



The Influence of the Means-Ends Analysis Learning Model on Critical Thinking Ability in History Subjects Class X SHS IT Insan Mulia Boarding School for the 2021/2022 School Year

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Abstract. The ability to think critically in education in the 4.0 era is essential for students. Means-Ends Analysis is a learning model that can support these abilities. This study aims to determine the influence of the Means-Ends Analysis Learning Model on critical thinking skills in students. This research was carried out at SHSIT Insan Mulia Boarding School for the 2021/2022 academic year using the Quasi-Experimental Method, which was applied using Nonequivalent Control Group Design. Researchers used Purposive Sampling and data analysis using Paired Sample T-Test and Independent sample T-Test. The results of the Paired Sample Test show the value of Sig. (2-tailed) $0.000 < 0.05$, which means that the Means-Ends Analysis Learning Model influences critical thinking skills, and the results of the Independent Sample T-Test test show Sig. (2-tailed) $0.000 < 0.05$ means that there is a difference between the Means-Ends Analysis Learning Model and the Conventional Learning Model. The test results of this study show that the Means-Ends Analysis Learning Model has encouraged students to perform problem identification skills, train the ability to evaluate thinking actively, communicate, search, manage data and finally will, conclude on the learning material by solving problems.

Keywords: Critical Thinking Ability · Learning Models · Learners

1 Introduction

Education is a planned effort to influence others, such as individuals, groups, and societies, so that they do what educators expect them to do [1]. Education is an activity that has a specific purpose or purpose that is directed to develop human potential both as a human being and as a whole society [2]. From this, it can be underlined that education is a process, a conscious and planned effort to realize the learning atmosphere and learning process so that students actively develop their potential and can achieve the national education goals mandated in Law Number 20 of 2003.

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To enable students to be competitive in the face of the Millennium and Industrial Revolution 4.0, teachers must be able to make students think critically and analytically and provide conclusions and problem-solving [3]. One of the essential elements that can prepare for it is learning. Therefore, each teacher must thoroughly understand what will be done in the learning activities in the classroom. In the learning process, teachers should be able to select appropriate learning models for their students to support their learning success, as the learning process is a multi-directional communication process between students, teachers, and the learning environment. N [4]. A learning model is a conceptual framework that describes a systematic approach to organizing learning experiences to achieve specific learning goals, and is used by learning designers and teachers when planning teaching and learning activities. It acts as a guide [5].

Based on observations made by researchers at the SHSIT Insan Mulia Islamic Boarding School, the learning model currently applied to History Subjects also often uses conventional models. Conventional learning is considered unable to facilitate students to become thinking abilities and challenge in problem-solving efforts, and there are still teachers who are still the centre of learning activities, so there are still many students who are passive during learning, even though these demands there are students who should play a more active role in learning activities. The results of interviews that have been conducted with the teacher of History Subjects, namely Adriansyah, S.Pd, show that in the learning process, students have not optimally carried out a series of critical thinking skills that lead to indicators of essential thinking ability, such as the lack of students in analyzing a historical event and when students are in discussion and presentation activities, many students are still passive and lack opinions. A learning process that is less effective and optimal will undoubtedly hinder the improvement of students' critical thinking skills. This will prevent students from finding new ideas and knowledge in teaching and learning activities. With the ability to think critically, students are expected to be able to solve the problems they experience.

The ability to think critically belongs to the cognitive realm, including mental activity (brain); the retardation of students' critical thinking ability can be seen in the low value of students' cognitive learning outcomes [6]. Indicators of essential thinking ability include interpretation, analysis, evaluation, inference, and explanation [7]. In the learning process, critical thinking is indispensable for students. One of the steps to achieve this goal is to use a learning model, namely the Means-Ends Analysis learning model. This model requires students to compose their questions or break down questions with more simple statements and questions [8].

Based on the limitations of the problem above, the formulation of this research problem is:

1. Is there any influence of the Means-Ends Analysis learning model on critical thinking skills in History Subjects of Class X Students at SHSIT Insan Mulia Boarding School for the 2021/2022 School Year?"
2. Does the means-end analytical learning model have a different impact compared to traditional learning model on students' critical thinking ability in History Subjects at SHSIT Boarding School Insan Mulia School Year 2021/2022?"

2 Research Methods

The method used in this study is the Quasi-Experimental research method. Quasi-Experimental is a development of True Experimental Design that is difficult to implement [9]. Quasi-Experimental is a comparison that compares the effect of giving treatment to an object (experimental group) and sees the magnitude of its influence. The design in this study used Nonequivalent Control Group Design, where the researcher used two groups as research. The first group was treated, and the second group was not. The treated group is called the experimental group, and the untreated group is called the control group. This study has several research stages. The steps for this investigation are:

A. Preliminary Research

This preliminary research was conducted as a preliminary observation to find data on the subject to be studied at SHS IT Insan Mulia Boarding School by conducting interviews with teachers and students.

B. They Determine the Population and Sample

The population in this study is Class X SHSIT Insan Mulia Boarding School for the 2021/2022 School Year, which amounts to 122 students. Under the conditions of this study, two groups were made, namely the experimental group and control group. The sample used in this study consisted of his 60 students, consisting of his 30 students in the experimental class and 30 students in the control class. The sampling technique used by researchers in this study is non-probabilistic sampling. This is a sampling technique that does not give each member of the population an equal chance of being selected as a member of the sample.

C. Preparation of Materials and Instruments

The subject matter is adjusted to the learning tools in the form of a Syllabus and Learning Implementation Plan (RPP). The instrument used aims to collect research data; the instrument is an Essay or description. In addition, the data collection techniques used are field observation, documentation of research results, and literature studies. This prerequisite test was performed with a validity test using Pearson Product Moment Correlation and a Reliability Test conducted using Cronbach's Alpha formula.

D. Implementation of Learning Activities in the Classroom

To the experimental group, treatment or stimulus was given using the MEA learning model, while the control group used the conventional learning model. It is the results of the reactions of this group will be compared. Experimental research aims to determine the presence or absence of harrowing and how much they are by giving a specific treatment to the experimental group and a control class for comparison.

E. Hypothesis Testing and Concluding

Hypothesis testing of the data obtained using the T-Test Sample Paired Test and the T-Test Independent Sample Test. The results of such tests are carried out as a basis for conclusions.

3 Results and Discussions

A. Instrument Prerequisite Test Results

1) Validity Test

The instrument validity test in this study was carried out using Pearson's Product Moment Test formula with a significant level of 5% with the number of students (n) as many as 30 people, thus the r-table value of 0.361. The decision-making of testing the instrument's validity is that if the r-count > the r-table, then the item about the instrument is declared Valid, and if the r-count < the r-table is declared Invalid. Table 1 shows the results of testing the validity of the research instruments.

Based on the results of testing the question items carried out, it can be seen that the r-count > r-table (0.361) then according to the test criteria, all questions are said to be Valid; therefore, there is no deletion or replacement process of the questions that will be used in this study. The validity test results will be used to determine the accuracy and accuracy of a measuring instrument in carrying out its measuring function, namely so that the data obtained can be relevant and to hold the measurement.

2) Reliability Test

The Reliability Test in this study was carried out to determine or show the accuracy and consistency of an instrument. Reliability Testing, in this case, using Cronbach's Alpha Formula (Table 2).

The test results show that the value of the reliability of the research instrument is 0.4726, which means "enough". This is based on the reliability criteria stated by Arikunto if the reliability produces $0.40 < r_{11} \leq 0.60$, then the reliability instrument is sufficient [10]. The value of the "sufficient" criteria in the reliability test above means that the research instrument used in this research has a sufficient level of consistency and steadiness or is under research, so it is suitable for use.

3) Normality Test

The normality test aims to determine the form of distribution of the data, which is standard or abnormally distributed. Researchers in this study conducted a Normality Test using the Kolmogorov-Smirnov Test Formula using the IBM SPSS 22.0 Statistics For

Table 1. Validity Test Results

Instrument Validity			
Question Number	r-count	r-table	Information
1	0.61	0.361	Valid
2	0.61	0.361	Valid
3	0.55	0.361	Valid
4	0.49	0.361	Valid
5	0.61	0.361	Valid

Source: Results of 2022 Researcher Data Processing

Table 2. Reliability Test Results

Reliability Test					
Item About	1	2	3	4	5
Variance of Each Item of the Problem σ_i^2	20.2	17.8	29.8	25.1	21.3
Number of Variants 5 Questions $\sum \sigma_i^2$	114422				
Total Variants $\sum \sigma_i^2$	183982				
Reliability r_{11}	0.4726				

Source: Results of 2022 Researcher Data Processing

Windows application. The decision-making in testing normality using the Kolmogorov-Smirnov Test is If Sig. (p) > 0.05, then H_0 is accepted, and If Sig. (p) < 0.05, then H_0 is rejected. The results of tests conducted to test the normality of the data with the Kolmogorov-Smirnov Test showed that the Sig. (p) value of the Experimental Pre-Test was 0.200, the Sig. (p) of the Experimental Post-Test was 0.200, the Sig. (p) of the Control Pre-Test (Conventional) was 0.179, and the Sig. (p) of the Control Post-Test (Conventional) was 0.200. The four data have a value of Sig. (p) > 0.05; therefore, a decision can be made that H_0 is accepted and H_1 is rejected so that it can be stated that the data from the four data have a normal distribution. The results of this normality test show a normal distribution; therefore, in testing the hypothesis, the examiner can use the Paired Sample T-Test.

4) Homogeneity Test

The homogeneity Test is used to determine whether the data from the experiment and control classes' research results have the same variants and is used as reference material to determine the next statistical test decision. Calculations using the IBM SPSS 22.0 Statistics For Windows application above show that the significance value is 0.789. Because the value obtained from the homogeneity test of the significance level > 0.05, the research data has the same variance value, so can be continued to carry out further data analysis an Independent Sample T-Test.

B. Results of the Hypothesis

1) Paired Testing T-Test Sample

Paired Testing T-Test Sample to determine the influence of the Means-End Analysis learning model on the ability to think critically about obtained calculation results. It is known in the experimental class between Pretest and Posttests with Sig. (2-tailed) by 0.000. The decision-making provisions are based on Table 3.

H_0 = Effects of means-objective analysis learning model and conventional learning model on critical thinking ability.

H_1 = The means-objective learning model has a significant impact on critical thinking skills.

The decision criterion accepts H_0 if Sig.(2-sided) > 0.05 and H_1 if Sig.(2-sided) < 0.05. 0.05. The Sig. (two-tailed) value is known to be 0.000 based on the paired test-t-test sample results. (both sides) value 0.000 < 0.05 then rejected and H_1 accepted.

Table 3. Paired Sample T-Test

		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Post-Test Eksperimen - Pre-Test Eksperimen	23.63	10.34	1.88	19.77	27.49	12.51	29	.000
Pair 2	Post-Test Kontrol - Pre-Test Kontrol	17.13	8.79	1.60	13.84	20.41	10.66	29	.000

Source: Results of 2022 Researcher Data Processing

This indicates that there is a significant difference between the start and end variables. This indicates that the discriminatory treatment of each variable has a large impact. This means that means-end analytical learning models have a significant impact on students' critical thinking skills.

2) Independent Sample T-Test

Independent Testing The T-Test sample was conducted to see the difference in the influence between the Means-Ends Analysis learning model and the conventional learning model on students' critical thinking ability in History Subjects. Independent Sample T-Test test results. Based on the test results in Table 4, it can be seen that the value on Levene's Test for Equality of Variances has an F-Calculate for the assumption of variance is 0.072 with a probability (Sig.) of 0.789. A decision criterion is accepted if probability (sig) > 0.05 and accepted if probability (sig) < 0 > 0.05. The conclusion is that the variances in critical thinking ability for the means-final analysis learning model and the conventional learning model are said to be equal, non-significantly different, or homogeneous. Therefore, the t-test relates to rows that assume equal variances. The difference in the influence of the Means-Ends Analysis learning model and the conventional learning model on critical thinking ability by paying attention to the following Equal Variance Assumed test line:

Hipotesis:

H_0 = There was no significant difference Effects of means-objective analysis learning model and conventional learning model on critical thinking ability.

H_1 = There are significant differences in the influence of the Means-Ends Analysis learning model and conventional learning model on critical thinking skills.

Decision making is Accept if Sig.(2-tailed) > 0.05 and Accept if Sig.(2-tailed) < 0.05. The results of the Independent Test of the T-Test Sample on equal variance Assessed

Table 4. Independent Sample T-Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Critical Thinking Students	Equal variances assumed	.072	.789	6.195	58	.000	8.033	1.297	5.438	10.629
	Equal variances not assumed			6.195	57.730	.000	8.033	1.297	5.437	10.629

Source: Results of 2022 Researcher Data Processing

showed that the t-count was 6,195 with a freedom rate (df) of 58 and a Sig. (2-tailed) of 0.000 because of the sig. (2-tailed) was $0.000 < 0.05$, then the was accepted and rejected. This means that there is a significant difference in influence between the critical thinking ability of the Means-Ends Analysis learning model and the Conventional learning model. Based on the results of these tests, it can be concluded that there are significant differences in impact on students' critical thinking abilities with means-objective analysis learning models. In this study, the mean-objective analysis learning model has a better impact on students' critical thinking ability compared to the traditional learning model. The critical thinking ability of students evidences this; the Means-Ends Analysis learning model has a higher average than the Conventional learning model.

C. Discussion

The results of the data analysis have been carried out by researchers using the Paired Sample T-Test and the Independent samples t-test. A paired t-test sample was performed by researchers to examine whether the mean analysis learning model affects students' critical thinking ability. After obtaining the computational process, we found that the average difference between pre-test and post-test experimental classes was 23,633, this shows that the Posttest value is higher than the Pretest value. This difference is found in the 95% confidence interval, a low of 19,770 and a high of 27,497. This illustrates the improvement of critical thinking results in answering questions after learning using the Means-Ends Analysis Learning model.

The results of the analysis of the paired-sample t-test data showed that the values of Sig. (two-tailed) were $0.000 < 0.000$. 0.05, according to the test criteria, if the Sig. (both sides) is less than 0.05, it means rejected and accepted. This means that after applying the Means-Ends Analysis learning model, it turns out that the average value of the Posttest is not equal to the average value of the Pretest; that is, the average value of the Posttest is **greater** than the average value of the Pretest. Thus, the hypothesis states that the Means-End Analysis learning model has a significant influence on students'

critical thinking ability after its application in history learning in Class X SHSIT Insan Mulia Boarding School for the 2021/2022 School Year can be accepted. This study to ascertain the difference in the impact of the mean analysis learning model compared to the traditional learning model was conducted by using the independent-sample t-test to test the difference between different data in two groups.

The results of the data analysis are divided into two parts; the first is Lavene's Test For Equality Of Variance which shows a variety of similarity tests or homogeneity tests, while the second part is the T-Test For Equality Of Means which shows the results of the average similarity test. For columns, Lavene's homogeneity of variances test was obtained according to the decision rule for values of $\text{Sig} > 0.05$. That is, the values of Sig are $0.789 > 0.05$ and H_0 is accepted. This means that there is no difference in variance. Or the variance between the means of the classes taught through the means-ends analysis model using the conventional model, i.e. the two classes are homogeneous.

As a consequence, the results of the For Equality Of Means t-test used are in the Equal Variance Assumed line. In this test, if $\text{Sig} < 0.000$, we got the value $\text{Sig} (2\text{-sided}) = 0.000$ according to the decision rule. That is, average results for critical thinking skills taught with the means-end analytical learning model and classes taught with this learning model achieve better averages compared to the traditional learning model. The results of data analysis on students' critical thinking ability in this study showed that the means-end analysis learning model is a learning model that influences critical thinking ability. The Impact of Learning Models relates to drivers and barriers in implementing a means-objective analytical learning model on students' critical thinking abilities in the SHSIT Insan Mulia Boarding School Class X History Subject.

The impact of means-end learning model analysis on critical thinking ability is also supported by observations made during the learning process. This can be seen when students carry out a discussion process with members of their respective groups to analyze a historical event through the group worksheet provided; through this learning model, students can argue, respond or comment on something with full consideration and thinking based on the point of view of a subject of discussion of historical events at the time of the presentation activity. Students can also study and analyze something given during the learning process. This means-ends analytical learning model allows students to take an active role in the classroom history learning process in experiential classes by engaging in engaging group discussions during learning.

This learning model is focused on students who play an active role and the teacher only as a facilitator. Students' activities in the classroom should be distinct from the teacher's role as a facilitator in the learning process. The impact of a means-analytic learning model on a student's critical thinking ability also cannot be separated from the syntax of the learning model itself, which is the driving factor of the model that influences the student's critical thinking ability. Means-goal analysis is a learning model that can improve critical thinking ability and has a syntax that can develop students' critical thinking skills [11].

The observations made by the researchers showed that this Means-Ends Analysis learning model trains Class X students to carry out problem identification skills; at this stage, students can collect and compile the necessary information and explain causal relationships. In addition, it can also train to evaluate skills such as distinguishing relevant

and irrelevant information and evaluating statements. The ability to conclude also participates in being trained in this learning model; this can be seen when the learning process takes place in the experimental class; students can show and distinguish between facts and values of an opinion and statement to be able to provide logical reasons accompanied by facts that support their opinions and provide reasonable explanations, and ideas.

This ability is a driving factor for the Means-Ends Analysis learning model to improve students' critical thinking skills. The characteristics of critical thinking skills are as follows: Recognizing problems, finding ways that can be used to deal with problems, collecting and compiling the necessary information, recognizing unstated assumptions and values, understanding and using appropriate, clear, and distinctive language, assessing facts and evaluating statements, knowing the logical relationship between problems, drawing the necessary conclusions and similarities, testing similarities and conclusions, and recasting belief patterns with broader experience [12].

Students' critical thinking ability is influenced by a physical condition, motivation, anxiety, intellectual development, and interaction [13]. Therefore, researchers always pay attention to these things in the learning process using the Means-Ends Analysis learning model. The Means-Ends Analysis learning model applied by researchers in History Learning is one of the factors in improving students' critical thinking skills in the history learning process. The factor that drives the Means-Ends Analysis learning model can influence and improve critical thinking skills is that this learning model does not only expect students to memorize historical learning materials, but through this learning model, students are actively thinking, communicating, looking for, managing data, and will finally conclude on the learning material by solving problems. The problem-solving model with a high thinking pattern will bring students to their experience using knowledge and skills to the maximum to be applicable in terms of problem-solving, discovery of solving patterns, and good communication skills, so that the meaningfulness of learning will be more pronounced and problem-solving about historical events carried out systematically will familiarize students to be able to think critically. Factors that are obstacles to the implementation of this model, such as the assumption that there are still students who think that problem-solving problems in the events contained in the implementation of this learning model are relatively tricky, but this factor can still be handled with discussions carried out by students, besides that the fact that is an obstacle to this learning model is the factor of estimating the learning time of History Subjects of 2 x 45 min so that researchers must be handled have good time management so that this learning model can run effectively and efficiently.

4 Conclusion

Based on the analysis of data that researchers have obtained from calculations about the influence of the Means-Ends Analysis (MEA) learning model on the critical thinking ability of Class X SHSIT Students Insan Mulia Boarding School for the 2021/2022 School Year, it can be concluded that the Means-Ends Analysis Learning Model influences the critical thinking ability of students of Class X History Subjects SHSIT Insan Mulia Boarding School For the 2021/2022 School Year which can be seen from the hypothesis test with the Paired Sample Test formula which shows the value of Sig. (2-tailed) = 0.000 < 0.05, so a decision can be made that the Means-Ends Analysis learning

model significantly influences students' critical thinking ability. There are differences in the influence of the Means-Ends Analysis learning model with conventional learning models on students' critical thinking ability in 2021/2022 SHSIT Insan Mulia Boarding School X Class History Subject. The results of the independent test of the t-test samples for equal variances assumed Sig. (both sides) $0.000 < 0.05$, then H_1 was accepted and H_0 was rejected. The mean experimental grade was 81.50 and the control grade was 73.47. This means that the means-objective learning model has had a significant impact on student performance. Critical thinking has more models than conventional learning.

Means Ends Analysis (MEA) learning model makes students play an active role in the history learning process in class in practical classes by conducting group discussions that will not make students bored in learning. This learning model is focused on students who play an active role (student center) and teachers only as facilitators. Mens-Ends Analysis (MEA) positively influences students' critical thinking skills. Therefore, this learning model must be applied in the learning process. Based on the results of this study, the researcher suggested to teachers that the Mens-Ends Analysis (MEA) learning model can be used as an alternative and a new model in learning activities for History Subjects to improve students' critical thinking skills. In addition, the researcher's advice is also directed to students to be more courageous in expressing their opinions, mastering the material, and being able to carry out a series of analytical activities in solving historical event analysis problems in learning activities.

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