

The Impact of The Using Information Literacy for Inquiry Based Learning Toward Student's Critical Thinking Skill

Nurul Ilmiyah, WaspodoTjipto Subroto, Nasution

Primary Education, Postgraduate, State University of Surabaya

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Abstract- The rapid of ICT devices development has impacted in excessive information dissemination. Unfortunately, the response of education world especially school still relies on the information access and the ability of the student using ICT tools. This research aims to find the impact of the application inquiry learning method on student's critical thinking skill. This research was conducted on Elementary School students of Simokerto VI / 139 Surabaya. The method used is the experimental method using treatment design by level 2 x 2. The technique of data analysis is analysis of variance (ANOVA) two-ways. The result of research shows that (1) student's critical thinking skill among the group of the student using inquiry learning method is higher than the student who using conventional learning method (2) there are impacts on the interaction between inquiry learning method and student's critical thinking skill (3) student's critical thinking skill who using inquiry learning method is higher than student who using conventional learning method.

Index Terms - critical thinking, Information literacy, Inquiry learning method.

I. INTRODUCTION

The encouragement with the change of social paradigm and culture, where nowadays context caused in the progress and development of information and communication technology (ICT) in the 21th century has triggered the development called literacy. The department of United Nation which deals with education like UNESCO noted that there are several terms which the development from literacy such as media literacy, information literacy, the freedom of expression and information literacy, library literacy, news literacy, computer literacy, internet literacy, digital literacy, cinema literacy, game literacy, television literacy, advertising literacy and so on. Information literacy as the response from the using of information technology. The indication encourages the use of information literacy rather than technology information literacy[1].

These days, learning at school more focused on the transferring information both scientifically and fact rather than train the student become human being with creativity and high intellectual [2]. In order to achieve the goal of preparing the student who have the skill to challenge the future and can face the contemporary society, that is why the student must have a special skill such as making rational judgement and critical thinking [3]. In the 21th century, the school required to develop student critical thinking skill that they can produce an informed active generation [4]. Critical thinking was one of the high critical thinking skill that should be the center of development learning, because it can create creative and innovative life skill which the student be able to solve their problem in real life[5]. Critical thinking is one of the high-level thinking that involves the process of thinking to gets the information, analyzing, understanding, connecting, interpreting, evaluating, making judgement and decision to reach the conclusion what is bad or good, right and wrong [6].

To develop student's critical thinking skill of holistic approach is needed which involves all the learning methods and oriented to the purpose that can make the student manipulated their cognitive skill [7]. According to the previous research [8], [9], explain that the inquiry learning is suitable for the student's critical thinking skill development [5]. The inquiry learning is the process where the student conceptualizes information that has been obtained through scientific asking process for the development of their critical thinking [10].

The statement of the problem in this research is to analyze the impact of using information literacy for inquiry based learning toward student's critical thinking skill.

II. IDENTIFY, RESEARCH AND COLLECT IDEA

This research uses experimental method with treatment design by level 2 x2. It can be told as the method which use to find the impact of certain treatment on others under controlled conditions. This research has Treatment by Level 2 x 2 design, as the following bellow:

Table 1. The Constellation of Research Problem

Critical Thinking Skill	Learning Methods	
	Inquiry Method (A ₁)	Conventional Method (A ₂)
High (B ₁)	A ₁ B ₁	A ₂ B ₁

low (B_2)

A_1B_2

A_2B_2

The selection of the sample using the process as below: (1) Randomly choosing from Simokerto elementary school VI of Surabaya, (2) then determine the experimental and the control class, the student of IVA grades was selected as experimental class and the student of IVB as control class which contain of 48 students.

The instrument value of student's critical thinking skill in the form of objective problem which consist of 30 questions and It is use writing essay test consist of 10 questions. For testing the normality, the researcher uses Lilliefors test and homogeneity test with Barlett test. The techniques of the data were using two-way ANOVA and sample testing effect using Turkey test.

III. RESULTS AND DISCUSSION

Descriptive statistic of research result was analyzed using descriptive and inferential statistic. The recapitulation of the descriptive analysis result as follows:

Table 2. The Descriptive Data of critical thinking skill.

Group	Makes	Min	Average	s-deviation	Variants	Modus	Median
A1	30	21	25,46	2,50	6,3	26	25,25
A2	27	20	23,58	1,7	3,1	23	23,5
B1	30	21	25,29	2,61	6,8	24	25
B2	27	20	23,75	1,78	3,2	24	24
A1B1	30	24	27,25	1,82	3,3	26	27
A2B1	27	21	23,33	1,61	2,6	23	23
A1B2	26	21	23,67	1,67	2,8	22	24
A2B2	27	20	23,83	1,95	3,8	25	24

The hypothesis testing in this research using two-ways of ANOVA, but the first thing to do is data analysis requirement, it is normality test and homogeneity data test. (A_1) the student who teach using information literacy for inquiry based learning, (A_2) the student who teach using conventional method, (A_1B_1) the student who using information literacy for inquiry based learning and high critical thinking skill, (A_2B_1) the student who using conventional learning method and high critical thinking skill; (A_1B_2) the student who using information literacy for inquiry based learning and low critical thinking skill, (A_2B_2) the student who using conventional learning method and low critical thinking skill.

In this research, the variants of homogeneity test were carried out on groups namely a) A1 and A2 homogeneity with F test. After the calculation, it obtained F_{count} is 3,46 while F_{table} is 3,84. It can be concluded H_0 is accepted because $F_{count} < F_{table}$ means both data groups are homogeneous. b) the homogeneity test B_1 and B_2 using F test. After the calculation was done H_0 is accepted because $F_{count} < F_{table}$ means both data groups are homogeneous. c) the homogeneity test of student critical thinking skill on four groups of interaction and attribute such as A_1B_1 , A_1B_2 , A_2B_1 , A_2B_2 performed using *Barlett* test with significance level of 0,05. The result of analysis *Barlett* test as below:

Table 3. The Analysis of Barlett test

Variant Source	JK	Db	RJK	F_{count}	F_{table}	
					$\alpha = 0,05$	$\alpha = 0,01$
Inter A	42,188	1	42,19	13,52*	4,04	7,19
Inter B	28,521	1	28,52	9,14*	4,04	7,19
Interaction of AxB	50,021	1	50,02	16,04*	4,04	7,19
In (D)	137,250	44	13,12	-	-	-
Total (T)	257,979	47	-	-	-	-

Based on the calculating result of *Barlett* test obtained that $\chi^2_{hit} = 0,47$. From the distribution list table of *Chi-Quadrat*, $2tab_{(\alpha=0,05)}(3) = 7,82$. It can be concluded that $\chi^2_{hit} \leq \chi^2_{tab}$, H_0 was accepted, this critical thinking skill from four groups was homogeny population. The hypothesis testing use ANOVA 2x2 which results below:

Table 4. ANOVA Hypothesis Result Testing

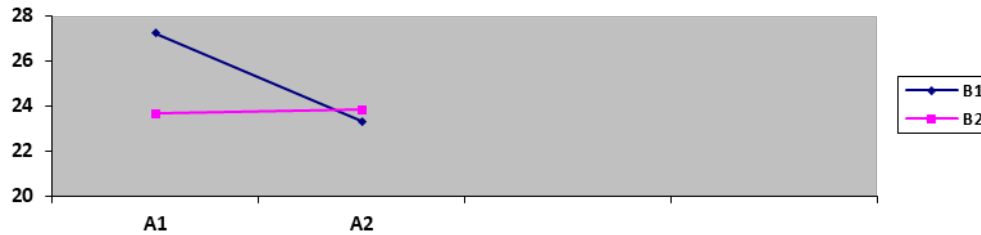
Group	Dk	1/dk	si^2	$\log si^2$	(dk) $\log si^2$	(dk) si^2
A1B1	11	0,1	3,30	0,52	5,70	36,25
A1B2	11	0,1	2,79	0,45	4,90	30,67
A2B1	11	0,1	2,61	0,42	4,58	28,67
A2B2	11	0,1	3,79	0,58	6,36	41,67
Total	44	0,4	10,49	1,97	21,54	137,16

The testing criteria that used is rejected H_0 if $F_{count} > F_{table}$. Based on analysis of variance (ANOVA) result above, explains as below:

The first result of hypothesis test showed that $F_{count} = 13,52 > F_{table} = 4,04$ at the significance level of $\alpha = 0,05$ thus H_0 is rejected. Then student's critical thinking skill between student who given inquiry learning method based on literacy is higher than who given conventional method.

Student's critical thinking skill with inquiry learning method based on literacy information ($\bar{x}=25,46$) better than who are given conventional method ($\bar{x}=23,58$). It concluded that the overall research hypothesis of the student who given with inquiry method based on literacy information higher than student with conventional method. According to the calculating result of table ANOVA at AXB showed that H_0 is rejected based on the value of $F_{count} = 16,04 > F_{table} (0,05: 48) = 4,04$ concluded that there is significance interaction between information literacy for inquiry based learning to student's critical thinking skill.

Based on the data research, the average score of critical thinking skill between student who had given inquiry method is 27,25 and 23,66 for the student with low critical thinking skill using inquiry method. The score for student with high critical thinking skill using conventional method is 23,33 and the student with low skill using conventional method is 24,52. The result calculating data summary through ANOVA 2 x 2 it can be seen at picture 1



. Picture 1. The Graphic Interaction of Inquiry Learning Toward Student Critical Thinking.

According to the analysis result there are interactions, it is necessary for do the further test using Turkey test. Based on the result analysis shows that the calculation of Turkey test was $A_1B_1 > A_2B_1 = Q_{count} = 7,68$ bigger than $Q_{table} \alpha = 0,05; 4; 12 = 4,2$ or $Q_{count} > Q_{table}$, at the significance level $\alpha = 0,05$, concluded that H_0 were rejected and alternative hypothesis of H_1 accepted. It is known that the average value of A_1B_1 group is 27,25 and A_2B_1 as big as 23,67. Because the average value of $A_1B_1 = 27,25 > A_2B_1 = 23,67$, it is concluded that student's critical thinking skill who given of inquiry method bases on information literacy and the student who have high critical thinking skill higher than the group of the student who given conventional learning method and those who high critical thinking.

The calculating of variants analysis advanced using Turkey test is for comparing the group which have low critical thinking skill that are given inquiry method bases n information literacy and conventional method.

Based on calculating result of $A_1B_2 < A_2B_2 = Q_{count} = -0,33$ smaller than $Q_{table} \alpha = 0,05; 4; 12 = 4,2$ or $Q_{count} < Q_{table}$, at the significance level $\alpha = 0,05$, thus H_0 is rejected and alternative hypothesis of H_1 is accepted. It is known that the average value of A_1B_2 group is 23,33 and A_2B_2 of 23,83. Because the average value of $A_1B_2 = 23,33 < A_2B_2 = 23,83$. It can be concluded that student critical thinking skill which given with inquiry method based on information literacy and who have low critical thinking skill lower than the student who given conventional learning method and have low critical thinking skill.

The first hypothesis testing shows that there are differences between student who given using information literacy for inquiry based learning with the student who given conventional learning method. The second hypothesis there is the interaction impact between inquiry learning method bases on information literacy and student critical thinking skill. The third hypothesis testing showed that student critical thinking skill who are given with inquiry learning method bases on information literacy and high critical thinking skill higher than student who given conventional method and have high critical thinking skill. The last hypothesis result explains that critical thinking skill on student who are given information literacy for inquiry based learning and have low critical thinking skill lower than student who given posing problem learning method and have low critical thinking skill.

IV. CONCLUSION AND SUGGESTION

Based on data analysis, the result of testing requirements analysis, the result of hypothesis testing, and the discussion of the research, it can be seen that (1) student's critical thinking skill among the group of the student who given with information literacy of inquiry learning method is higher than the student who using conventional learning method (2) there are impacts on the interaction between inquiry learning method and student's critical thinking skill (3) student's critical thinking skill who given with information literacy of inquiry learning method is higher than student who using conventional learning method.

Based on these conclusions it can be suggested that there needs to be a further research method for efforts to improve students' critical thinking skills as a way to maximize the potential of young generations in equipping themselves from social radicalism to life.

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AUTHORS

Firs Author – Nurul Ilmiyah, Postgraduate Students, Primary Education Study Program, State University of Surabaya, e-mail: nurul.17070855429@mhs.unesa.ac.id

Second Author - Waspodo Tjipto Subroto, Doctorate, Primary Education Study Program, State University of Surabaya, e-mail: waspodosubroto@unesa.ac.id

Third Author - Nasution, Doctorate, Primary Education Study Program, State University of Surabaya, e-mail: nasution@unesa.ac.id

Correspondence Author - Nurul Ilmiyah, nurul.17070855429@mhs.unesa.ac.id, +62 81331806504