

The Application Of Games Based Learning Model Assisted By Index Card Match Media To Students' Critical Thinking Skills In Learning Geography At Public Senior High Schools (SMA)/ Islamic Senior High School (MA) In Gerokgak Sub-District

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Abstract. Teachers' employment of a learning paradigm that encourages memorization and reduces student participation in class is the reason for pupils' poor critical thinking abilities. The purpose of this study is to ascertain how applying a game-based learning paradigm with index card math media affects students' critical thinking abilities when they are studying geography. The design of this study was experimental, specifically nonequivalent control group design pseudo-experimental research. All of the Senior High Schools (SMA) and Madrasah Aliyah (MA) in the Gerokgak District made up the research sample. Observation and document recording techniques were used to gather data, which were subsequently subjected to descriptive analysis and hypothesis testing using the Independent Sample T-test method. The study concludes that the use of the games-based learning model with index card math media results in a significant difference in students' critical thinking abilities, namely ((sig.000 <0.05)).

Keywords: Games Based Learning, Index Card Match, Critical Thinking Skills

1 Introduction

According to the demands of 21st century learning skills, critical thinking, communication, collaboration, creativity, and invention (4C) are the four elements that must be converted into learning. This indicates that critical thinking abilities are necessary in geography education as well. Critical thinking abilities play a crucial part in education since they help students become accustomed to recognizing issues, evaluating them, using logic, and coming to the correct conclusions when resolving difficulties that arise in daily life. The application of critical thinking abilities in geography instruction will force students to consider how to approach real-world issues from a geographical scientific perspective. In actuality, pupils' critical thinking abilities in geography classes remain low. According to Rosyida (2014), teachers who still employ the lecture approach in their geography lessons may be to blame for the delayed development of critical thinking abilities in the subject.

The improper learning paradigm used is one of the reasons why pupils have poor critical thinking abilities. In this instance, the teacher adopts a teacher-centered learning paradigm, which solely concentrates on the teacher. Interviews with geography teachers at SMA Negeri 1 and 2 Gerokgak and MA Negeri Buleleng also revealed that pupils' critical thinking abilities were lacking. According to Berjamai and David (2020), students' insufficient critical thinking skills may result from: (1) a lack of courage to voice opinions; (2) a lack of space for exploration; (3) the employment of repetitive techniques; and (4) inadequate classroom management.

In light of current issues, the usage of interactive models and media can help address the issue of students' poor critical thinking abilities. One such model and learning medium is the games-based learning model, which is aided by index card math media.

2 Methods

This study combined an experimental Nonequivalent Control Group Design with a quasi-experimental design. The experimental class, which was treated using the games-based learning (GBL) model using index card match (ICM) media, was compared to the control group in this study, which was not treated in any way.

All of the high schools and the Islamic Senior High School in the Gerokgak subdistrict were randomly chosen to serve as research samples. Based on the findings of random sampling, MAN Buleleng was chosen as the research school. Class X, which included seven classes, was the sample used. X A and X B are the classes that were chosen utilizing the random sampling technique.

In order to determine the outcomes, the Fisher Test was used for the data homogenias test and the Lilifors approach for the data normality test. To ascertain the difference in critical thinking skills between the experimental and control groups, a t-test was conducted using the independent sample t-test procedure.

3 Result and Discussion

There are three indicators in the execution of learning activities: opening, core, and closing activities. These are in line with the continuity of learning that employs the Games Based Learning model with the use of Index Card Match media. The teacher selects the game and topic, explains the principles and rules of the game, plays the game, summarizes the information, and reflects after explaining the content to start the game with Index Card Match media. The Games Based Learning paradigm must be used to complete these five steps during the learning process. The discussion will be focused on the five stages. The following explanation will be based on the five steps.

1) Determining the game and topic material used

Matching cards with index card match media is the game that will be played in class in the beginning, as decided by the teacher. The questions and responses are exclusive to the course material, which is Understanding Disasters. To cut down on time, the media is created prior to the learning process.



Fig 1. index card match media preparation

- 2) Explain the concept and rules of the game
To ensure that students grasp the concept and rules of the matching question and answer card game, the teacher goes over them with them before the index cards are issued.



Fig 2. explain the rules of the game

- 3) Playing a card matching *game*
After students are asked to select cards at random, the teacher will ask them to comprehend the information on the card before giving them instructions to locate and match the questions or answers on the cards. Once every student has a pair of cards, the teacher will read out the question cards and answer cards they received to give a brief presentation.



Fig 3. play the game

4) Summarize knowledge

After students are asked to select cards at random, the teacher will ask them to comprehend the information on the card before giving them instructions to locate and match the questions or answers on the cards. Once every student has a pair of cards, the teacher will read out the question cards and answer cards they received to give a brief presentation.



Fig 4. students summarize game-based learning with index card match media

5) Reflecting

With the help of index card match media, the instructor concludes the learning activities of the games-based learning model by providing a summary of the topics covered. In order to make the learning process relevant for the students, the teacher also reflects to determine how well the students grasp the content. This approach will assist the students stay interested in the learning activities.



Fig 5. the teacher reflects

As a precursor test, the findings of this study used a data normality test with a significance level of 0.05% to ascertain whether the data were normally distributed. The data was deemed normal if the study revealed that L_{count} was less than L_{table} . Table 1 displays the data normalcy findings.

Table 1. Data normality test results

No	Class	L_{count}	L_{table}	Description $L_{count} < L_{table}$
1	control class critical thinking skills pre-test results	0,156	0,161	Normal

2	Post-test results of critical thinking skills control class	0,133	0,161	Normal
3	experimental class critical thinking skills pre-test results	0,156	0,161	Normal
4	Post-test results of critical thinking skills of experimental class	0,157	0,161	Normal

The homogeneity test will be used to determine whether or not the population variants in the control and experimental classes are the same when dealing with normally distributed data. The Fisher test is used to test for homogeneity at a significance level of 0.05%. The data is deemed homogenous if F_{count} is less than F_{table} . Table 2 displays the findings of the homogeneity test.

Table 2. Homogeneity test results

No	Class	L_{count}	L_{table}	Description $L_{count} < L_{table}$
1	Control Class	1,131	1,860	Homogeneous
2	Experiment Class	0,518	0,537	Homogeneous

To determine whether the use of the games-based learning model using index card media had a substantial impact on the critical thinking skills of class X students at MAN Buleleng when learning geography, a different test was conducted. The results of the t-test are shown in Table 3.

Table 3. T-test results

		Paired Samples Test							
		Mean	Std. Deviation	Std. Error Mean	Paired Differences		t	df	Sig(2-tailed)...
					Lower	Upper			
Pair 1	PRE TEST - POST TEST ...	20,46667	12,21004	2,22924	-25,02597	-15,90736	9,181	29	,000

The Sig (2-tailed) value for students' critical thinking abilities is 0.000, which is less than 0.05, according to the findings of the t-test conducted with SPSS. This demonstrates that students' critical thinking abilities in geography learning differ significantly before and after the implementation of a game-based learning paradigm supported by index card match media.

By using the game-based learning model with index card match media, the following elements help to alter the learning process or enhance students' critical thinking skills: (1) a greater desire among students to study since game-based learning models change the

perception of learning—which is unpleasant when done through conventional means like lectures—to one that is pleasurable when students play while learning. The idea of game-based learning boosts students' interest in the subject matter and raises their enthusiasm for learning. According to Putra et al. (2024), this game-based learning approach is more enjoyable, gives students motivation to learn, and engages them in the process of learning. By applying learning while playing, the game-based learning model makes the classroom environment more enjoyable, which influences students' enthusiasm for the material and raises their curiosity about it. This encourages students to analyze problems and consider solutions to problems that arise in their environment that are related to the material being taught. (2) Improved Student Cooperation Skills: All students participate in game-based learning, and the use of index card match media necessitates that students collaborate with one another to determine the right questions and answers. This will help students solve problems that arise in their own questions and answers. In order to get used to thinking critically about the issues presented in learning materials, students can more easily evaluate the answers or questions in the index card match media thanks to their discussion activities with other students.

4 Conclusion

The data analysis reveals a significant difference between the experimental and control classes in the way the games-based learning model, aided by index card match media, is applied to students' critical thinking abilities. The students' sig (2-tailed) critical thinking abilities are $0.000 < 0.05$. Learning activities that enhance students' critical thinking abilities may involve the use of games-based learning models supported by index card match media.

Applying the games-based learning model with the help of index card match media is relevant for use in learning activities, particularly in schools where research on geography learning has been conducted. This is because the games-based learning model uses learning while playing to increase students' enthusiasm for learning, which in turn affects their desire to understand the material being taught. With the help of index card math media and the game-based learning paradigm, students can have more discussions with one another to determine the right solution. Student discussion activities make it simpler for students to evaluate and resolve issues that arise during learning activities, which encourages critical thinking in both learning and non-learning contexts. With student discussion activities, students are easier to analyze and solve problems obtained in learning activities so that it will stimulate students to think critically both in learning and outside learning activities.

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