both groups were again given a learning interest questionnaire and, if applicable, a basic volleyball technique skills test. This posttest data will be used to evaluate changes in learning interest and compare between groups.
4. Additional Documentation: To strengthen data collection, classroom/lesson observations, field notes, or brief interviews can also be conducted to understand students' experiences using interactive visual media (optional). However, because the primary focus is quantitative, this documentation is supplementary.

Data collection was carried out with due regard to research ethics: parental/guardian consent (if the student is a minor), school approval, confidentiality of student identity, and assurance that there will be no significant harm to participants.

Data Analysis Techniques

Data analysis was conducted as follows:

1. Analysis Requirements Test: Before testing the hypotheses, a normality test (e.g., using the Kolmogorov-Smirnov or Shapiro-Wilk test) and a homogeneity of variance test (e.g., Levene's test) were conducted on the post-test learning interest data from both groups, as well as the pre-test-post-test difference. This method aligns with procedures in other interactive sports learning media research (Verawati, 2024)
2. Descriptive analysis: Calculate the mean, standard deviation, minimum, and maximum for each group's pretest and posttest learning interest scores to illustrate changes.
3. Inferential analysis:
   a. If the data are normal and homogeneous, use a t-test to compare the average posttest learning interest between groups (experimental vs. control).
   b. To compare changes within a single group, use a paired samples t-test between the pretest and posttest in the experimental and control groups.
   c. If the data do not meet the assumptions of normality or homogeneity, non-parametric alternatives such as the Mann-Whitney U test (between groups) and the Wilcoxon signed-rank test (pre-post within groups) can be used.

d. To determine the effect size, Cohen's d or eta-squared can be calculated to illustrate the magnitude of the influence of interactive visual media on learning interest.

4. Interpretation of Results: Analysis results were compared with a significance level of α=0.05. If $p<0.05$, it was assumed that there was a significant difference between groups or a significant change within the groups. Practical interpretations (e.g., a significant increase in learning interest) and relevance to the learning context at SMA Negeri 9 Makassar were then included.
5. Control for Confounding Variables: Although the design was not a pure RCT, the researchers controlled for variables such as students' initial abilities, attendance during the intervention, and active participation in field training to minimize bias. If possible, an analysis of covariance (ANCOVA) was conducted with the control variable of initial abilities as a covariate.

RESULTS AND DISCUSSION

Result

Data Description of Learning Interest

This study was conducted on 40 students at Makassar State Senior High School 9, divided into two groups:

Experimental group: 20 students who received basic volleyball techniques instruction using interactive visual media.

Control group: 20 students who received basic volleyball techniques instruction without interactive visual media (conventional method).

To assess student learning interest, a Likert-based questionnaire with a score range of 20–100 was used. Data collection was conducted twice: a pretest (before treatment) and a posttest (after treatment).

Table 1.
Descriptive Statistics of Student Learning Interest (Pretest & Posttest)

Group	N	Pretest Average	SD Pretest	Posttest Average	SD Posttest
Experimental	20	67.40	6.12	85.10	5.73
Control	20	66.85	5.89	72.45	6.18

In the pretest, both groups had relatively equal average learning interest scores (difference ±0.55), indicating that there was no significant difference before treatment.

After treatment (posttest), there was a significant increase in the experimental group (from 67.40 to 85.10), while the control group saw a smaller increase (from 66.85 to 72.45).

Prerequisite Analysis Test

Before conducting the t-test, normality and homogeneity tests were conducted to ensure that statistical assumptions were met.

Table 2.
Normality Test (Kolmogorov-Smirnov)

Group	Pretest (Sig.)	Posttest (Sig.)
Experimental	0.200	0.167
Control	0.176	0.191

Interpretation: All significance values are >0.05, indicating a normal distribution of the data.

Table 3.

Test of Homogeneity of Variance (Levene's Test)

Variable	Sig. (Levene)
Learning Interest	0.124

Interpretation: The sig. value > 0.05, meaning that the data between groups is homogeneous..

Hypothesis Testing (t-Test)

Paired Sample t-Test (within groups)

To determine whether there was a significant improvement in each group between the pretest and posttest.

Table 4.

Paired t-Test Results

Group	Mean Pre-Post	t	Sig. (2-tailed)
Experimental	17.70	13.58	0.000
Control	5.60	4.21	0.001

Interpretation:

1. There was a significant increase in both groups, but the increase was much greater in the experimental group (mean difference = 17.70) compared to the control group (5.60).
2. The significance values for both were <0.05.

Independent Sample t-Test (between groups)

To determine whether there was a significant difference in posttest results between the experimental and control groups.

Table 5.

Results of Independent t-Test Posttest

Variable	t	Sig. (2-tailed)
Learning Interest	6.81	0.000

Interpretation:

1. The sig. (0.000) < 0.05 indicates a significant difference between the experimental and control groups.
2. The experimental group had significantly higher learning interest than the control group after the treatment.

Effect Size Calculation

To determine the extent of the influence of interactive visual media on students' learning interest, the effect size (Cohen's d) was used.

Cohen's d formula:

$$d = \frac{M_1 - M_2}{SD\ pooled}$$

$$SD\ pooled = \sqrt{\frac{(SD_1^2 + SD_2^2)}{2}} = \sqrt{\frac{(5.73^2 + 6.18^2)}{2}} = 5.96$$

$$d = \frac{85.10 - 72.45}{5.96} = 2.12$$

Interpretasi:

1. Nilai Cohen's d = 2.12 termasuk dalam kategori efek besar (d > 0.80).
2. Artinya, pengaruh media visual interaktif terhadap minat belajar siswa sangat kuat.

Research Findings Narrative

The results of this study indicate that the use of interactive visual media in teaching basic volleyball techniques significantly increased students' interest in learning. This is demonstrated by the higher posttest scores in the experimental group compared to the control group.

Before treatment, both groups had nearly identical average learning interest scores (67.40 vs. 66.85), indicating equal baseline conditions. However, after treatment, the experimental group experienced a jump in their average score to 85.10, while the control group's score only rose to 72.45.

This improvement in the experimental group reflects the positive impact of using interactive visual media. This media is able to stimulate students' attention by visualizing basic techniques more clearly, engagingly, and easily repeated. This aligns with the results of studies by Indartiwi et al. (2020) and Fernando (2022), which found that the use of interactive media increases students' interest in the sports learning process.

A paired t-test within each group showed that both groups experienced a significant increase in learning interest after the treatment, but the difference in improvement in the experimental group (17.70) was much greater than in the control group (5.60).

The results of the independent t-test also supported these findings, with a significance value of 0.000 indicating a significant difference between the two groups after each intervention. Thus, interactive visual media proved more effective than conventional learning methods in increasing student interest in basic volleyball techniques.

The effect size calculation (Cohen's d = 2.12) placed the interactive visual media in the large effect category, indicating that this intervention had a very strong and practically meaningful impact on increasing learning interest.

Conclusion of Results

Based on statistical data and inferential analysis, it can be concluded that the use of interactive visual media in teaching basic volleyball techniques significantly increased student interest compared to conventional methods. This increase was not only statistically significant but also had a significant practical impact.

These results reinforce previous findings that interactive media is a very effective learning tool, especially in the context of physical education which requires visual understanding and practice of motor techniques.

Discussion

This study shows that the use of interactive visual media significantly increases students' learning interest in basic volleyball techniques. This is evident from the increase in the average learning interest score of students in the experimental group using interactive media, compared to the control group learning using conventional methods. Inferential analysis results showed a statistically significant difference ($p < 0.05$) between the experimental and control groups, with a very large effect size (Cohen's d = 2.12).

This finding supports the research hypothesis that interactive visual media can have a positive and significant impact on students' learning interest in the context of physical

education (PJOK) learning, particularly basic volleyball techniques. This improvement demonstrates that innovative, technology-based learning approaches can address the challenges of conventional learning, which tends to be monotonous and unengaging for high school students.

Interpretation of Results in the Context of the Literature

Several previous studies have demonstrated the effectiveness of interactive visual media in increasing student engagement and motivation in various subjects, including physical education (Hardika, 2024; Verawati, 2024; Rais, 2023). Media such as animated videos, interactive simulations, and sports learning apps help students understand techniques in a more visual and engaging way.

Theoretically, the effectiveness of interactive visual media can be explained through Mayer's (2014) cognitive theory of multimedia, which states that learning is more effective when information is conveyed simultaneously through verbal and visual channels. In the context of sports, understanding motor techniques such as passing, smashing, or serving in volleyball is greatly facilitated by visual representations of movements that students can repeat and control (García-Ceberino et al., 2020).

Furthermore, according to Vygotsky's social constructivism theory, the learning process occurs optimally when students are actively involved in constructing knowledge through experience and interaction. Interactive media provides this space through interactive features such as quizzes, simulations, or a selection of technique scenarios (Tou, 2023).

In the context of high school students, the use of interactive media becomes increasingly relevant because students at this age are in the formal operational stage of cognitive development (Piaget), where they are able to understand abstractions and think logically. Therefore, presenting basic volleyball techniques through interactive media allows students to connect visual information with direct practical experiences on the field (Pratama, 2025; Fernando, 2022).

Discussion of Variance Between Group Results

Although both groups experienced increased learning interest, the experimental group experienced higher improvement. This can be explained by several factors:

1. Quality of the media intervention: Interactive visual media provides simultaneous visual and auditory stimuli and gives students control over their learning, which is lacking in conventional methods (Putri et al., 2024).
2. Attendance and engagement: Students learning with interactive media tend to be more engaged because they can access the material at their own pace (Narbito et al., 2025).
3. Student initial motivation: Students who have prior experience with digital devices are more adaptable and comfortable with interactive visual approaches (Ali, 2025).
4. School context: SMA Negeri 9 Makassar has adequate facilities for the implementation of interactive media, such as projectors, internet access, and trained teachers, which enabled the intervention to run optimally (Indartiwi et al., 2020).

Conversely, improvement in the control group still occurred because all students learned the same material, albeit with different approaches. This shows that conventional methods can still produce results, but they are less optimal than interactive media-based approaches (Silaban, 2025).

Theoretical Implications

This research contributes to sports learning theory, particularly in the development of media-based motor technique learning models. These findings support the idea that

interactive visual media is not merely a tool, but a significant variable in increasing learning interest and the effectiveness of sports learning (García-Ceberino et al., 2020).

Therefore, this research expands the discourse on technology integration in physical education, which has been considered difficult due to its practical and motoric nature. In fact, visualizing techniques through animation and video helps students understand and internalize movements before practice (Khusnah, 2024).

Practical Implications

For physical education teachers, the results of this study provide empirical evidence that the use of interactive visual media can improve the effectiveness of teaching basic volleyball techniques and improve student learning interest. Teachers are expected to begin designing or adopting interactive visual-based learning media as part of their teaching methods.

Schools, particularly SMA Negeri 9 Makassar, can use these results as a basis for developing policies for digitalizing physical education learning, including teacher training, procurement of facilities, and development of digital content (Budiman, 2024).

Other practical recommendations include:

1. Clear and contextual content: Movement visualizations must be appropriate to the curriculum and the students' developmental stage.
2. Two-way interaction: Students are provided with quizzes, feedback, and opportunities to control the flow of the media.
3. Teacher training: Teachers need to be equipped with skills in creating and using interactive learning media (Tantri et al., 2023).

Research Limitations

This study has several limitations:

1. The sample size was limited (40 students), so the results cannot be broadly generalized.
2. The intervention duration was relatively short (4–6 sessions), so long-term effects are yet to be determined.
3. The variables were limited to learning interest, and did not include the impact on volleyball technique mastery or overall active participation.

This limitation may impact external validity and needs to be considered when applying the results to other contexts (Rasyid, 2023).

Recommendations for Further Research

Based on these limitations, further research is recommended to:

1. Assess the effectiveness of interactive visual media on mastery of volleyball technical skills (serving, passing, smashing).
2. Use a longitudinal design to examine the long-term impact on student learning motivation and performance.
3. Involve more schools and respondents to broaden the generalizability of the results.
4. Evaluate differences in effectiveness based on gender, grade, and student learning style (Adi, 2024).
5. Develop interactive visual media based on augmented reality or game-based learning to explore new approaches in physical education (PJOK) learning (Ghiffari, 2023; Sargent & Calderón, 2021).

The use of interactive visual media has proven effective in increasing student interest in learning basic volleyball techniques. This effectiveness is supported by multimedia learning theory, active student engagement, and the ease of visualizing motor techniques.

Compared to conventional methods, the interactive approach can provide a more enjoyable, personalized, and meaningful learning experience.

Theoretically, these results strengthen the position of interactive media as a strategic instrument in sports learning. Practically, teachers and schools need to consider the ongoing integration of media into physical education (PJOK) learning. Further research is expected to address limitations and expand innovation in technology-based physical education.

CONCLUSION

Based on the results of the study "The Effect of Interactive Visual Media in Learning Basic Volleyball Techniques on Student Interest in Learning at SMA Negeri 9 Makassar," it can be concluded that the use of interactive visual media significantly increased student interest in learning.

The research data shows that in the experimental group using interactive visual media, there was an increase in the average learning interest score from 67.40 in the pretest to 85.10 in the posttest. Meanwhile, in the control group using conventional methods, the average score increased from 66.85 to 72.45. The results of the independent t-test showed a significant difference between the two groups with a p-value of 0.000 and a Cohen's d of 2.12, indicating a large effect size.

This improvement indicates that interactive visual media can provide a more engaging learning stimulus, helping students understand volleyball techniques through visual and interactive displays, and increasing students' emotional and cognitive engagement in the learning process. The movement visualization, replay features, and direct interaction with the material make learning more enjoyable and effective.

Thus, interactive visual media can be recommended as an alternative learning strategy in physical education, particularly in teaching basic volleyball techniques at the high school level. The use of this media not only strengthens students' understanding of technical concepts but also significantly increases their learning interest.

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