

Make A Match Model on Students' Critical Thinking Ability about Fractional Numbers Class V UPTD SD Negeri 122337 Pematang Siantar

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A R Q I C L E I N F O

A B S T R A C T

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This research aims to determine whether there is an influence of the *Contextual Teaching and Learning Model* on the critical thinking abilities of fifth grade students at UPTD SD Negeri 122337 Pematang Siantar FY 2023/2024. The method in this research is a quantitative experimental method whose research design is Pre-experimental type one group. pretest-posttest. Conducted in October 2023, the population of all students at UPTD SD Negeri 122337 Pematang Siantar and a sample of 22 students consisting of 11 female students and 11 male students were used, namely purposive sampling with two research variables: the dependent variable (x) in the form of increase critical thinking skills, as well as the independent variable (y) in the form of a *make a match* model, a learning concept where students learn while playing using students matching pairs of cards on a fun topic. Data collection techniques are test techniques with validity tests, reliability tests, gain normality tests (n-gain). The test results using the Ngain technique with the help of the SPSS version 21 program, based on the calculation results obtained a mean of 0.71, with an effectiveness of $0.71 \geq 0.7$ which is included in the high category. All independent variables have a significant influence on the dependent variable. So it can be concluded that there is an influence of *the make a match mode* on the critical thinking abilities of class V students at UPTD SD Negeri 122337 Pematang Siantar FY 2023/2024.

INTRODUCTION

Education is one of the determining factors for success in improving quality human resources (HR) and shaping the human spirit to become oneself as a unique person. Education is the main thing in human life. Educational goals can be achieved optimally if the role of a teacher can present learning creatively and variedly for students. The learning process is essentially to develop students' activities and creativity through various interactions and learning experiences. Basic education is education in the form of an elementary school where the function of education at the basic level is to provide basic provisions for the development of life, both personal and community life.

Critical thinking can be defined as a process and ability used to understand concepts, apply, synthesize and evaluate information obtained or information produced. Critical thinking is a high-level thinking skill and has been known to play a role in moral development, social development, mental development, cognitive development, and scientific development. The low level of students' critical thinking is due to the teacher's monotonous way of teaching, namely lectures. Teachers are less creative in delivering learning and even the learning model given is not appropriate. Under these conditions, student learning outcomes are less good.

Mathematics lessons are one of the lessons that are expected to be mastered well, one of which is the material on operations to calculate fractions. Many students think that mathematics is a difficult lesson, not easy to understand, very boring and not fun. This is a negative perception of mathematics subjects, this perception creates a lack of student interest and motivation in learning mathematics, thus affecting students' critical thinking abilities.

Based on the results of observations made by researchers, they saw that the results of the critical thinking skills of class V students at UPTD SD Negeri 122337 Pematang Siantar in mathematics learning were still incomplete or did not meet the KKM. To overcome this, we need a learning model that is interesting and not boring for students to learn mathematics, especially about fractions. One learning model that can increase the absorption of knowledge and actively increase students' self-confidence and raise students' enthusiasm in receiving lessons is the Make A Match learning model.

Based on the description of the background of the problem that has been explained above, the author is interested in carrying out research in order to improve students' critical thinking, especially in mathematics subjects, namely fractions, with the title

"The Influence of the Make A Match (MAM) Model on the Critical Thinking Ability of Class V Students of UPTD SD Negeri 122337 Pematang Siantar."

THEORETICAL FRAMEWORK

A conceptual framework is a theoretical description that suggests the relationship between variables. The conceptual framework aims to provide an overview of the basic concepts used in research so that it can show the flow of thinking appropriately while being able to accommodate all existing problems by solving the problems.

In this research, researchers will use the make a match learning model. To determine the effect of the make a match learning model on student learning outcomes, it was carried out by conducting an initial test (pretest) and final test (posttest). Submission of the initial test and final test is carried out by providing questions related to the learning material. The initial test (pretest) is carried out before using the make a match learning model in the learning material, while the final test (posttest) is carried out after the learning process uses the make a match learning model.

The conceptual framework based on the description above can be described as follows:

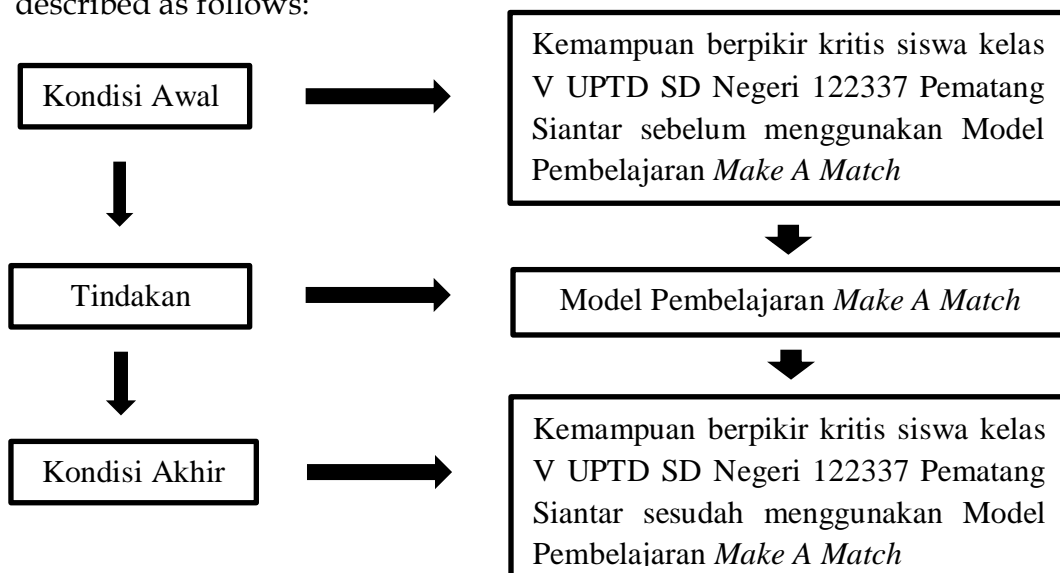


Figure 1. Conceptual Framework

METHODS

The method used in this research is a research method with a quantitative approach. The type of research used is experimental research, namely the Pre-Experimental Type. Sugiyono (2017:74) says that pre-experimental design is a design that includes only one group or class that is given pre- and post-tests. This one group pretest and posttest design was carried out on one group without a control or comparison group. With this research, the results of the treatment can be known more accurately, because it can be compared with the situation before treatment and after treatment. The research design can be seen in Table 3.1 below:

Table 3.1 One Group Research Design Pre-test Post-test

Pre-test	Treatment	Post-test
O ₁	X (Make A Match Model)	O ₂

Information:

O₁ : Initial test (pretest) before using the make a match model

X : Treatment/treatment model make a match

O₂ :Final test (posttest) after using the make a match model

The population in the research were all students at UPTD SD Negeri 122337 Pematang Siantar, and the sample taken by class V students was 22 students. This research uses a test instrument in the form of a description with the aim of measuring students' critical thinking abilities. Before being used for data collection, the data testing stage used validity tests, normality tests and homogeneity tests. In data analysis, the N-gain test was used.

RESULTS AND DISCUSSION

Results

1. Validity test

Validity is the degree of certainty between the data that occurs in the research object and the power that can be reported by the researcher. Therefore, the importance of validity in research determines the truth of the object being studied. Validity data obtained from experts/experts is then analyzed by calculating the average score for each aspect. The criteria for the validity research category are ≤ 0.4 which is considered less valid, $0.4 - 0.8$ which is stated as moderate, and > 0.8 which is very valid.

Table 1 Instrument Validity Assessment Criteria

Index	Category (Validity)
≤ 0.4	Less Valid
$0.4 - 0.8$	Currently
> 0.8	Very Valid

2. Normality test

The normality test is a statistical technique used to determine whether a particular data sample or variable comes from a population that has a normal distribution or not. To test normality, this is done by taking the results from the pretest and posttest. Learning results from the pretest and posttest were tested for Kolmogrov-Smirnov normality using the SPSS application program. The basis for making normality test decisions is:

1. If the significant value is > 0.05 then the data is normally distributed.
2. If the significant value is < 0.05 then the data is not normally distributed.

3. Homogeneity Test

The data homogeneity test is carried out to find out and test whether the research data is homogeneous or not. The homogeneity test used Cronbach Alpha with the SPSS application program where two variants were tested on

the results of the pretest and posttest data based on the decision criteria in the homogeneity test in SPSS. The basis for decision making in the homogeneity test is:

1. If the significant value is > 0.05 , it means the data is homogeneous
2. If the significant value is < 0.05 , it means the data is not homogeneous

DATA ANALYSIS

1. N-Gain Test

This method is used to measure the extent of the effectiveness of the learning model before being given treatment (pretest) after being given treatment (posttest). The target that must be achieved is of course that students have mastered the material 100% and have at least reached the KKM. To test the effectiveness of the make a match learning model, manual calculations were used, namely the N-Gain effectiveness formula. The normalized gain test was carried out to determine the increase in students' critical thinking after being given treatment. Calculate the normalized gain score based on the formula, namely:

$$\text{Normalized Gain (g)} = \frac{\text{Posttest Score} - \text{Pretest Score}}{\text{Maximum Score} - \text{Pretest Score}} \times 100$$

The results of the normalized gain calculation are then interpreted based on the n-gain interpretation table according to (Hake, 1999).

Gain Grouping Criteria

N- Gain Score (g)	Interpretation
$(g) \geq 0.7$	Tall
$0.7 > (g) \geq 0.3$	Currently
$(g) < 0.3$	Low

The normalized average score (N-Gain) is used to determine the magnitude of the increase in student learning outcomes before being given treatment .

Discussion

This research was carried out in Class V UPTD of SD Negeri 122337 Pematang Siantar for the 2023/2024 academic year from 16 October - 23 October 2023. The population used was all class V students of UPTD SD Negeri 122337 with a sample of 22 class V students.

In this section, the results found in the research that have been carried out will be described. The intended results are conclusions drawn based on the data collected and data analysis that has been carried out. This research aims to determine the effect of the *Make A Match model* on students' critical thinking skills in fraction material. There were 22 students in Class V UPTD SD Negeri 122337 Pematang Siantar who had students in this study. Before carrying out the research, the researcher first validated it with 2 validators. Validation by the validator is carried out in order to determine the number of questions from the 10 questions that will be tested in essay form, namely 5 questions.

In this study, researchers obtained data on the results of *the pretest* and *posttest* conducted in one experimental class. Researchers will conduct *a pretest* before receiving treatment, while *the posttest* will be carried out after students

receive treatment. These two tests function to measure the influence of the *make a match model* on students' critical thinking abilities.

Before conducting the research, the researcher first validated the questions with expert lecturers (*expert judgment*) and teachers to determine the validity and reliability of the instrument that the researcher would use to measure students' critical thinking abilities. After the questions have been validated by expert lecturers (*expert judgment*) and teachers, they are then tested using the Aiken formula. The results of the calculations carried out were $V=1.2$, indicating that the question was in the high or valid category because it got a value greater than 0.8 so the question was said to be valid.

After the question is valid, it is continued by taking initial result data using a *pretest*, then treated using the *make a match model*. After the class has been treated, a *posttest* is then given to the students. This was done to determine students' critical thinking abilities after treatment.

Pretest data analysis provided showed that the average result of students' critical thinking ability was 36.36 with the lowest score being 12 and the highest score being 72. In the *posttest* the average score of critical thinking ability results was 81.82 with the highest score being 96 and lowest 56. To find out whether the data population used is normally distributed or not, the author calculated normality using *Shapiro-Wilk*, obtained a significance in the *pretest* of 0.033 and a significance in the *posttest* of 0.092 with a sample of 22 students. Judging from the results of the decision making, it can be concluded that the *pretest* and *posttest* were normally distributed because the significance results obtained were > 0.05 . The data was obtained from the *SPSS 21 output results*.

To find out whether there is an influence of the *make a match model* on students' critical thinking abilities, the author calculated it using the N-Gain formula. Based on the results of the N-Gain test, it was concluded that the experimental class showed an increase with the criteria for a result value of 0.71 or categorized as high, so the conclusion from the table of N-Gain test results above is that there is an influence of the *make a match model* on students' critical thinking abilities in fractional number operations material. .

CONCLUSIONS & RECOMMENDATIONS

So further lessons that can be given to make it better in the future are:

a. Advice for teachers

In the learning process, teachers should teach by applying the *make a match model* so that all students can be active in participating in the learning process, and teachers give students the freedom to look for pairs of cards held by each student, so that it is not always centered on the teacher but also on the students.

b. Suggestions for schools

To the school to always motivate teachers to be able to use the *make a match model* in the learning process

c. Advice for students

To UPTD students at SD Negeri 122337 Pematang Siantar to be more active in studying and enthusiastic in participating in the learning process, because with

this students will better understand the explanation given by the teacher so that it can help improve learning outcomes.

d. Suggestions for researchers

This research is the basis for developing one's potential in knowing interesting models so that researchers can apply them in the future when they enter the field. And it is hoped that it can develop the *Make A Match model* in depth.

REFERENCES

- Taha, Rauf. *The Influence of the Make A Match Type Cooperative Learning Model on Students' Mathematics Learning Outcomes on Lines and Angles*. Thesis, Gorontalo State University, 2016.
- Lestari, Sinta Dewi, Khamdun, and Lovika Ardana Riswari . 2023 . Application of the Make A Match Model in Improving Critical Thinking Abilities of Class V Students at SDN Boloagung 02 . *Journal of Early Childhood Islamic Education* 5 (2); 592-603.
- Sugiyono, 2018. *Quantitative, Qualitative and R&B Research Methods* . Bandung: ALFABETA
- Tambunan, Janwar. 2018. *Learning and Learning*. Pematangsiantar: HKBP Nommensen Pematangsiantar University.
- Wakhidin, Agus. 2020. *Combination of Make A Match Learning with Trade Quiz-Quiz*. West Java: Adab.