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Development of Students' Historical Thinking Skills Through the Project-Based Learning Model

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Abstract

This study aims to see the effect of the Project-Based Learning model on the development of students' historical thinking skills. The research method used was a quasi-experimental design with a pretest-posttest control group design used. The population in this study were all students of class X, amounting to 354 students with the sampling technique using random sampling techniques. The data was collected by using a description test to see students' historical thinking skills. Data analysis was performed using the t-test independent sample t-test at a significant level of 5% to determine whether there was an effect of treatment or not. The research findings show that there is a positive and significant effect of the project-based learning model (PjBL) on students' historical thinking skills which is confirmed by a significance value of 0.000. Based on the N-Gain value, the PjBL model gave the effect of increasing and developing historical thinking skills by 41%, while the conventional learning model used in the control class only had an effect of 10% on the development of students historical thinking skills. Thus, it is concluded that the project-based learning model (PjBL) has a positive influence on the development of students' historical thinking skills.

Keywords: Historical Thinking Skills, Higher Order Thinking Skill (HOTS), Historical Learning, Learning Models, Project-Based Learning

Introduction

Historical thinking skills have become the main goal in teaching history in schools. Studies show that historical thinking has an important role in building critical thinking in studying history (Seixas, 2017; Powell, 2019). Students' skills in building an understanding of the past, searching for, and finding historical sources, and analyzing every past event by looking at their pain to the present and the future are fundamental in building historical narratives. Historical thinking skills have become a real solution in studying past events critically (Subiyakto & Widyanti, 2020). Historical thinking skills do not only teach students how to remember the names of characters, dates of events, and places of events. However, historical thinking trains students to understand that history learning must be based on sources about causality that occurs in continuity and change by taking biases from various critically selected documents (Anis et al., 2020). Historical thinking skills can increase cognitive abilities in exploring complex and abstract ideas. Thus, through historical thinking skills,

students can understand critically and imaginatively various aspects of life. Historical thinking skills allow students to understand how historians reconstruct the past using various existing resources (Hamid et al., 2019).

Historical thinking skills are one of the higher-order thinking skills in history learning. Higher-order thinking skills are needed for students in problem-solving and decision making in various fields of life (Retnawati et al., 2018). However, in reality, students' historical thinking skills are currently not well developed. Most of the learning process is carried out in the classroom with more emphasis on the concept of memorizing. Students are more emphasized on memorizing facts and finding the correct answers rather than analyzing and evaluating them critically. Students tend to accept the "final" concept and are encouraged to fully believe what the teacher teaches. Thus, students who study history tend to see the causes of an event from one dimension and what happens is that students understand that a historical event occurs by a single cause (Anis, Sriwati, & Mardiani, 2020). Hamid et al (2019) found that the low interest and interest of students in learning history was partly due to the inaccuracy of the learning model used by the teacher. The conventional learning model with the lecture method results in students having no experience in the process of looking for, finding, to prove the concept. Historical thinking skills as one of the goals of learning history as stated in the 2013 Curriculum emphasize students' skills in historical research. Students are required to seek, discover, dig deeper and criticize historical narratives, to form reasonable conclusions about the past. Thus, to develop these skills, a learning model is needed that can provide opportunities for students to be directly involved in reconstruction activities and historical research.

Project-based learning (Project Based Learning) is a learning model that is oriented towards real action in the form of cooperation between students in solving a problem. This learning model has long been used by many educators as one of the innovative learning practices that develop a learning process based on challenges or problems that lead students to investigate, make decisions, design, and finally conclude with a product (Uziak, 2016). Project-Based Learning (PjBL) has the potential to sharpen students' critical thinking skills. The main principles of PjBL are problem-oriented, project-based, multidisciplinary, student-centered, and collaborative. PjBL has the main benefit as a learning model that can support sustainable and contextual education and enhance students' higher-order thinking. PjBL provides opportunities for students to carry out in-depth investigations of real topics (Altun et al., 2009), integrate knowledge, and present the results they learn (Kubiatko & Vaculova, 2011). Besides being able to develop students' ideas for creating problem solutions, finding available resources, presenting information search results, and evaluating their findings (Kubiatko & Vaculova, 2011), PjBL also supports constructivist principles (Kwan and Wong, 2012), working with others, independent and active student involvement (Cakici and Turkmen, 2013). Thus, through the PjBL model, it is hoped that students can be actively involved in the real activities of reconstructing historical events that will involve several dimensions of historical thinking skills. Based on the above background, this study aims to develop students' historical thinking skills through the Project-Based Learning model.

Literature Review

Project-based learning (PjBL) offers students an authentic, interesting, and complex problem where students must find solutions to these problems based on existing data (Repko, Szostak, & Buchberger, 2017). PjBL learning integrates several concepts and procedures in learning activities to improve student skills. The PjBL model is designed to train students to

develop interdisciplinary skills by providing opportunities to formulate creative solutions and practice collaboration skills between students. PjBL aims to increase active participation and motivation and create independent learners in learning the subject matter. The study of Fajarwati, Susilo & Indriwati (2017) shows that it can improve higher-order thinking skills.

High-level thinking in history learning is also known as Historical Thinking Skill and Historical Reasoning. These two skills require students to be actively involved in historical investigations. Students are allowed to develop higher-order thinking skills through the reconstruction of historical events with scientific research steps (Seixas, 2017; van Boxtel & van Drie, 2018). The ability of students to build a correct understanding of history through the activity of searching for and finding historical sources, comparing any information from data sources, analyzing, and concluding is the core of historical thinking skills and historical reasoning skills (Gestsdóttir, van Boxtel, & van Drie, 2018). The objectives and steps of historical thinking are in line with project-based learning steps (PjBL). PjBL provides opportunities for students to gain hands-on experience through project-making activities with complex, challenging, and demanding tasks for students to design, solve problems, investigate, decide, and make conclusions so that students are actively involved in the learning process (Ardianti, Pratiwi, & Kanzunuddin, 2017).

The following are the research hypotheses tested in this study, namely:

H0: There is no positive and significant influence between Project Based Learning (PjBL) and historical thinking skills

H1: There is a positive and significant influence between Project Based Learning (PjBL) and historical thinking skills

Research Methods

The research method used in this research is a quasi-experimental design with a pretest-posttest control group design. The research design is as follows:

Table 1.
Research Design

Group	Pretest	Treatment	Posttest
Control	**O_1**	**-**	**O_2**
Experiment	**O_1**	**X**	**O_2**

Table 1 illustrates O1 = historical thinking skills before being treated (pretest), O2 = historical thinking skills after being given treatment (posttest), X = Project Based Learning (PjBL) model. The population in this study were all students of class X, amounting to 354 students. The sampling technique used a random sampling technique with a total of 104 students. The experimental class uses the Project-based learning model (PjBL) and the control class uses conventional learning. This is done to make it easier to see the differences and analyze the results of the two classes so that a conclusion can be drawn. The data collection technique was carried out by using a description test to see students' historical thinking skills. Data analysis was performed using the t-test independent sample t-test at a significant level of 5% to determine whether there was an effect of treatment or not. But before doing the t-test, the normality and homogeneity tests were carried out on the historical thinking skills data obtained. Statistical analysis of the research data was carried out using the IBM SPSS version 25 software. Data on the increase in historical thinking skills were calculated using the N-Gain test with the following formula:

$$g = \frac{\text{Posttest Score} - \text{Pretest Score}}{\text{Maximum Score} - \text{Fretes Score}} x100\%$$

Table 2. Criteria for the N-Gain Score

N-Gain Score interval	Category
g > 0.7	High
0.3 < g ≤ 0.7	Middle
g ≥ 0.3	Low

Result

Data analysis was performed using the independent sample t-test by first doing the prerequisite test, namely the normality and homogeneity test to determine whether the data used were normally distributed and homogeneous or not. Researchers collected data in the form of pretest and posttest results of historical thinking skills from the control class and the experimental class. The highest score (Max), lowest score (Min), average (Mean), and Standard Deviation (SD) were calculated for both classes. The following is a summary of the results of the pretest and posttest data analysis.

Table 3.
Descriptive results of pretest and posttest data analysis

Class	Pretest				Postest			
	Min	Max	Mean	SD	Min	Max	Mean	SD
Control	40	75	62.60	7.309	50	80	66.15	8.379
Experiment	45	80	67.12	8.480	60	90	80.48	7.492

Based on table 2, it is known that the results of the pretest and posttest for each class are different. Based on the data, it is known that the highest average value is obtained from the posttest experimental class with a score of 80.48. The data in Table 2 shows that there is an average difference between the pretest and posttest for the two groups. So, mathematically there are differences in historical thinking skills between the treated class (experiment) and the untreated class (control). Furthermore, to see whether there is an effect of using a project-based learning model on students' historical thinking skills, a hypothesis is tested using the independent sample t-test. However, before carrying out the t-test, the prerequisite test is first carried out, namely the normality test and the homogeneity test. The results of the normality and homogeneity test of research data are presented in the table below:

Table 4.
Normality test results

Tests of Normality							explanation
	Kolmogorov-Smirnov[a]			Shapiro-Wilk			
	Statistic	df	Sig.	Statistic	df	Sig.	
Pretest Test Results for Control Class	.150	52	.105	.941	52	.112	**Normal**
Posttest Test Results for Control Class	.158	52	.102	.938	52	.110	**Normal**
Pretest Test Results for Experimental Class	.209	52	.201	.890	52	.210	**Normal**
Posttest Test Results for Experimental Class	.224	52	.207	.895	52	.205	**Normal**
a. Lilliefors Significance Correction							

Table 5.
Homogeneity Test Results

Test of Homogeneity of Variances						explanation
		Levene Statistic	df1	df2	Sig.	
Control Class Test Results	Based on Mean	1.031	1	102	.312	**Homogen**
	Based on Median	.890	1	102	.348	
	Based on Median and with adjusted df	.890	1	99.435	.348	
	Based on trimmed mean	1.042	1	102	.310	
Experimental Class Test Results	Based on Mean	.423	1	102	.517	**Homogen**
	Based on Median	.370	1	102	.544	
	Based on Median and with adjusted df	.370	1	98.430	.544	
	Based on trimmed mean	.351	1	102	.555	

Based on tables 4 and 5 above, it is known that the data is normally distributed and homogeneous with a significance value greater than 0.05. Thus, hypothesis testing can be done using the independent sample t-test. The results of the t-test are presented in table 6.

Table 6.
The results of the t-test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Hasil uji keterampilan berpikir historis	Equal variances assumed	1.611	.207	-9.191	102	.000	-14.327	1.559	-17.419	-11.235
	Equal variances not assumed			-9.191	100.750	.000	-14.327	1.559	-17.419	-11.235

Based on table 6, it is known that the significance value of t -9191 is 0.000 (less than 0.05) so that it can be concluded that there is a significant effect of using project-based learning models on students' historical thinking skills. After conducting the t-test, to find out how much influence the PjBL model has on students' historical thinking skills can be seen from the N-Gain score. The following shows the N-Gain value of historical thinking skills.

Table 7.
N-Gain Score

Class	Score	Category
Control	0.10	Low
Experiment	0.41	Middle

Based on the N-Gain value presented in table 7, it is known that the increase in the experimental class was greater than the control class. So, it can be concluded that learning with the PjBL model improves students' historical thinking skills more than learning with conventional learning models.

Discussion

The research findings show that there is a positive and significant effect of the project-based learning model (PjBL) on students' historical thinking skills which is confirmed by a significance value of 0.000. Based on the N-Gain value, the PjBL model gave the effect of increasing and developing historical thinking skills by 41%, while the conventional learning model used in the control class only had an effect of 10% on the development of students historical thinking skills. Thus, the project-based learning model (PjBL) can be used by teachers as an alternative to the history learning model to develop students' historical thinking skills.

The results of this study are in line with several research results which show that PjBL contributes to the improvement of higher-order thinking skills (Sulisworo, 2020; Kamerikar, Patil, & Watharkar, 2020; Eliyasni, Kenedi, & Sayer, 2019). The steps in project-based learning support the development of students' thinking skills in creating problem solutions, through collecting existing resources, then analyzing sources, and drawing conclusions based on the data found (Kubaitko & Vaculova, 2011). Through PjBL students are invited to think and construct concepts to provide opportunities for students to be directly involved in meaningful learning.

Learning activities that begin with observation, discussion, analyzing, and synthesizing concepts, topics, or problems in learning can activate higher-order thinking skills. Project-based learning (PjBL) is based on a constructivist view that promotes student activeness in reconstructing knowledge (Han, Yalvac, Capraro & Capraro, 2015). This is in line with the principle of historical thinking skills that students are not only recipients of information and then remember it, but students are invited to actively reconstruct historical events through scientific research steps. Thus, based on the above discussion, it is concluded that the project-based learning model (PjBL) has a positive influence on the development of students' historical thinking skills.

Conclusion

The research findings show that there is a positive and significant effect of using the project-based learning model (PjBL) on students' historical thinking skills which is confirmed by a significance value of 0.000. The N-Gain value shows that the project-based learning model (PjBL) has an effect of 41%, while the conventional learning model only has an effect of 10% on the development of historical thinking skills. Based on these findings, it is concluded that the project-based learning model (PjBL) has a positive and significant influence on the development of historical thinking skills. PjBL encourages the active participation of students in the learning process. Students are required to be directly involved in solving problems through collaborative activities between groups. Through PjBL learning steps students are stimulated to develop higher-order thinking skills. Thus, the project-based learning model (PjBL) is very suitable to be used in the learning process that requires students to think at a higher level, especially to develop historical thinking skills in history learning.

However, in its application, the PjBL model has several weaknesses including (1) the lack of student cooperation in groups, this can be seen from some students who are very dominating and some students who look passive in groups, so the results obtained are also not optimal; and (2) the lack of guidance from teachers in the project completion process so that students experience difficulties in certain parts of the activity. To overcome the weaknesses of implementing the project-based learning model (PjBL), the authors provide suggestions including (1) the need for an even distribution of tasks between students in groups, all group members work according to their duties in completing a project, so that no group member is very domineering or too passive in working together to complete project assignments, and (2) teachers need to be good facilitators to guide students in completing assignments. the given project, so that some of the difficulties encountered by students can be overcome. Furthermore, further research is needed, especially on the application of project-based learning models to develop higher-order thinking skills.

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