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Integrating interactive video media in physical education: a study on critical thinking and learning motivation

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ABSTRACT

Background: At present, the process of physical education learning has incorporated the use of video-based interactive media, with the aim of optimising the achievement of learning outcomes. However, to the best of our knowledge, there remains a notable gap in research that explores the application of video-based interactive media in enhancing critical thinking and fostering greater interest in learning among students, particularly through mixed-method research. **Research Objective:** The aim of this study is to examine the impact of video-based interactive media on the development of critical thinking skills and the enhancement of students' interest in learning physical education in junior high schools within Surabaya City. **Methods:** This study utilised a mixed-methods approach, with a research sample comprising 33 eighth-grade students who were divided into two groups: an experimental group (n = 17) using media-based learning and a control group (n = 16) employing traditional teaching methods. The research instruments included a critical thinking questionnaire, an interest in learning survey, and in-depth interviews to gather qualitative data. **Finding/Results**: Statistical analysis showed a significant increase in students' critical thinking skills in the experimental group; the average post-test score increased to 59.1 ($p < 0.05$), while the control group showed 55.0. Thus, students' interest in learning increased to 95.6 ($p < 0.05$), while the control group increased to 98.1. Qualitative findings showed that students using video-based interactive media expressed greater interest and demonstrated increased critical thinking due to the interactive and flexible nature of visual presentations. However, challenges related to technology access, such as reliance on internet connectivity and network stability, were identified as limiting factors. **Conclusion:** Our research confirms that involving video-based interactive media learning is an effective way to change critical thinking skills and interest in learning among students. This study contributes important information for teachers so that they can use video-based interactive media learning programs continuously in the future.

Keywords: Technology learning; critical thinking; interest in learning; physical education; mixed methods

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INTRODUCTION

The transformation of digital education has redefined the entire landscape of learning components, making them more modern and advanced (Zarubina et al., 2024). The whole world is discussing the utilisation of digital technology in the context of physical education (Mackenbrock & Kleinert, 2023; Sargent & Calderon, 2021), one of which is interactive media (Bizel, 2023; Perez et al., 2023). Interactive media plays an important

role in physical education to encourage students in the learning process (Wibowo et al., 2022). However, interactive media not only offer enhanced access to educational resources, but also transform interdisciplinary objectives and traditional learning paradigms, resulting in more dynamic and engaging learning experiences (Ramansyah et al., 2023), shaping independence, mindset, and interest in learning (Sommier et al., 2022; Talib, 2018). It not only changes the situation but also shapes the mindset of today's early adolescents (Xie, 2024). Early adolescence is a transition from childhood, so when learning is still needed education so as not to get bored.

In the midst of this transition, it is very important to understand the impact that the use of interactive media has on students' cognitive aspects especially in terms of critical thinking skills and interest in learning (Chang & Yang, 2023; Lanos et al., 2023). Critical thinking emerges when students comprehend the material presented, while interest is fostered when the media used in teaching is engaging and easily understandable, thereby encouraging a desire to learn and explore the subject further, which in turn can enhance critical thinking. Despite the abundance of research in this area, there remains a substantial need for further investigation into the complexities of the relationship between the use of interactive media and the development of critical thinking (Tangkui & Keong, 2020), and the desire to learn (Sastra et al., 2023). Critical thinking and interest in learning arise when interactive media are interesting and can be an attraction for students to be enthusiastic about learning. Many students are now lazy to learn due to monotonous learning.

According to Adi et al. (2024) video-based interactive media is one of the elements to stimulate the improvement of learning quality which results in a decrease in students' interest in learning and critical thinking (Budhia & Behera, 2023; Fabio & Suriono, 2023; Nozdrina, 2023). Although there has been a significant increase in the use of video-based interactive media in physical education, a comprehensive understanding of its impact on critical thinking skills and learning interest has yet to be fully realised (Kawuryan et al., 2022). The impact of video interactive media has fuelled the attraction and urgency of research in physical education (Kennedy & Yun, 2019; Murtagh et al., 2023). According to Thacker et al. (2022) stated that video interactive media provides audio-visual services that make it easier for students to receive and understand the content of the video. However, there are still many teachers who do not use interactive media in physical education learning.

Previous research discusses digital technology based on video games in football (Diekhoff & Greve, 2023), according to Kirkorian (2018) the role of interactive media to help children connect with what they see on the screen, according to Satyawan (2023) the development of interactive media to improve learning outcomes in football and according to research Shalihah et al. (2023), discusss the impact of audio-visual media on inquiry learning models on critical thinking skills, students' interest in learning and video-based learning media in physical education can improve students' learning outcomes (Triansyah et al., 2023). However, not much has been explored about how interactive video media can influence students' critical thinking skills and learning interest in physical education.

The novelty of this research offers novelty by integrating critical thinking skills and students' learning interests in physical education in the context of providing video-based interactive media, which has not previously been discussed much in the related literature. In addition, this research uses a mixed method of qualitative and quantitative which can provide a more accurate and comprehensive picture of phenomena in the field regarding video-based interactive media (Buck & Tyrrell, 2022).

The urgency of this research is the increasing use of video-based interactive media in physical education, which has an important role for students as a learning service to understand learning so that they can hone critical thinking patterns and a high level of willingness. This research is urgently needed to support teachers to innovate regarding physical education learning, the impact on students who do not understand the material, and the increasing development of interactive learning media. Consequently, the aim of the present study is to examine the effects of video-based interactive media learning on improving students' critical thinking and interest in learning, utilising a mixed-method approach.

METHOD

This research used a mixed method, which is a combination of quantitative and qualitative research (squel explanatory). Qualitative research is descriptive research, which is an in-depth analysis of phenomena in a problem (Lahiri, 2023). Meanwhile, quantitative research is research that identifies relationships and data obtained in the field systematically (Kittur, 2023). Quantitative research is conducted using experimental methods with randomised control trail (RCT) design. While qualitative research is conducted through phenomenology with in-depth interviews. These approaches complement each other because the data generated from quantitative and quantitative research are more specific. This research is the best approach because it can increase credibility, understand phenomena in the field comprehensively, and can integrate quantitative and qualitative data from various data sources reliably (Vebrianto et al., 2020).

Participants

The participants to be involved in this study were grade 8 students from a junior high school in Surabaya City, Indonesia (n = 250). Firstly, the researcher contacted the PE teacher at the school and after obtaining verbal permission from the teacher, the researcher sought permission from the school and parents. All participants received information regarding the guidelines, potential harms, and benefits of the study before it began. A letter of willingness to participate was obtained from each student's parents.

Participants were selected using the inclusion criteria: (i) have learning experience using interactive media for at least one year, (ii) can think critically and have low interest in learning. Meanwhile, the exclusion criteria were as follows: (i) no learning experience using interactive media, (ii) critical thinking skills, and high learning interest. The control group (n = 16) and experimental group (n = 17) each consisted of participants. The protocol in this study was approved by the ethics committee of Surabaya State University (registration number: B/40960/UN38.6/LT.02.02/2024). In addition, all activities in this study followed the guidelines of the Declaration of Helsinki (2017). To participate, students and parents also had to sign a consent form. Table 1 provides demographic information for the participants.

Table 1. Participant Demographics

Group	Age	High	Weight
Experimental (Interactive Media)	14.5 ± 0.514	152 ± 4.67	47.6 ± 1.77
Control (Non-Interactive Media)	14.5 ± 0.516	153 ± 5.39	47.3 ± 1.69

Quantitative Instruments

The quantitative instruments used in this study are questionnaires of critical thinking skills and learning interest (Ghiffari & Ridwan, 2023; Suroto et al., 2021). The critical thinking instrument has five sub-indicators and 17 questions, while the learning interest instrument has four sub-indicators and 30 questions. Questionnaires consist of a series of written statements and questions designed so that respondents can provide accurate and concise answers (Amalia et al., 2022). The validity test results show that 30 questions of interest and 17 questions are valid for critical thinking.

The Likert scale was used in measuring the answers of this study. In surveys, a psychometric scale called the Likert scale is used to measure respondents' opinions, ranging from strongly agree to disagree (Setyanto, 2013). The two components of the g-form questionnaire used in this study are learning interest and critical thinking.

Table 2. Quantitative Research Instruments

Variables	Sub Indicators	Question Item
Critical Thinking	1. Simple Explanation	1. I can determine the cause of my Physical Education, Sport and Health (Physical Education) learning problems. 2. I connect one thing with another to solve a difficulty in learning Physical Education.
	2. Building a Mindset	1. I can predict the consequences that will occur if I encounter difficulties in the Physical Education learning process. 2. I can choose appropriately when faced with several options in the Physical Education learning process. 3. I can distinguish between facts (reality) and opinions (opinion) in learning Physical Education. 4. I respect other people's opinions even if they are different. 5. In Physical Education learning, every answer must have a basis.
	3. Summarising	1. I discuss difficulties in understanding Physical Education materials with others to get the right answer. 2. Every difficulty in learning Physical Education has a solution.
	4. Further Explanation	1. I create backup answers to questions in the Physical Education material being explained. 2. I can provide evidence if I have an opinion about Physical Education learning. 3. I am not shy to ask others if I need help in the Physical Education learning process. 4. I can mention facts (reality) or opinions (opinion) in Physical Education learning.
	5. Strategy & Tactics	1. I summarised some of the problems in the Physical Education materials into one of the most critical issues. 2. I solve problems individually, not simultaneously, in the Physical Education learning process. 3. I search for the truth when there is uncertain Physical Education material. 4. When learning Physical Education, I will check the truth when in doubt about someone else's answer.
	1. Feelings of Happiness	1. Physical Education is fun for me. 2. Teachers lack creativity in explaining or providing Physical Education material.

Variables	Sub Indicators	Question Item
Learning Interests		3. The teacher explains the lesson in a fun way. 4. Learning with interactive media in the form of videos makes me really understand the material. 5. Physical Education makes me not excited. 6. I know that learning using learning media is fun. 7. I ask about material I don't understand. 8. Learning with interactive media in the form of videos makes me feel happy. 9. I don't understand when learning with interactive media in the form of videos. 10. I feel interested in learning Physical Education because of the many health benefits I get.
	2. Attention	1. I don't like and feel bored when learning using learning media such as interactive media in the form of videos. 2. I pay attention to Physical Education, learn to maintain a healthy lifestyle at home. 3. I find it difficult to follow Physical Education lessons because I can't play sports. 4. I am very active when learning with interactive learning media in the form of videos. 5. I pay more attention to Physical Education learning at school.
	3. Interests	1. I look for material provided by the teacher from other learning sources (e.g. google/youtube). 2. I always hand in my assignments on time. 3. I pay attention when learning and studying media. 4. I pay more attention to Physical Education learning at school. 5. I am very active when learning with interactive learning media in the form of videos. 6. I deliberately did not attend PE lessons because I was too lazy to bring a change of clothes. 7. I do not like and get bored when learning using learning media such as interactive media in the form of videos. 8. I take part in Physical Education lessons because the facilities and infrastructure in my school are complete. 9. Physical Education is very boring because it is outside the classroom.
	4. Student Engagement	1. I pay attention to Physical Education, learn to maintain a healthy lifestyle at home. 2. I pay attention when learning and studying media. 3. I am interested in learning new learning media, such as interactive media in the form of videos. 4. My interest in learning increases when learning with interactive media in the form of videos. 5. The media used by the teacher helps me understand the PE material more easily. 6. I wouldn't say I like studying at home because the learning media is limited.

Qualitative Instrument

The qualitative instruments in this study utilised 30-minute in-depth interviews with the participants. Setiawan et al. (2023) asked respondents about the benefits, drawbacks, and impacts of using interactive media.

Research Procedure

This mixed-methods study was conducted in junior high schools in Surabaya City (Indonesia) in February and March 2024. The study was initiated using an experimental approach and quantitative methodology. The first task involved completing questions on critical thinking and interest in learning between 08.20 and 08.50 am. This served as a pre-test. The experimental group participated in the second activity, which introduced an interactive media learning programme, while the control group only used traditional learning methods (non-interactive media). This intervention programme activity was conducted for four weeks. The final task was to complete a post-test, which consisted of answering questions about critical thinking and interest in learning between 8:00 am and 8:30 am. Meanwhile, a thirty-minute qualitative study was conducted in grades 8a and 8b with 33 students to discuss the benefits, drawbacks, and effects of interactive media learning.

Interactive Media Pearning Programme

Interactive learning resources were used in the therapy process. Students can watch learning films at home or in class, implemented by the teacher. Interactive videos feature both audio and visual elements. Students' capacity to critically analyse learning films may be affected by this. On the other hand, students' enthusiasm in learning sports may increase if they feel comfortable using quality educational materials. Table 3 presents the interactive media learning curriculum for better clarity.

Table 3. Interactive Media Learning Programme

Sunday	Learning Content	Duration	Destination
1 - 4 (Monday and Thursday)	• Provide video links for students to analyse.	10 minutes	To increase students' enthusiasm for learning and their critical thinking skills.
	• Present observations from the video.	60 minutes	
	• Providing questions and discussion.	10 minutes	

Quantitative Statistical Analysis

Jamovi version 2.3.2.8 used to analyse all data collected from the completion of surveys on critical thinking and interest in learning. Firstly, descriptive statistical analyses, including mean scores and standard deviations, were conducted. Secondly, analyses were conducted on the characteristics of critical thinking and learning interest with validity and reliability tests. Thirdly, the improvement of the experimental and control groups from pre-test to post-test was looked at using the Paired Samples t-test methodology. To determine how much the experimental and control groups contributed to the effect, an effect size test was used. Using Cohen's formula (d), the effect size test determined three sizes: large (0.8 >), medium (0.50-0.79), and small (0.20-0.49). The significance criterion is $p < 0.05$ (Gani et al., 2022a).

Qualitative Statistical Analysis

In qualitative research, the analysis used includes: (i) coding and (ii) categorisation. According to Gani et al. (2022b) and Jumareng et al. (2022), in qualitative research, the analyses include:

1. **Theme 1: Learning benefits of interactive media**
   a. Subtheme: Interactive media.
   b. Subtheme: Study time.
2. **Theme 2: Lack of interactive media**
   a. Subtheme: Technology tools
   b. Subtheme: Bad internet connection.
3. **Theme 3: Impact**
   a. Subtheme: The impact of interactive media learning on critical thinking.
   b. Subtheme: The impact of interactive media learning on students' interest in learning.

RESULTS AND DISCUSSION

After processing, the data were divided into two categories: critical thinking and learning curiosity.

RESULTS

Critical Thinking

This section of the study findings was customised to meet the requirements of the data analysis. The information needed for this study was to measure how critically students viewed interactive media, such as videos distributed to them. The Jamovi application version 2.3.2.8 was used to perform a number of calculations on the data, including paired sample t-test, homogeneity test, normality test, and descriptive analysis test. Two groups were used in this study: an experimental group and a control group.

Table 4. Critical Thinking Descriptive Analysis Test

Description	Group	Pre-test	Post-test
N	Interactive Media	17	17
	Control	16	16
Missing	Interactive Media	0	0
	Control	0	0
Means	Interactive Media	48.6	59.1
	Control	52.4	55.0
Average	Interactive Media	50	58
	Control	51.5	55.0
Standard deviation	Interactive Media	5.35	4.73
	Control	5.01	6.67
Minimum	Interactive Media	35	49
	Control	44	45
Maximum	Interactive Media	57	67
	Control	62	67

The number of students involved in the interactive media and video research activities is shown in Table 4. These thirty-three students were divided into two groups: seventeen were placed in the experimental group and sixteen in the control group. In the pre-test, the minimum score of the experimental group was 35, while that of the control group was 44. In the post-test, the minimum score of the experimental group was 49, while that of the control group was 45. The experimental group scored 57 in the pre-test and the control group scored 62, while the experimental group scored 67 in the post-test and the control group scored 67. The mean pre-test score of the experimental group was 48.6 against a post-test score of 59.5, while the mean pre-test score of the control group was 52.4 against a post-test score of 55.0.

Table 5. Critical Thinking Normality Test

Normality Test (Shapiro-Wilk)		
	We	P
Pre-test	0.979	0.764
Post-test	0.975	0.639

The critical thinking test results for students with normal distribution and Asymp Sig values are shown in Table 5. (2-tailed) are greater than > 0.05, or 0.764 in the pre-test and 0.639 in the post-test. To proceed with the homogeneity test, students' critical thinking is normally distributed.

Table 6. Critical Thinking Homogeneity Test

Variance Homogeneity Test (Levene)				
	F	df	df2	P
Pre-test	0.00944	1	31	0.923
Post-test	3.89531	1	31	0.057

The results of the pre-test and post-test homogeneity tests are shown in Table 6. The pre-test p value is 0.923 and the post-test p value is 0.057. Data are considered homogeneous if the p value is more than > 0.05. This also applies to post-test data. You can then move on to the independent samples t-test step after that.

Table 7. Independent Sample t-test of Critical Thinking

Independent Samples T-Test								
		Statistic	df	p	Mean difference	SE difference		Effect Size
Pre-test	t	-2.13	31.0	0.041	-3.85	1.81	Cohen's d	-0.742
Post-test	t	2.06	31.0	0.048	4.12	2.00	Cohen's d	0.716

The independent samples t-test findings are shown in Table 7, with a pre-test value of 0.041 and a post-test value of 0.048. The 2-tailed sig result is less than < 0.05. Effect sizes make variations in study findings easier to recognise. In the pre-test, the effect size result was -0.742, while in the post-test, the result was 0.716. The p-value and effect size results show how much the interactive media influenced students' critical thinking. The data can be used to determine differences in the essential thinking scores.

Learning Interests

The information needed for this study was to measure how critically students viewed interactive media, such as videos shared with them. Two groups were used in this study: an experimental group and a control group.

Table 8. Descriptive Analysis of Learning Interest Test

Description	Group	Pre-test	Post-test
N	Interactive Media	17	17
	Control	16	16
Missing	Interactive Media	0	0
	Control	0	0
Means	Interactive Media	87.9	95,6
	Control	84.6	98.1
Average	Interactive Media	87	96
	Control	85.5	99.0
Standard deviation	Interactive Media	5.74	4.94
	Control	4.67	3.26
Minimum	Interactive Media	76	86

Description	Group	Pre-test	Post-test
Maximum	Control	76	90
	Interactive Media	99	104
	Control	93	104

The number of students who took part in the research project utilising interactive video media is shown in Table 8: Nineteen of the 37 students were placed in the experimental group, and the remaining eighteen in the control group.

Table 9. Normality Test of Learning Interest

Normality Test (Shapiro-Wilk)		
	We	P
Pre-test	0.979	0.757
Post-test	0.982	0.839

The number of students who took part in the research project utilising interactive video media is shown in Table 8. Nineteen of the 37 students were placed in the experimental group, and the remaining eighteen in the control group.

Table 10. Homogeneity Test of Learning Interest

Variance Homogeneity Test (Levene)				
	F	df	df2	P
Pre-test	0.0549	1	31	0.816
Post-test	3.4062	1	31	0.075

The results of the pre-test and post-test homogeneity tests are shown in Table 10. The pre-test p value is 0.816 and the post-test p value is 0.075. Data is said to be homogeneous if the p value is more than > 0.05; This also applies to post-test data. You can then move on to the independent sample t-test step after that.

Table 11. Independent Sample t-test of Critical Thinking

Independent Samples T-Test								
		Statistic	df	p	Mean difference	SE difference		Effect Size
Pre-Test	t	1.78	31.0	0.085	3.26	1.83	Cohen's d	0.620
Post-Test	t	-1.73	31.0	0.094	-2.54	1.47	Cohen's d	-0.620

The independent samples t-test findings are shown in Table 7, with a pre-test value of 0.085 and a post-test value of 0.094. The 2-tailed sig result is less than < 0.05. Effect sizes make variations in study findings easier to recognise. In the pre-test, the effect size result was 0.620, but in the post-test, the result was -0.620. The use of interactive media on students' learning interest is greatly influenced by the p-value and effect size results. The aforementioned statistics can be used to determine the difference in interest on educational scores.

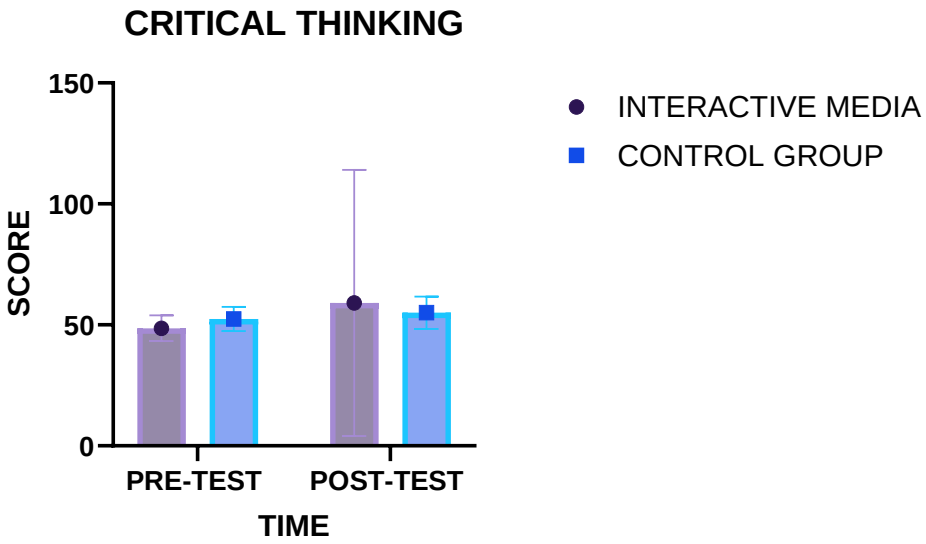

Figure 1. Average Improvement from Pre-test to Post-test between the Two Groups

Figure 2 illustrates that the average growth of the control group is statistically significantly higher than that of the interactive media group.

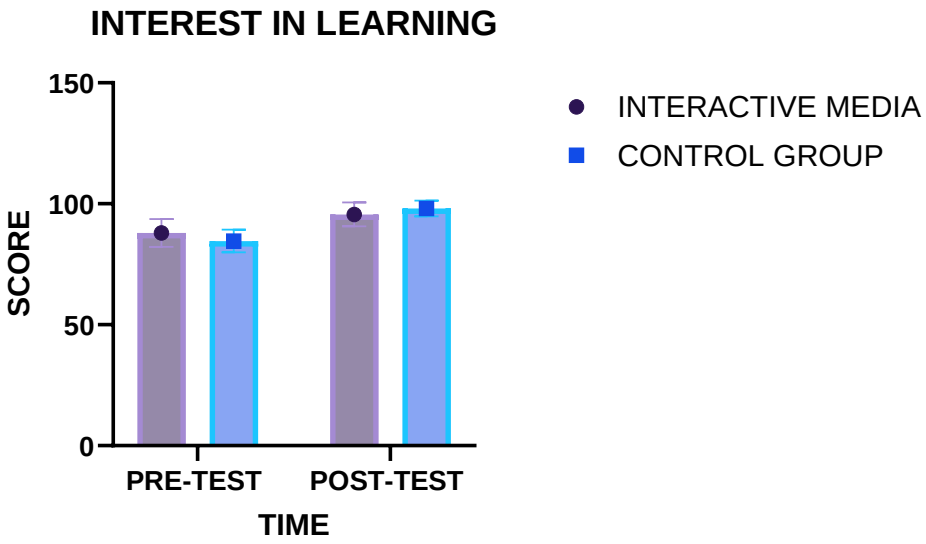

Figure 2. Average Improvement from Pre-test to Post-test between the Two Groups

Figure 1 shows that the average improvement was more significant in the interactive media group compared to the control group.

Qualitative Research Results

Theme 1: Learning benefits of interactive media

Respondents A, B, C, D, E, F: "In my opinion, learning using interactive media has several benefits (i) because it is easy to implement, (ii) it is more fun, (iii) it is more efficient and saves time, (iv) it can gain knowledge through video and audio. Respondents G, H, I, J, K, L, M: "In our opinion, learning using interactive media has several benefits, including (i) it can be done anytime and anywhere, (ii) it is more practical, (iii) it can recognise technology. Respondents N, O, P, Q: "In our opinion, learning using interactive

media has several benefits, including (i) it is not boring for students, (ii) it makes students excited in learning, (iii) it can be done from 2 learning systems both at home and at school.

Theme 2: Lack of interactive media

Respondents A, B, C: "In my opinion, learning using interactive media has several disadvantages, including (i) having to use quota or wifi, (ii) having to have a good network, (iii) it cannot be used in an environment where there is no stable network. Respondents D, E, F, G, H, I: "In our opinion, learning using interactive media has several disadvantages, including (i) the internet network that often experiences interruptions, (ii) the difficulty of showing the complexity of movements in sports to students. Respondents J, K, L, M, N, O, P, Q: "In our opinion, learning using interactive media has several disadvantages, including (i) students become dependent and constantly use gadgets, (ii) potentially damaging the eyes if used for a relatively long time.

Theme 3: The effect of interactive media on students' interest in learning and critical thinking

Respondents A, B, C, D, E, F, G, H: "In our opinion, learning using interactive media can improve critical thinking skills gradually. This is because students are presented with videos during the learning process. Then, students are asked to analyse the movements of basic skills in soccer games, which will indirectly develop students' critical thinking skills. Respondents I, J, K, L, M, N, O, P, Q: "In our opinion, learning with interactive media has a positive effect in changing low interest into high interest; this is because the learning process involves various videos of basic skills training presented in the game of football and that is what causes students to become more interested or have high interest.

DISCUSSION

Based on the previously discussed research results, interactive media has a significant influence in improving critical thinking skills and learning motivation among students. Interactive media is one of the commonly used ways to communicate information related to learning in the contemporary digital era (Liu & Ma, 2019). Interactive media comes in many forms, for examples are Canva, video, PowerPoint, and many more. The advantages of learning involving the use of video-based interactive media are that it can be used anywhere and anytime without the need to carry books everywhere (Mutz et al., 2021), this media is more practical and efficient than printed media such as books, so it is more widely used by the current generation (Nozdrina, 2023). This is in line with previous studies that report that providing learning presented in the form of videos can trigger students to think critically in learning the subject matter (Nascimento et al., 2023; Friskawati & Supriadi, 2022). Students who have access to a variety of interactive media become more engaged and excited about learning. According to Zheng et al. (2021) the advent of interactive media has become an important tool for educators to use technology more creatively and actively. Interactive media applications appeal to children in the early stages of adolescence as they help to enhance and structure the knowledge taught to them. Students can solve current problems, such as questions that all students find embarrassing to ask in sports lessons, by using interactive media. With the help of this engaging interactive media, students gain confidence to voice their ideas, in order for students to understand the lesson plan that has been presented by the instructor through interactive media (Santoso et al., 2023).

Quantitative research findings showed that interactive media, in the form of videos, conducted over four meetings, positively increased students' capacity for critical thinking as well as their enthusiasm for learning (Taningrum et al., 2024), thus making them more eager to learn. According to research Rahim (2022) and Klavina et al. (2021) interactive

media can encourage students to be more engaged and imaginative. In addition, the research conducted shows that students cans refine their critical thinking skills and understand learning concepts through interactive media. Meanwhile, students' interest in learning increases by about 50% when interactive media is used (Silvianti & Gazali, 2023). Based on the research results Wibowo et al. (2022), interactive media has the potential to improve students' learning process by providing complex movements that inspire and increase their interest in learning. This is evidenced by the situation of students who previously only relied on information in books and did not have access to any media. Students' learning experience is greatly influenced by the availability of interactive media, which makes them more eager to participate in class and understand the material. Students are interested in this to develop their critical thinking skills and become more interested in learning.

Qualitative research shows that most students feel happy with the existence of interactive media in sports learning because it is not boring and more innovative so that students are interested in learning and can think more critically to understand learning. In addition, every interactive media platform must have advantages, disadvantages, and impacts from some respondents in this study. The advantages include; more efficient and time-saving, can be done anytime and anywhere, and not boring, while the disadvantages include having a good network, students become dependent and continue to use gadgets and the difficulty of demonstrating complex movements in sports to students (Abadi et al., 2024; Ridwan & Nikmah, 2022). The impact obtained in this study is that students can increase critical thinking and high interest in learning through interactive media.

CONCLUSIONS

Based on the research results and data analysis described above, it can be concluded that video-based interactive media learning is effective in improving critical thinking skills and learning interest among students. However, similar to previous studies, there are still limitations in this research, for example, (i) the participants involved in this study were relatively small, involving only one class in a junior high school located in Surabaya City (Indonesia). Thus, the suggestion for future research is to try to involve far more participants and come from several junior high schools in the city of Surabaya, (ii) the duration of the study was relatively short, namely four weeks. This limited time is not enough to see long-term impacts. Suggestions for future researchers are to provide sufficient research time to provide deeper insight into the long-term impact of using video interactive media. This research contributes very important information for teachers to improve critical thinking skills and students' interest in learning in physical education classes in the future.

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CONFLICT OF INTEREST

The author declares no conflict of interest in writing this essay.

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