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The Effect of Discovery Learning Learning Model on Critical Thinking Ability in Class 5 Elementary School Students

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Abstract

This study aims to determine effect of discovery learning model is the learning ability of students of class V student at SDN Tenggilis Mejoyo I Surabaya. The research method used is a quantitative with research draft Quassi Experimental Design-Posttest Only Control design. The sample in this study is all learners of class 5, using saturated Sampling. Data collection techniques using tests and observations. The instrument in this study is a test sheet of critical thinking and observation sheets of student activity. Data analysis techniques using test-t and percentage. The results of data analysis shows that the application of the discovery learning model can have an effect on students in critical thinking by carrying out all activities according to the steps or syntax specified in the discovery learning model to the critical thinking skills of students at SDN Tenggilis Mejoyo I Surabaya, the results of calculations using the t-test formula obtained a t value of 9.78. Result from the test criteria because 9,78>2,30 or 9.78, then H_0 it is rejected. This means that there is a difference, so there is an effect of this discovery learning model on the critical thinking skills of fifth grade students at SDN Tenggilis Mejoyo I Surabaya. and showed that students activities in The Science learning process using the Discovery learning model were excellent.

Keywords: *Discovery learning, critical thinking ability, learning model.*

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INTRODUCTION

The effect of development and progress of a nation by education. The development of the times and their increasingly advanced and complex demands have made the need for education for the nation in this country to increase. This is because the success of a nation to answer the demands of the times is inseparable from the progress of education that has been achieved by the nation itself. The implementation of education must be able to adapt to the times so that development in renewing education in schools is very necessary. Development in renewing education in schools can be done through efforts to improve the components contained therein such as educators, students, learning models, curriculum, and others. Curriculum development is one of the efforts that can be done to improve the quality of education. The current curriculum development is the implementation of the 2013 curriculum (K13), this is a curriculum developed from the previous curriculum, namely the Education Unit Level Curriculum (KTSP). In K13, the learning applies an integrated thematic approach that combines or relates one material to another.

Thinking deep about the future is the foundation of the application of K13, namely 21st-century learning. This 21st-century learning contains social-based

knowledge, as well as future competencies. In the 21st century learning, the old learning center, namely what was previously centered on educators/teachers, switched to being centered on students/students. According to Daryanto & Karim (2017:1) this 21st-century learning, it is centered on students connecting knowledge and real life with communication and collaboration. In K13 students are expected to have critical thinking skills, so this is by the objective of K13 is to create students who can think critically.

Generally, critical thinking is characterized by the ability to reason appropriately, systematically, and logically in understanding concepts or beliefs to take action and solve problems based on the mechanism of conceptual analysis and argumentation. According to Fanani, et al (2019: 75), Critical thinking is thinking analytically to describe a problem or case that has related elements in the case. Also, Nur Amalia & Pujiastuti (2016:525) said that thinking based on the idea of thinking when presenting reasons for concluding and solving problems is a process of critical thinking. Learning outcomes need to be evaluated and assessed as a form of accountability of educational institutions to the government and society (Sudjana & Ibrahim, 2001, p.218).

Critical thinking can occur when the learning process takes place. According to Shoimin, (2014:24), the learning model is a guide or guide for teachers/educators in conducting a lesson. When the learning process takes place, a teacher/educator must be able to choose the right/appropriate learning model to use. This is because the learning model used by a teacher/educator has a very strong influence on the achievement of maximum learning objectives. Critical thinking can arise by using several learning models, including discovery learning because in this model students are made active by investigating and discovering from a material/knowledge presented by the teacher/educator. From the process of investigating and finding out for yourself, it is hoped that the material/knowledge gained from these students will be able to last a longer period in the students' memory.

The ability to think critically provides a more precise direction in thinking, and working, and helps more accurately determine the relationship between something and another. Therefore, critical thinking skills are needed in solving problems or finding solutions. The development of critical thinking skills is the integration of various components of ability development, such as observation, analysis, reasoning, judgment, decision making, and persuasion. The better the development of these abilities, the better at dealing with problems. Currently, critical thinking skills are very important in life's everyday life, because to develop other thinking skills, such as the ability to make decisions and solve problems. There are so many phenomena in everyday life that need to be criticized.

In the field of education, critical thinking can help students improve their understanding of the material being studied by critically evaluating arguments in textbooks, journals, and discussion partners, including teacher arguments in learning activities. So critical thinking in education is a competency to be achieved as well as a necessary tool in constructing knowledge. Thinking that is displayed in critical thinking is very orderly and systematic. Critical thinking is one of the higher-order thinking processes that can be used in the formation of students' conceptual systems. In addition, students critical thinking can be developed through

the provision of meaningful experiences. Haryono's opinion, (2019:106) that the learning model that encourages students to build their knowledge is called the discovery learning model. The teacher guides students' activities in finding their concepts of knowledge. The learning steps with the discovery learning model are (1) providing stimulus to students, (2) identifying problems relevant to the subject matter, formulating problems and then determining temporary answers (hypotheses), (3) dividing students into several groups for discussion, (4) facilitating students in data collection activities, then processing them to prove temporary answers (hypotheses), (5) directing students to draw conclusions based on their observations, and (6) directing students to communicate their findings. Discovery learning enables a more meaningful learning process so that it is well embedded in the knowledge gained by students (De Jong & Joolingen, 1998, p.194)

The discovery learning model in this study was carried out in class 5 of SDN Tenggilis Mejoyo I Surabaya on the content of social studies learning material, namely the type of business and economic activity. Observations were made to reveal learning activities and students who were still weak, this was evidenced by the learning outcomes of 67 that did not match the minimum graduation rate of 70. So the researchers wanted to conduct research experiments on The Effects of Discovery learning models On Critical Thinking Ability in Class 5 Elementary School Students.

METHODS

The experimental method used in this research is experimental. The type of experiment that the researcher chose was Quasi-Experimental Design, with a posttest-only control group design research design. In this design there were two groups (R), one group was given treatment (X) while the other group was not given treatment. The effect/result of the treatment is (O_(1;) O_2).

The population that the researchers used in this study were all fifth-grade students at SDN Tenggilis Mejoyo I Surabaya which consisted of two classes, namely classes V-A and V-B. The samples that the researchers took were all students of class V, each of which amounted to 28 students. Class V-A is the experimental class and class V-B is the control class. The selected classes are classes that are estimated to be in the same condition or condition (Taniredja & Mustafidah, 2011, p56). This research objective is to review the effect of using the discovery learning model on students' critical thinking skills.

Data collection techniques in this study include critical thinking test instruments and observation. The instrument is a data collection tool by researchers using. The following is an explanation of the instruments used by researchers:

1. Critical Thinking Test instrument

The critical thinking ability test instrument is the main instrument in this research. These test questions consist of 4 items of description that contain indicators for critical thinking. The questions in this test item include knowledge between C4 (Analyzing) and C5 (Evaluating), the time for this test is 40 minutes.

2. Instrument of observation

The process of observation/observation in this study uses an observation sheet. This sheet is filled in when the learning process that applies the discovery learning model takes place, with the aim of witnessing the activities of students and

educators during learning activities. The steps or syntax of the discovery learning model are the arrangements of the observation sheet.

RESULTS & DISCUSSION

This study discusses several things that will be studied based on the results of the Effect of the Discovery Learning Model on the Critical Thinking Ability of Class V Students at SDN Tenggilis Mejoyo I Surabaya. The description of the results of this study includes the presentation of data: the results of the critical thinking ability test on the content of science learning (including the test, homogeneity test, and the t-test of critical thinking skills in the two classes that the researcher uses) and data on the results of observing the activities of students in participating in learning using the model. discovery learning.

Tabel 1. Critical Thinking Posttest score

Data	Nilai Tertinggi	Nilai Tertendah
Postest Kelas Ekperimen	94	82
Posttest Kelas Kontrol	55	55

The post-test score data above was calculated using t-test statistics to determine the effect of the discovery learning model on the critical thinking skills of fifth-grade students at SDN Tenggilis Mejoyo I Surabaya. The data processing process is as follows:

Before calculating the t-test, you must first perform a prerequisite test consisting of a normality test and a homogeneity test.

1. Normality Test

   The normality test was carried out on the results of the critical thinking test data in the experimental class and control class, which was based on the chi-square table. From the calculation of the normality test for the two classes, each data class is normally distributed with the acquisition x^2 tabel of 11,070 then for x^2 count the experimental class is (-35,29) while in the control class is (-44,79), then this is in accordance with the test criteria which H_0 is accepted if, x^2Calculate $\leq x^2$tabel, then the distribution normal data.

2. Homogeneity Test

   A homogeneity test is a test of research data to determine whether the data obtained has a homogeneous variant or not. Based on the results of the homogeneity test, the value of F = can be obtained with the following test criteria:

   H_0 rejected if F Calculate $\geq$ F, then not homogeneous, H_0 is accepted if F Calculate $\geq$ F, then homogeneous. The homogeneity test that has been carried out, the value of F Calculate= 1.63 and the value of F = 1.90 can be concluded that the data obtained is homogeneous because the value of F Calculate (1 .63) $\leq$ F (1.90).

3. T test

   After the data met the requirements, then the data were analyzed using t-test statistics. To determine whether or not there is effect of the discovery

learning model on the critical thinking skills students. Based on calculations using the t-test formula, the t Calculate value is 9.78.

4. Hypothesis Test

   Hypothesis test was conducted to obtain results that prove the hypothesis of the effect of the discovery learning model on students' critical thinking skills.

   $H_0 : \mu_1 = \mu_1$ This means that there is no effect of the discovery learning model on students' critical thinking skills.

   $H_1 : \mu_1 \neq \mu_1$ This means that there is an effect of the discovery learning model on students' critical thinking skills.

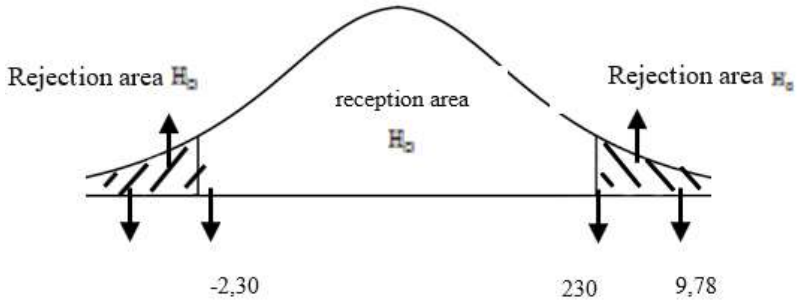

Figure 4.1. Determination of the rejection area curve

Figure 4.1 above shows the rejection area curve using the t-test formula, the value is 9.78 from 2.30. So it can be seen from the test criteria that 9.78 is rejected. This means that there is a difference, then there is an effect on critical thinking on the content of social studies learning material, namely the type of business and economic activity on students who get learning with the discovery learning model and those who don't use the discovery learning model. It is concluded that the discovery learning model affects students' critical thinking skills.

The results of the hypothesis test that the researchers conducted showed the effect of the discovery learning model on the critical thinking skills of fifth-grade students at SDN Tenggilis Mejoyo I Surabaya. In theory, in the opinion of Haryono, (2019:106) that the learning model that encourages students or students to find their own knowledge is called the discovery learning model. Empirically, this research correlates with previous research by Yuliani Kiki in 2015 in a journal entitled "The Development of Learning Devices Based Guided Discovery Model to Improve Understanding Concept and Critical Thinking Mathematically Ability of Students at Islamic Junior High School of Medan". From this research, it can be concluded that: students' mathematical concepts can be improved by learning using the discovery model.

The conclusion from the results of data analysis shows that the application of the discovery learning model can have an effect on students in critical thinking by carrying out all activities according to the steps or syntax specified in the discovery learning model learning process. Students' critical thinking skills have been achieved using the discovery learning model learning because the teacher has carried out all the steps in implementing the discovery learning model. Student activities in learning using the discovery learning model have been achieved well

because students have carried out all activities according to the steps specified in the learning process using the discovery learning model. Students are active and look more critical when participating in learning than before, in different learning models.

CONCLUSION

The conclusion in this study refers to the results of the analysis which states that there is an effect in the application of the discovery learning model to the critical thinking skills of grade 5 students at SDN Tenggilis Mejoyo I Surabaya, The results of calculations using the t-test formula obtained a t value of 9.78. Result from the test criteria because 9,78>2,30 or 9.78, then H_0 it is rejected and post test results show that there is an effect between the use of the discovery learning model on increasing students' critical thinking skills. Observation data on student activity in learning reached the excellent category with 86.8%.

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