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The Influence Of Interactive Learning Media In Improving Students' Critical Thinking Skills In Computer System Subjects Software Utilisation

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Abstract
Interactive learning media refers to education that utilises multimedia or information and communication technology. the problem faced by researchers in the field, the results of researcher observations, found the problem of low critical thinking skills of computer system students in software utilisation subjects. This research was conducted in an effort to determine how interactive media can improve critical thinking skills. This study uses a quantitative approach with the type of experimental research, the samples in this study were student representatives in the Experiment class with a total of 14 students and a control class of 14 people. The research instruments used tests, observation sheets, and questionnaires. The result of this study is a t-test on the experimental class with a p-value <0.05 indicating that interactive media can be a useful teaching tool to improve students' critical thinking skills. Compared to traditional teaching techniques, the inclusion of interactive media in the curriculum can be more beneficial in helping students develop their critical thinking skills.

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1. INTRODUCTION

Interactive multimedia-based learning media is a media that can build 21st century skills such as critical thinking, creative thinking, communication, and collaboration of learners. This media is defined as learning that utilises multimedia or information and communication technology [1]. Interactive multimedia refers to a type of multimedia display in which many types of material, including text, graphics, games, audio, video, and animation, are combined on a computer with a controller to connect users to the programme and learn interactively [2]. Interactive media also includes audible audio and graphic effects designed to elicit an active response from the audience [3].

Students can benefit from interactive media by getting an overview of the use of software in vocational schools. Interactive media is a type of graphic media that can be used in education. It uses words, sentences, numbers, symbols, and pictures to convey facts, concepts, or ideas [4]. This can help and accelerate students' understanding of the lessons taught. This media can also be coloured to make the information more interesting and memorable for students. By utilising several software programs at once, interactive media can facilitate students' critical thinking [5].

The use of interactive media can assist students in improving their critical thinking skills through problem solving, generating fresh ideas, and making decisions. The values of critical thinking skills in the 21st century are being fair and open-minded, adaptable and honest, and considering all points of view as the main choice, while the skills produced in critical thinking are analysis, synthesis, evaluation, problem solving, logic, communication, reflection, creativity [6]. With these skills, one can make better decisions and think more rationally. Therefore, teachers must play a key role as the vanguard of education to actualise the principles mentioned above.

They should be able to recognise, investigate, and help students develop their critical thinking skills during the learning process [7].

To foster critical thinking in children, educators should treat every student with respect and give them equal opportunities to actively participate in their education. Because critical thinking is a higher-order thinking skill and has been linked to the advancement of science, morality, society, mental health, and cognitive ability [8].

Critical thinking skills on software materials in Class X SMK 1 Muhammadiyah Bima require teachers to present good curriculum planning and implementation, as one of the implementations is the presentation of interactive learning media on informatics subject matter. Multimedia-based learning materials can integrate media into the teaching and learning process, assisting teachers in developing dynamic presentation models. In addition, the substance of the subject matter can be changed to make it easier to understand and more interesting. This will make challenging material easier to achieve, make stressful learning environments more enjoyable, and increase motivation and learning efficiency. encourages student-centred learning, student-focused experimentation, student-focused learning, and more flexible and enjoyable learning [9].

In connection with the above, contrary to the problems faced by researchers in the field, the results of researcher observations, found the problem of low critical thinking skills of computer system material in the subject of software utilisation in class X students of SMK 1 Muhammadiyah Bima. This is caused by the teacher's insistence that more students pay attention to the lesson and the lack of teacher guidance in encouraging students to voice their opinions. This is shown by the fact that students usually show passivity during the learning process, which makes them bored quickly. In addition, students often do not react when the teacher asks them questions. [10] An interactive classroom is necessary for students to develop their critical thinking ability as best as possible. Teachers should see their students as thinkers rather than teachers, and their role should serve as mediators, facilitators, and motivators who assist in learning rather than teaching.

Students who are able to fulfil the minimum requirements for learning success become one of the benchmarks of how well critical thinking skills are learned [11]. This is also in line with the requirements for learning success at SMKN 1 Muhammadiyah Bima, which states that students are considered to have completed their education if the students' learning evaluation scores meet the minimum completion criteria (KKM) of 75. Meanwhile, if at least 80% of the students in a class have obtained the specified KKM score or have completed the learning, the class is considered to have completed the learning.

In school learning [12] , critical thinking skills are one of the aspects that are highly considered to be developed in every student. This study showed that students who received teaching that emphasised critical thinking skills tended to show significant improvement in analysis, evaluation, and problem solving skills. This is in line with the results of research [13] which states that thinking, especially critical thinking, provides opportunities for students to learn to think about the best strategies in achieving learning objectives. In addition, critical thinking can help students integrate their thinking skills by making judgements.

Previous research conducted by [14] showed that the use of interactive media such as stimulation and educational games, can significantly improve students' critical thinking skills. [15] also stated that students who engage in game-based learning tend to be more able to analyse, evaluate and create creative solutions to problems. Another study conducted by [16] showed that the use of simulations in the context of science learning can improve students' ability to apply theoretical concepts to practical situations. Thus, the integration of interactive media in the curriculum can be an effective strategy to facilitate the development of critical thinking skills among students.

Based on the description above, so the researcher took the title The Effect of Interactive Learning Media in Improving Students' Critical Thinking Skills in Computer Systems Subjects on Software Utilisation Material. The research location is at SMK 1 Muhammadiyah Bima,

Kananga Village, Bima Regency. This was done to find out how the influence of interactive media in improving students' critical thinking skills.

2. RESEARCH METHODS

This type of research uses a quantitative approach and is experimental in nature. Experimental research is a methodical approach to research that aims to determine the impact of certain treatments on untreated variables under controlled circumstances. Quasi-experiments and pseudo-experiments are one of the experiments used in this study.

The population in this study were grade X students at SMK 1 Muhammadiyah Bima. In the 2024/2025 academic year with a population of 28 students. The sampling technique used is Cluster Random Sampling, namely the selection of samples that are randomly selected not individually, but groups. The samples in this study were student representatives in the Experiment class with a total of 14 students and the control class of 14 people. The research instruments used tests, observation sheets, and questionnaires.

3. RESEARCH RESULTS AND DISCUSSION

3.1. Research Results

Research related to the effect of interactive learning media in improving students' critical thinking in computer system subjects on software utilisation material, has the aim of knowing the effect of using interactive learning media in improving students' critical thinking.

Comparison of pretest and post-test results in experimental and control class research can be shown in the table below.

Table 1.
Experiment Class Pretest and Posttest Critical Thinking Ability

Action	Pretest	Posttest
N	14	14
Mean	60	80
Lowest Score	45	70
Highest Score	75	90

Specifically, the results of the pretest and posttest of the experimental class can be seen in the graph as in Figure 1.

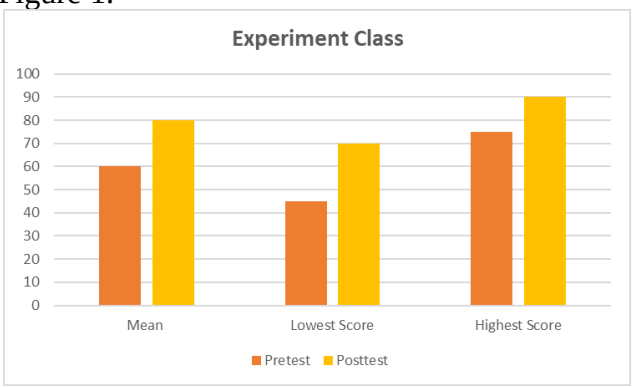


Figure 1. Critical Thinking Progress of Experimental Class Students

In the table and figure above, it shows that the critical thinking skills of students through the use of interactive learning media for computer system subjects. The software utilisation in the experimental class obtained pretest and posttest scores. Where the lowest value of pretest 45 and posttest 70 with a mean of 60, while the highest value of pretest 75 and prosttest 90 with a mean of 80. As a result, the intervention was successfully carried out in the experimental class of X grade students of SMK 1 Muhammadiyah Bima.

In contrast to the results obtained in the control class, the value of this control class can be seen in the table below.

Table. 2
Control Class Pretest and Posttest Critical Thinking Ability

Action	Pretest	Posttest
N	14	14
Mean	55	75
Lowest Score	40	65
Highest Score	70	85

Specifically, the pretest and posttest results of the control class can be seen in the graph as in Figure 2.



Figure 2. Critical Thinking Ability of Control Class Students

In the table and figure above, it shows that the critical thinking skills of students through the use of interactive learning media for computer systems subject matter on software utilisation in the control class obtained pretest and posttest scores. Where the lowest score is pretest 40 and posttest 65 with a mean of 55, while the highest score is pretest 70 and prosttest 85 with a mean of 75. As a result, there is a significant increase between the average scores of the pretest and posttest, indicating that students have understood the material taught.

- **Normality Test**

The data normality test was carried out on the experimental group and control group, the resulting data was a statistical calculation.

Table. 3
Normality Test Results of Experimental and Control Classes

Data	*p-value*	Taraf Signifikasi	Description
Pretest and posttest of experimental class	3.771E-08	0,05	Normal
Pretest and posttest of control class	2.28961E-06	0,05	Normal

From the table above, the data on students‘ critical thinking skills in the experimental and control classes are significant > 0.05 H_O is accepted so that the data on students’ critical thinking skills are normally distributed.

- **Homogeneity Test**

Table. 4
Homogeneity Test Results of Experimental and Control Classes

Data	*p-value*	Taraf Signifikasi	Description
Pretest and posttest of experimental class	0.897039144	0,05	Homogen
Pretest and posttest of control class	0.867448446	0,05	Homogen

From table. 4 above shows that the data on students' critical thinking skills before and after learning experimental and control classes p-value > H_0 significance is accepted so that the sample variance is homogeneous.

- **T test**

The results of the t-Test: Two-Sample Assuming Equal Variances using statistical calculations:

Table. 5
t-Test

Test	Gainscore Eksperimen	Gainscore Kontrol
Mean	23.57	20.71
Variance	67.03	107.14
Observations	14	14
Pooled Variance	87.09	
Hypothesized Mean Difference	-	
Df	26	
t Stat	0.81	
P(T<=t) one-tail	0.21	
t Critical one-tail	1.71	
P(T<=t) two-tail	0.43	
t Critical two-tail	2.06	

From table. 5 above, it shows that the t-test in the experimental and control classes rejects H_0 if Sig ≤ α 0.05. because the calculated sig value ≥ α 0.05, H_0 is rejected and H_1 is accepted, because the average value of the experimental group's gainscore is higher than the control group, it means that the intervention given to the experimental group effectively increases the value of the dependent variable.

Based on the results of data analysis, there is a significant difference in the experimental gainscore with a mean of 23.57 and the control gainscore with a mean of 20.71, there is a difference between the two means, namely 23.57 - 20.71 = 2.86, this difference indicates that the teaching method applied in the experimental class is more effective in improving critical thinking compared to the conventional method used in the control class. The statistical test conducted showed a p-value < 0.05, which means that this difference is statistically significant.

3.2 Discussion

The significant increase in scores between the pretest and posttest shows that interactive media has a significant effect on students' critical thinking skills. The increase in the average score indicates that after using the interactive media, students' critical thinking skills improved significantly [17].

A more active and engaged approach to improving critical thinking can be done through interactive media, such as engaging learning apps [18]. These media often offer quick responses, allowing students to investigate and experiment with ideas thoroughly, which encourages critical and analytical thinking.

These findings demonstrate the potential of interactive media as a useful teaching tool for improving critical thinking skills. Compared to traditional teaching techniques, the inclusion of interactive media in the curriculum can be more beneficial in helping students develop their critical thinking skills [19].

Critical thinking is one of the skills that is very important to be applied throughout the curriculum, the ability of students who are limited to listening, copying or imitating what is given by the teacher proves that there is no motivation from within students to develop their potential and creativity [20].

The use of interactive media can increase student engagement and provide a more in-depth learning experience [21]. Research shows that students who participate in interactive learning are more likely to develop critical thinking skills compared to students who use traditional methods. This is in line with the findings of a study conducted by [22], which found that using technology in the classroom can help students analyse, assess and create new information.

In contrast [23] stated that traditional teaching methods, which focus more on lectures, often limit students' opportunities for active participation and critical thinking. This explains the lower progress in critical thinking skills shown by the scores obtained by the control class.

Taking these findings into account, it is clear that interactive media can help students develop their critical thinking skills. Students can participate more actively in the learning process by using interactive films, educational games and simulations. These resources encourage students to question, analyse and evaluate the material they are presented with.

4. CONCLUSION

The involvement between teachers and students occurs during the learning process. This involvement can occur in two forms: directly through face-to-face activities, or indirectly through the use of interactive learning media.

The t-test value in the experimental class with a p-value < 0.05 indicates that interactive media is effective in enhancing students' critical thinking skills. The significant improvement between the pretest and posttest scores shows that interactive media has a positive impact on critical thinking abilities. This finding demonstrates the potential of interactive media as a useful teaching tool to enhance critical thinking skills. Compared to traditional teaching techniques, the inclusion of interactive media in the curriculum can be more beneficial in helping students develop their critical thinking skills.

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