Improving Student' Historical Thinking Skills Using the Inquiry-Based Learning Model

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ABSTRACT: The aim of this study is verifying students' historical thinking skills using the inquiry-based learning model. Inquiry-based learning model can involve students actively in the process of building knowledge through research questions to conduct investigations. The research method used is a quasi-experimental with one group pre-test post-test design. The paired sample t test results show the sig (2-tailed) value is 0.000 which means that the value is less than 0.05. The result of this study indicates that there is a significant difference in the pre-test and post-test of the ability of historical thinking skills of students after participating in learning using the inquiry-based learning model. Based on the results of this study, to improve historical thinking skills, it is necessary to apply a learning model that fosters simple inquiry activities and presents real-life phenomena in the classroom. Inquiry-based learning is one of the new breakthroughs.

KEYWORDS: historical thinking skills, inquiry-based learning, history learning

INTRODUCTION

Historical thinking skills are the main goal of learning history because these abilities are the basics that students must have, in reconstructing the past to take meaning from event that has occurred (Iqrima, B., et al. 2020). According to Wineburg, (1999), historical thinking skill is to see every motive that causes an event to occur and to be able to distinguish the facts so as not to swallow historical information. Historical thinking skills are needed to give meaning to any historical information received (Talin, R. 2015). Learners can provide an understanding of complex facts and take lessons for their current lives through historical events. In real life, historical thinking skills help learners to think systematically, solve problems in a directed manner according to guidelines, and be able to make decisions (Politsinsky, E., et al. 2015). Learners can analyze and identify the factors behind an event in the community so that it can be used as an evaluation to make better decisions, so that mistakes that occurred in previous events are not repeated.

Responding to the urgency of historical thinking skills, in fact, previous research state students’ historical skills are still relatively low (Sasha, Hedya, 2019, Miki, Yuta. 2017). This is related to the most common problem experienced by history learning, which seems boring and uninteresting (Margison, et al. 2021, Dwijayanti, L., et al. 2015; Lau Yi Yi, 2019). The learning environment is also not supported by problem-solving-based activities, discussions, building knowledge through primary source investigations, and educators lack encouragement for learners to think historically (Arthur, J & Robert P. 2000; Yosanne, 2015; Zamilova, R. 2021). Mumpford (1991) argues that learning history requires an approach model that can encourage students to analyze and think critically about historical facts, so that learning does not only lead to memorization of the facts of events.

Therefore, this research needs to develop innovative learning models that can facilitate these skills. Educators must be creative in creating innovative learning to optimize learning, involve students actively so that they develop character, knowledge, and behave a good person (Umamah, 2017). Educator must be abandoned and create a new learning model. One of the recommended models is inquiry-based learning. Rebecca, B (2017) inquiry-based learning model is a learning model that involves students actively in the process of building knowledge through research questions to conduct investigations, providing interesting historical investigation tasks, and accessible historical sources will support the improvement of students' historical thinking skills (Hicks, D., et al. 2011). Learners' historical thinking skills can be developed through questioning. During interaction, learners can develop their ability to think historically (Jordan, M., et al. 2019).

Inquiry-based learning is a learning activity that involves learners in a problem by asking research questions and then testing the hypothesis in an experiment (Reitinger, 2016 in Manuela, H. 2020; 23). The inquiry-based learning model in learning is often centered on natural sciences or science, but it is also very efficient to be applied in learning history and other social sciences, because inquiry is part of the nature of historical science and the work of historians (Carrasco, C., et al. 2016). Studying history

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means making efforts to find the truth related to life in the past, thus learning history must direct students to find answers through researching, collecting, and exploring evidence found. These research activities can be supported by using the inquiry-based learning model (Talin, R. 2015). This model encourages learners to ask questions critically and seek answers through inquiry activities.

The inquiry-based learning model can be an alternative to develop historical thinking skills in history learning, because this model has a series of activities that can support these skills, including: (1) capacitate students’ ability to answer the formulation of problems in an event in the past which is then related to everyday life; (2) through investigative activities, encouraging learners to analyze and extract evidence from sources and historical testing, in addition learners learn to implement historical methodology; (3) learners gain the ability to reveal the cause and effect of historical events based on the sources that have been found, to then be compiled in the form of historical stories; and (4) learners can connect past and present phenomena and take the values or wisdom contained in them (Gómez, Ortúa, & Molina, 2014).

This research has novelty including the application of the inquiry-based learning model in history learning to improve historical thinking skills, where several previous studies have only focused on implementing the model in science subjects. In addition, students’ historical thinking skills have not fully improved, so it is necessary to have a learning model that supports the improvement of these abilities, namely inquiry-based learning that encourages them to investigate like historians. Thus, creating an active, interactive, and efficient history learning. This research will find the syntax, support system, and instructional impact of the inquiry-based learning model according to the needs of historical thinking skills. The main objective of this research is to solve the problem of (1) how is the implementation process of the inquiry-based learning model in improving students’ historical thinking skills; (2) whether the implementation of the inquiry-based learning model can improve students’ historical thinking skills.

RESEARCH METHOD

This research uses quantitative methods which are the process of collecting and analyzing data numerically to answer questions and test hypotheses that have been determined (Geoffrey, E. M. 2019: 6). The type of research used is experimental research. The quasi-experimental design applied in this research is pretest postest one group design. The following is a table of this research design:

Table 1. Research Design

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-test</th>
<th>Treatment</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>O₁</td>
<td>X</td>
<td>O₂</td>
</tr>
</tbody>
</table>

Description: O₁: The pretest was given to determine the initial condition of the historical thinking ability of students; X: implementation of learning using inquiry-based learning model; O₂: posttest is given to see the final condition of students' historical thinking ability after being taught the inquiry-based learning model.

The steps of data collection were carried out in the following stages: (1) researchers prepare syllabus, lesson plans or teaching modules, student worksheets, and assessment instruments that have been validated by experts; (2) the researcher gave a pretest to determine the initial ability of students' historical thinking skills by categorizing the results into four categories, namely very good, good, good enough, and less good; (3) the researcher conducts learning by giving students worksheets (LKPD) and then observing their learning activities using the historical thinking skill assessment rubric instrument; (4) after three face-to-face sessions, at the end of the lesson, students were given a posttest to determine the final ability of their historical thinking skills by categorizing the results into four categories, namely very good, good, good enough, and less good.

The population in this study were all students of class X SMAN Mumbulsari in the 2022/2023 school year which amounted to 252 people. The sample selection used proportional random sampling to determine the research class of 108 students. The instruments in this study consisted of teaching modules, student worksheets, pretest and posttest of students' historical thinking skills, and historical thinking skills assessment rubric sheets. The scale used is a Likert scale with intervals of 1-4. There are several data analysis procedures in this study, including: (1) validity and reliability tests using person correlation statistics and cronbach's alpha; (2) normality test on the respondent's class using kolmogrov smirnov; (3) analysis of average differences using the paired sample t test to determine whether there are differences in pretest and posttest historical thinking skills of students after being taught using the inquiry-based learning model.

FINDING/RESULTS

The results of research related to solving the problems described in the introduction. First, how is the process of implementing the inquiry-based learning model in improving students' historical thinking skills on the material of the life of Hindu Buddhist Kingdoms in Indonesia, the implementation of the model is applied with the following syntax: (1) Learners observe a map showing the location of Hindu-Buddhist Kingdoms in Indonesia, they will be encouraged to think about problems
and formulate questions based on the educator's instructions. The activities in this first syntax encourage learners to improve the historical thinking skill indicator, namely chronological thinking. (2) Learners determine questions that are relevant to the problem, such as how the government of the Srivijaya Kingdom lived during its rule. (3) Learners formulate hypotheses or temporary answers to the questions that have been asked. Syntax 2 and 3 help learners improve their historical understanding which is the second indicator of historical thinking skills. (4) Learners are directed to collect data from various sources to answer the problem formulation that has been proposed previously. From data collection activities, students can practice simple historical research which is the third indicator of historical thinking skills. (5) Learners analyze and connect all the information that has been obtained. Then learners compile research reports and presentation materials, then present the research results in front of the class. Learners can learn to analyze and interpret history. (6) Learners evaluate the results of their investigation, thus encouraging them to improve their ability to analyze historical issues which is the fifth indicator of historical thinking skills.

![Figure 1. Syntax of inquiry-based learning to improve students' historical thinking skills.](image)

Next, it will be presented whether the implementation of the inquiry-based learning model can improve students' historical thinking skills. Researchers utilize teaching materials that have been developed, including independent curriculum teaching modules, student worksheets, pre-test and post-test historical thinking skills that have been validated and pay attention to their validity so that they are effective for use in research. An important step before implementing the inquiry-based learning model is to give a pre-test of students' historical thinking ability by categorizing the results into four categories: very good, good, good enough, and not good enough. Next, implement the model in learning and give a post-test to measure the final ability of historical thinking of students. The results of the pre-test and post-test data tabulation are as follows:

<table>
<thead>
<tr>
<th>Table 2. Recapitulation of Pre-test and Post-test</th>
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<tbody>
<tr>
<td><strong>Descriptive Statistic</strong></td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Pre-test</td>
</tr>
<tr>
<td>Post-test</td>
</tr>
</tbody>
</table>

Furthermore, the prerequisite test for analysis is the normality test. The normality test is intended to determine whether the data that has been obtained during the research is normally distributed or not. Calculation of the normality test using the Kolmogrov-Smirnov formula on SPSS version 25 for windows. The decision is made if the significance value is more than 0.05 (> 0.05) then it is normally distributed. Table 3 shows that the pre-test and post-test values have a significance value of more than 0.05 (>0.05), meaning that both data are normally distributed. The results of the normality test can be seen in the following table:

<table>
<thead>
<tr>
<th>Table 3. Normality Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Historical Thinking Skill</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Next, a statistical test was conducted using the paired sample t test to test whether there was a significant difference in the historical thinking ability of students before and after the implementation of the inquiry-based learning model. Table 4 shows the
sig (2-tailed) value is 0.000 which means that the value is less than 0.05. The conclusion is that there are differences in the pre-test and post-test of students' historical thinking skills after participating in learning using the inquiry-based learning model.

Finally, to determine the magnitude of the difference, a further test was carried out in the form of an effect size test using the following formula:

\[ d = \frac{M^2 - M^1}{\sqrt{SD_1 + SD_2}} \]

Description:
- \( M_1 \) = Mean of treatment group
- \( M_2 \) = Mean of comparison group
- \( SD_1 \) = Standard Deviation Group 1
- \( SD_2 \) = Standard Deviation Group 2

Based on the calculation results, the Cohen's d value is 2.86 which is included in the large effect size category. So, it can be concluded that there is a big difference in the ability of historical thinking skills of students before and after being taught using the inquiry-based learning model.

**Table 5. Effect Size Criteria**

<table>
<thead>
<tr>
<th>Value</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01</td>
<td>Small Effect</td>
</tr>
<tr>
<td>0.06</td>
<td>Moderate Effect</td>
</tr>
<tr>
<td>0.14</td>
<td>Large Effect</td>
</tr>
</tbody>
</table>

**DISCUSSION**

The results of this study indicate that the inquiry-based learning model has an influence on the ability of historical thinking skills of students. This is reinforced by several previous studies which state that the model facilitates learning by asking research questions then students independently seek answers by conducting investigations (Rebecca, B. et al. 2017: 9; Azizah, et al. 2020; Foangeraigo, T., et al. 2022: 72; Gasterland, 2021; Öztürk, et al. 2022). The results of the study are related to the indicators of historical thinking skills in the chronological thinking section, historical understanding, and simple research skills (National Standard for History, 1994). Inquiry-based learning is very effective and efficient to be implemented in learning history or other social sciences because inquiry is part of the nature of historical science and the work of historians (Carrasco, C., et al. 2016; Warner & Myers, 2006). Studying history means making efforts to find the truth related to life in the past, thus learning history must direct students to find answers through researching, collecting, and exploring evidence found.

The use of this inquiry-based learning model follows the way scientists work, which encourages students to conduct research, formulate hypotheses, investigate, analyze data, and make conclusions (Hofstein, et al. 2004 in Kapici, H., et al. 2020: 5-6). Previous research shows that the inquiry-based learning model encourages students to think historically (Hagglund, B. 2022). Learners will conduct historical investigations to reconstruct and reinterpret past events using a variety of sources, checking their credibility, validating, and looking for causality (Hagglund, B. 2022, Witt & Ulmer. 2010). Thus, learning activities in the Inquiry Based Learning model effectively encourage students to think historically so that it affects their learning outcomes which are getting better.

Other research also states that this model encourages learners to conduct simple historical investigations, reconstruct and reinterpret past events using various sources, validate the content of historical stories, and look for causality chronologically (Shih., et al. 2010: 51 in Hagglund, B. 2022: 22; Witt & Ulmer. 2010: 272; Talin, R. 2015). Through these active activities, it can help learners develop their historical thinking skills. The implementation of the inquiry-based learning model follows the way scientists work, which is to encourage students to conduct simple research, formulate hypotheses, conduct investigations by collecting various information, analyze the information that has been obtained, and make conclusions (Kapici, H., et al. 2020).
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Felder and Brent (2003) suggested to history educators to ask high-level questions to their students, these questions can direct students to think historically. This is in accordance with the steps of the inquiry-based learning model where the initial activity is carried out by asking high-level questions to encourage students to have critical thinking skills.

Inquiry-based learning in the form of using the inquiry-based learning model can encourage better integration of students in the classroom (Baron, C. 2013). This raises questions for learners about combination of materials and historical investigations need to be undertaken to stimulate truly historian-like historical thinking (Christine, B. 2013). This learning model is useful for integrating all aspects of research activities into history learning, for example by conducting a simpler research process that is organized independently by students (Bihrer, A. 2019). Research conducted by Olivares-Tirado Sergio (2021) states that inquiry-based learning is an effective strategy in learning history. In this situation, memorization is replaced by reflection on content, the result is more meaningful and significant historical learning. The formation of historical thinking skills requires a transformation of current historical didactics that can replace the traditional lecture methodology with active learning using the inquiry model (Gomez, C. 2020). By prioritizing the way or concept of thinking makes learners confident in carrying out intellectual activities, because Inquiry helps solve history learning problems and supports learners to find something at the “certain” level through data support, analysis, interpretation, and verification.

Historical thinking skills are the ability of learners to distinguish between the past, present, and future, evaluate evidence, analyze, and compare historical stories from the past, interpret historical records, and construct historical stories based on their understanding (Hedya, S., et al. 2019). This skill is very useful for students to become more critical in dealing with changing global conditions that are full of uncertainty, by having historical thinking skills, students know how to manage the information they get, so they do not absorb bias historical information (McGrew., et al. 2018). According to Johnston & Sheehan (2016) historical thinking skills prioritize how students think and study the past more critically. Historical thinking is the ability to reason to analyze past events and infer events that will occur in the future (Miki, Y., and Kojiri, T. 2018). Therefore, this skill is important for learners to be able to understand the intentions and backgrounds of the people involved in historical events, consider the similarities between historical events and modern situations, and envision solutions if similar events occurred in modern situations.

Many scholars through their research, have proven that the Inquiry Based Learning model has improved learning that is more effective because it is learner centered (Korkman, et al.2020). This model has encouraged learners to have strong knowledge from the results of their investigations, thus affecting the improvement of academic achievement (Condon & Wichowsky, 2018; Song & Kong, 2014). Through inquiry activities, learners will conduct historical research to reconstruct and reinterpret events in the lamp period using various sources, checking their credibility, validating, and looking for causality (Shih., et al. 2010: 51 in Hagglund, B. 2022: 22). The role of educators today is not only to teach historical facts, but educators are required to teach scientific inquiry.

Related to the first historical thinking skill indicator, namely chronological thinking. This ability plays an important role for students in solving problems in their daily lives. They are encouraged to think systematically, namely efforts to think about information in an organized and directed manner in accordance with predetermined guidelines, so that this helps a person solve problems based on systematic understanding (Ben-Zvi Assaraf and Orion, 2010). Frank (2000 in Ben-Zvi Assaraf and Orion, 2010) states that systematic thinking ability helps learners solve problems in their daily lives because it can produce many solutions, discover a lot of new knowledge, and evaluate events in the surrounding environment. In addition, this ability makes it easier for learners to express opinions, minimize errors because they act according to procedures, and do things from simple things to complex levels.

The second indicator is historical understanding, this ability is useful for students in living their lives. The ability to understand something makes it easy to capture the meaning or meaning of an event and then apply what has been understood in the circumstances or life situations experienced by students (Gomez, Ortuno, & Molina, 2014). The third indicator is historical analysis and interpretation, this ability makes it easier for learners to solve and resolve a problem (Politsinsky, E., et al. 2015: 384). Through analytical skills, learners can think about the causes of a problem and help make decisions in their daily lives. Learners will get an overview of the background of their current life. So that learning about past events provides learning and understanding that there is continuity with today's life (Rusvitaningrum, Y., et al. 2018). Thus, learners gain a broader understanding of life.

The fourth indicator is the ability of historical research that helps learners find and provide the best solution from the results of their investigation of a problem. The results of their findings can be used as a solution to social symptoms that arise in the surrounding community. The last indicator is analyzing historical issues which gives learners the ability to analyze and identify the factors behind an event in the community so that it can be used as an evaluation to make better decisions, so that mistakes that occurred in previous events are not repeated (Rusvitaningrum, Y., et al. 2018). Similarly, learning history requires emphasizing important world issues as a basis for historical understanding, knowledge enrichment, and analysis.
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CONCLUSIONS
The inquiry-based learning model influences students' historical thinking skills, because the syntax of the inquiry-based learning model is related to the indicators of historical thinking skills. The first syntax in the form of observation activities encourages students to think about a problem and formulate questions to increase the indicators of chronological thinking. The next syntax, students formulate hypotheses from the questions posed earlier, the preparation of hypotheses requires a strong understanding of theory, and this can encourage indicators of historical understanding. Furthermore, learners are directed to collect data to answer the problem formulation. Through this activity, learners are encouraged to conduct simple historical research. Analysis activities carried out after data collection help learners improve indicators of historical analysis and interpretation. From the series of activities that have been carried out, learners evaluate the results of their investigations, thus encouraging the ability to analyze historical issues. A series of activities carried out by learners can support all indicators contained in historical thinking skills.

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