International Journal of Evaluation and Research in Education (IJERE)
Vol. 13, No. 6, December 2024, pp. 3993~4003
ISSN: 2252-8822, DOI: 10.11591/ijere.v13i6.30388

Developing an online project-based assessment instrument for assessing students' historical thinking skills

Ofianto[1], Nanda Saputra[2], Tri Zahra Ningsih[3], Surya Aymanda Nababan[4], Zul Asri[1], Aman[5], Johan Setiawan[6]

[1]History Education, Faculty of Social Science, Universitas Negeri Padang, Padang, Indonesia
[2]Madrasah Ibtidaiyah Teacher Education, Faculty of Education, Sekolah Tinggi Ilmu Tarbiyah Al-Hilal Sigli, Sigli, Indonesia
[3]Educational Evaluation Research Doctoral Program, Graduate School, Universitas Negeri Yogyakarta, Sleman, Indonesia
[4]History Education, Faculty of Teacher Training and Education, Universitas Islam Sumatera Selatan, Palembang, Indonesia
[5]History Education, Faculty of Social Sciences, Law, and Political Sciences, Universitas Negeri Yogyakarta, Sleman, Indonesia
[6]History Education, Faculty of Teacher Training and Education, Universitas Muhammadiyah Metro, Lampung, Indonesia

Article Info

Article history:

Received Feb 23, 2024
Revised Aug 13, 2024
Accepted Aug 23, 2024

Keywords:

Evaluation
Historical thinking
History
History learning
Project assessment

ABSTRACT

This study aims to provide a comprehensive evaluation of historical thinking that can be applied to all aspects of online historical thinking skills. The analysis proposed by Gall was used in developing the model and it involves the following stages: instrument design; instrument development; analysis; and initial data collection. A total of 148 high school students participated in this study, and data were gathered through literature analysis sheets, interviews, needs analysis questionnaire for the development of e-project skills assessment tools, expert validation test, and e-project assessment. The findings showed that the e-project is valid and reliable for evaluating historical thinking skills in remote learning, with all components having a high reliability rating of 0.78 and validity values ranging from 0.77 to 1.30. Subsequently, a valid, reliable, and acceptable e-project website was created to assess student's competence in historical thinking. This research offers options for teachers to effectively assess and monitor students' historical thinking skills while also improving a more interactive and interesting learning style.

Corresponding Author:

Tri Zahra Ningsih
History Education, Faculty of Teacher Training and Education, Universitas Negeri Yogyakarta
Karang Malang, Caturtunggal, Depok, Sleman, Yogyakarta 55281, Indonesia
Email: trizahra.2023@student.uny.ac.id

1. INTRODUCTION

The importance of historical thinking has been recognized by many nations as a crucial aspect of learning [1], [2]. According to Ningsih *et al*. [3], historical thinking skills is the ability to analyze and utilize information as well as historical data in order to understand the past. The basis for the development of this skill is the constructivist theory, which emphasizes the active involvement of students in knowledge construction [4]. To attain the desired competencies, there is a need to incorporate both conceptual knowledge and historical methodologies in the study [5]. This leads to the development of more complex skills in knowledge discovery. Numerous studies have shown that historical thinking can assist in analyzing historical events critically [6]. Therefore, a technique that encourages students to actively participate in constructing their historical knowledge through the process and the assessment system is vital for the development of historical thinking skills [7].

The assessment is a crucial aspect of learning and it is conducted to evaluate what students have learned and the skills they need to have acquired after the learning process is complete [8]. The assessment

plays a vital role in the learning process because teachers and educational administrators use it to determine the effectiveness of learning experiences, activities, and techniques [9]. Furthermore, teachers and other stakeholders can utilize the outcomes of the assessment activities as indicators to gauge the success of the learning objectives and the need for further action. Based on the significance of assessment in the educational process, every educator needs to have the ability to evaluate students' knowledge and skills in relation to the established indicators and objectives. It is crucial to note that the assessment process employed is of utmost importance when determining a student's potential [10].

The findings from interviews with History teachers in Indonesia, particularly in West Sumatra, reveal that a majority of them are aware of the current absence of assessment tools for evaluating historical thinking abilities in history education. These educators acknowledge the significance of historical thinking skills in facilitating students' in-depth comprehension of past events and more effective analysis of historical contexts. Nevertheless, they encounter a primary obstacle in the limited availability of appropriate instruments for gauging historical thinking skills. Overall, they recognize the importance of enhancing the assessment of historical thinking skills as an essential aspect of history education to foster students' critical and adept historical thinking capabilities.

The assessment of historical thinking skills has been the subject of several studies, an example is the One Hour Test developed by Seixas *et al.* [11], consisting of multiple-choice questions, short answer tests, and construct response questions. The One Hour Test focuses on evaluating the use of primary source evidence and ethical dimensions based on the subject of Ukrainian detention in Canada during World War I as the assessment material. Another study by Maryani [12] utilized a multiple-choice approach to assess historical thinking skills, but this method has been criticized for its inability to accurately evaluate students' responses, the potential for guessing, and a lack of personal cognition reflected in the outcomes [13]. This evaluation model needs to be revised because it is difficult to accurately determine the talents that these categories of pupils possess. This is the reason Ningsih developed a portfolio evaluation method, however, it can only measure the use of primary sources as evidence [3]. Reisman *et al.* [14] developed a document-based assessment instrument with a written essay assessment model. Essay assessments sometimes just allow students to submit written responses without giving them the chance to come up with more original ideas.

Based on the studies conducted on historical thinking skills assessment instruments, the following are concluded i) not all aspects of historical thinking skills are currently covered by the available instruments, such as establishing historical significance, using primary source evidence, identifying continuity and change, analyzing cause and consequence, as well as understanding the ethical dimensions of historical interpretations; ii) each instrument has its unique limitations that need to be addressed; and iii) the instrument developed is limited to face-to-face learning process.

In order to address the problems with assessing historical thinking skills experienced by history teachers in West Sumatra and overcome the drawbacks of historical thinking skills assessment instruments that have been developed in the past, this study offers a new solution in the form of a project-based online assessment tool that may be used to evaluate all aspects of historical thinking skills. No one has yet created an online tool for evaluating historical thinking skills based on past findings. In the digital era, this study significantly changes how we classify and evaluate historical thinking skills, which might have a good effect on creative and pertinent educational history.

Liu *et al.* [15] highlighted several advantages of using an online assessment system, including i) the flexibility of accessing it from anywhere and anytime; ii) Online tests enable instantaneous transmission, storage, dissemination, and retrieval of student work; iii) Teachers can also customize the assessments by incorporating different elements such as graphics, music, video, or animation to cater for students' preferences. This investigation is essential due to the scarcity of studies on online tools for assessing historical thinking skills. To address the limitations of existing models, a project-based assessment approach was created. This method allows students to work autonomously, develop their learning, and produce tangible outcomes [16]. Suastra and Ristiati found that it helps to engage students in problem-solving tasks, making it possible to accurately identify and characterize their historical thinking skills [17].

2. METHOD

2.1. Participant

This study was carried out in a senior high school in West Sumatra, Indonesia. Out of four schools involved in the study, two were well-regarded, while the other two were not considered. The necessity for complete data from both high and lower-level schools influenced the choice of the participants. This study population consisted of 986 students, while a purposive random sampling technique was used to select a sample of 148 students[8], [18], [19]. This was performed to ensure that the results of the testing product accurately reflected the abilities of all students.

2.2. Research design

This study focuses on the process of development by using the modified Gall model [20]. The stages are in line with the goals and interests of this study. By modifying the Borg and Gall development model, three phases of development were obtained, namely i) requirements analysis and preliminary data collection (literature reviews, interviews, questionnaires); ii) instrument design (make definition, indicators, project tasks, expected outputs, scoring rubrics, scoring criteria); and iii) instrument development (expert validation, validity, and instrument reliability tests).

2.2.1. Stages of needs analysis and the initial data collection

In the stage of requirements analysis and initial data collection, information was obtained through literature reviews, interviews, and questionnaires. A comprehensive literature review was carried out to gather information on historical thinking skills and project assessment instruments. To gain insights into this classroom assessment, interviews were conducted with four history teachers from various schools, focusing on the use of project assessment as an evaluation tool and the need for an online tool to measure historical thinking skills. Additionally, a survey was administered to 80 students to gather their opinion on the importance of creating an electronic project tool for historical thinking skills assessment.

2.2.2. Design stage

During the instrument design stage, a framework for the assessment tool was constructed based on the analytical results. The e-project instrument for measuring historical thinking skills is comprised of several components, including the definition, indicators, project tasks, expected outputs, scoring rubrics, and scoring criteria.

2.2.3. Development stage

The stages of test development were arranged in accordance with Suastra and Ristiati [17], which include evaluating expert validation, as well as determining validity and reliability. The test design involves several crucial steps, namely constructing the instrument grid, item writing, item repair, and item assembly. Expert validation was conducted by a team of specialists, including linguists, instrument specialists, and material experts. Each area is represented by two individuals who were chosen for their knowledge and academic qualifications. The created instrument was subjected to a validity and reliability test to assess its ability to measure students' historical thinking skills. The validity and reliability test were performed using Quest 2.0.

2.3. Research instrument, data collection, and data analysis

The study tool consisted of several forms, namely a literature review analysis, an interview, a questionnaire to gather information, an expert validation test, and a sheet for the e-project assessment. This tool was based on a historical thinking model created by Anis in and it aimed to evaluate students' thinking skills [6]. In this study, a combination of quantitative and qualitative methods was utilized for data analysis. Expert opinions on the quality of the developed instrument were gathered through an open questionnaire, while qualitative analysis was used for further enhancement. These responses were examined in order to amend and enhance the instrument's quality during the development phase. On the other hand, the reliability and validity of the tools were assessed quantitatively using the quest program and the Rasch model. The following categories are used in this study on a scale of 0–2 or 3: i) Category 1: Can the pupil provides an incorrect response; ii) Category 2: Can the student meet the criteria with one accurate response; and iii) Category 3: Can the student be able to meet two or more required criteria.

In this current study, the Rasch model was employed to evaluate the validity and reliability of the developed instrument [21]. This choice was made because the approach satisfies the five principles of the assessment model [22], namely providing a linear scale with constant intervals, allowing for missing data, delivering precise estimates, identifying errors as well as ensuring replicable measurements and models. Furthermore, the Rasch model was applied to assess the item fit of the instrument through the use of INFIT means and INFIT means square (INFIT MNSQ), which are calculated as standard deviations. An INFIT MNSQ value within the range of 0.77 and 1.30, indicates that the item is legitimate [6].

3. RESULTS

3.1. Results of a needs analysis base on the literature

A literature review on the assessment of historical thinking skills leads to the development of learning resources, such as lesson plans, a syllabus, a concept analysis, and maps of core and fundamental competencies (RPP). Table 1 presents the results of the literature review. According to the table, it becomes apparent that the aim of teaching history in high school is to develop critical thinking skills and historical consciousness among students. Therefore, historical instruction needs to be viewed from a three-dimensional context, encompassing

an understanding of the past in relation to the present and future. From a reasonable standpoint, it is evident that studying history promotes thinking skills using scientific methods.

Table 1. Findings of literature review

Rationale of historical subjects	Learning objectives for history	Characteristics of history subjects	Scope of skills required	History learning achievements
In order for us to reflect on one another, assess, contrast, or make judgments as well as to provide us direction for a better future, history education must be able to relate numerous historical events with events that are now occurring. The purpose of history education is to focus on critical thinking abilities that will inevitably promote the development of independent people who are knowledgeable about the past and are in line with the Pancasila Student Profile.	– Develop a better understanding of oneself. – Improve one's knowledge of the nation as a whole. – Gain a better understanding of the human, spatial, and temporal dimensions. – Improve one's knowledge of development, continuity, and change. – Develop critical, reflective, contextual, imaginative, and multiperspective thinking skills. – Build your abilities to find sources (heuristics), analyze and synthesize sources (interpretation), and write about the past (historiography). – Develop a sense of nationalism and patriotism; Develop a sense of pride in the glory of the past (perennialism). – Improve the past as a social reconstruction towards the future. – Develop moral, human, and environmental values. – Develop the values of diversity and gotong royong. – Develop a sense of nationalism and patriotism. – Enhance historical awareness.	History can be researched using a variety of historically specific methods, including synchronic or diachronic (chronology). The study of history also offers opportunities for scientific learning through the steps of sourcing information (heuristics), vetting and selecting sources (verification), analyzing and synthesizing sources (interpretation), and finally drawing conclusions and reflections.	– Historical conceptual skills – Historical thinking skills – Historical consciousness – Historical research – Historical practice skills	Class X (first grade) – Through cooperation, on-site historical research, literacy, and discourse, students are able to analyze and evaluate a variety of historical events. – Students can conduct research on local history that directly or indirectly, diachronically and/or synchronously, relates to Indonesianness using primary or secondary sources and convey their findings Class XI (second grade) – Be able to develop basic historical concepts to study historical events in local, national, and global trajectories. – capable of carrying out historical research diachronically and/or synchronously using primary and/or secondary sources and then presenting the results. – be able to explain, analyze, and evaluate historical events, as well as interpret the values they contain, using historical knowledge. Class XII (third grade) – Be able to perform synchronous and/or dia-chronic historical research using primary/secondary sources and convey the results. – Be able to apply historical knowledge, to explain, analyze, and evaluate historical events from many angles and to realize their interests and abilities in the history area through post-secondary study or extra-curricular historical activities.

According to the characteristics of history subjects in the Indonesian curriculum, history learning needs to provide students the opportunity to practice acting as historians during the stages of information gathering (heuristics), critique, interpretation, and historiography [23]. Learning history necessitates that students have the ability to think critically and historically via investigative activities based on existing historical information or sources. It is important to note that the objective of learning history goes beyond merely memorizing facts such as names of characters, dates, and locations of events [24].

This demonstrates that history has to be taught and developed with the aim of encouraging learners to participate in historical study and practice. It is evident from the skills standards expected in history learning that the focus needs to shift from lower-level thinking to the development of more comprehensive historical understanding skills [3], [22]. It is expected of the class X students to be able to understand fundamental historical concepts, analyze, and evaluate different events occurring in Indonesia. They have to be proficient in using both primary and secondary historical sources to conduct local studies. It is also anticipated that class X students possess the skills to explain the events and interpret the values contained therein.

Students in class XI are intended to be able to develop fundamental historical concepts to study different events in a local, national, and global context through project assignments, debates, reading, and field trips. These students are also expected to be able to comprehend different historical occurrences in Indonesia and throughout the world, as well as explain these events using historical sources. Finally, students in class XI need to be able to derive significance from events in order to direct their present and future lives. Students in Class XII are required to be able to conduct historical studies, present the results, and critically examine events from multiple perspectives.

The purpose of history education is to develop students who have the ability to gain a comprehensive understanding of historical events through the acquisition of various skills. This aligns with the learning goals established in the education curriculum. To maximize each student's potential, various educational methods were utilized, including project-based learning, literacy exercises, group discussions, and field trips [25], [26]. The analytical step was carried out through the use of online surveys and interviews. A total of 80 students from four different schools answered the questionnaire, while interviews were conducted with four high school history teachers in West Sumatra. The results from the teacher interviews are presented in Table 2.

The interview results with high school history teachers in Padang City showed that, till present, teachers have relied on multiple choice test instruments and essay exams to evaluate their students. However, none of the teachers have utilized project assessments to evaluate students' historical thinking skills in particular. Only 25% of teachers reported having evaluated their students' historical thinking skills, implying that 75% have not assessed this competency in their students. At the end of the interview, all teachers agreed that project-based assessment was critical for evaluating students' historical thinking skills. Furthermore, questionnaires about the analysis of the needs for instrument development were distributed to the students and their responses are presented in Table 3.

Table 2. Findings of teacher interviews

No	Statement	Answer	Percentage of answer
1.	The test is used to measure how well history students are learning	Multiple-choice	50%
		Essay	50%
		Project	0%
2.	The teacher tests students' historical thinking skills.	Ever	25%
		Never	75%
3.	Instruments for measuring one's potential for historical thinking	Multiple choice and essay test	25%
4.	Is it important for teachers to evaluate students' historical thinking skills?	Important	100%
5.	Has the teacher ever assessed a project in the history class?	Ever	25%
		Never	75%
6.	Has the teacher ever used an online test?	Ever	100%
7.	The instrument used to evaluate the outcomes of the online history study	Multiple-choice	50%
		Essay	50%
8.	Applications for online testing	Task-sharing through WA group	75%
		Google form	25%
		Website	0%
9.	Is it important to assess students' historical thinking skills through projects?	Important	100%
10	Is it important to create an online assessment instrument?	Important	100%

Table 3. Findings of questionnaire answer

No	Statement	Answer	Percentage of answer
1.	Do you know about historical thinking skills?	Knowing	25%
		Do not know	75%
2.	Has the teacher ever tested students' historical thinking skills?	Ever	25%
		Never	75%
3.	Teachers utilize an assessment tool to evaluate the learning outcomes for history.	Multiple choice	67.5%
		Essay test	32.5%
4.	Has the teacher ever used a project-based assessment method?	Never	100%
5.	Has the teacher ever used an online test?	Ever	80%
		Never	20%
6.	The instrument used to evaluate the outcomes of the online history study	Multiple-choice	50%
		Essay	50%
7.	Applications for online testing	Task-sharing through WA group	85%
		Google form	15%
		Website	0%
8.	Have you ever accomplished a history-related project?	Never	95%
		Ever	5%
9	Is it important to assess students' historical thinking skills through projects?	Important	100%
10	Is it important to create an online assessment instrument?	Important	100%

Table 3 displays the results from student interviews regarding project evaluation and historical thinking skills. It was discovered that the teacher evaluated students using essay and multiple-choice test instruments, but not with a project. The students emphasized the importance of developing an online tool for evaluating their historical thinking skills.

3.2. Design stage

Based on the outcome of the analysis phase, the project assessment instrument was developed to examine historical thinking skills. The design was adjusted to align with the learning competencies and goals. The preparation process involved the following steps, including i) Constructing historical thinking skills that were consistent areas for improvement. In this instance, the Seixas historical thinking paradigm, which has six components, was employed, namely establishing historical significance, utilizing primary source evidence, identifying continuity and change, analyzing cause and consequence, taking historical perspectives, and understanding ethical dimensions of history; ii) Organizing project activities that enhance students' historical thinking skills; iii) Compiling indicators based on the identified historical thinking skills; iv) Determining the output that students are required to produce based on the competencies to be attained; v) Developing an assessment rubric; and vi) Establishing scoring criteria based on the Rasch model. The previous phases lead to the following sample design as presented in Figures 1 and 2. An online project assessment tool was developed to assess students' historical thinking skills based on the study design framework.

Figure 1. The instrument preview

Figure 2. The basic concept of historical thinking

3.3. Development stage

A validation test was then carried out by experts on the newly developed instrument to determine its effectiveness in measuring students' historical thinking skills. Six experts, including two from material aspects, assessment, and linguistics, participate in this validation test. After the expert validation test, the instrument undergoes item validity and instrument reliability tests to assess the validity of each item and the suitability of the instrument for measuring students' historical thinking skills. The results of the expert validation test, item validity, and instrument reliability are reported.

3.4. The expert validation

Table 4 shows that the experts assessed the suitability of the instruments developed each using two material experts, namely an assessment expert and a language expert. The results that can be obtained from assessment experts and language experts are presented in Table 4.

According to the results of the expert validation test, the developed instrument was deemed effective for evaluating students' historical thinking skills. The instrument effectively captures the fundamental concepts and intellectual foundation of historical thinking. However, language adjustments were necessary to ensure that the students were familiar with the academic and scientific terminology used in the test. These language modifications improved the overall quality of the instrument.

Table 4. Feasibility test results by experts

Indicator	Score	Interpretation
Material	3.76	Very suitable
Assessment instrument	3.72	Very suitable
Language	3.63	Very suitable
Mean	3.70	Very suitable

3.5. The validity, reliability, and difficulty of the instrument

The validity and reliability of each item in the designed instrument were determined through the use of the Quest program and the Rasch model analysis. The results indicated that the question items of the instrument were reliable, as reflected in the validity indicators. Figure 3 shows the results of the item's validity. From the figure, it can be seen that the item alignment values ranging from 0.77 to 1.30 provide evidence of item validity. The following is data supporting the validity of the items which can be seen in Table 5.

Based on the data presented in Table 5, items 1 through 9 are considered valid as they exhibit a validity range between 0.77 and 1.30. Additionally, to assess the consistency of the instrument, a reliable test was performed, and the results are shown in Table 6. In the table, the internal consistency score of 0.78 can be considered high, indicating that the instrument is quite reliable. The developed e-project tool is proven to possess both valid and reliable items, making it suitable for assessing students' historical thinking skills, particularly in distance learning settings.

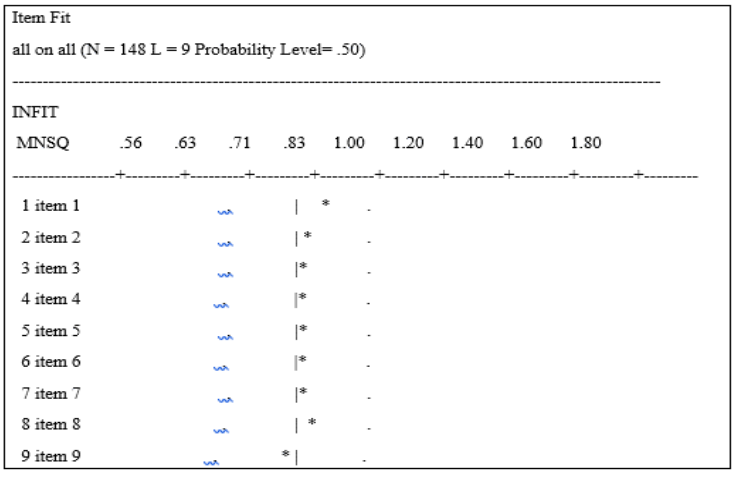

Figure 3. Item validity of the developed instrument

Table 5. Result of validity item

No	Item	INFIT MNSQ score	Description
1	Item 1	1.13	Valid
2	Item 2	1.04	Valid
3	Item 3	1.02	Valid
4	Item 4	1.01	Valid
5	Item 5	1.01	Valid
6	Item 6	1.01	Valid
7	Item 7	1.01	Valid
8	Item 8	1.05	Valid
9	Item 9	0.95	Valid

Table 6. The reliability of the developed instrument

Instrument	Value
Mean test score	8.60
Standard deviation	1.72
Internal consistency	.78

All on all (N=148, L=9, probability level=.50)

4. DISCUSSION

The results of the analysis showed that the cultivation of historical thinking skills is crucial to the objectives of the history education curriculum in Indonesia. The best learning strategy, according to the characteristics of the subject, is to adopt a scientifically based approach through project activities with scientific stages. The purpose of history learning in schools is to provide students with the knowledge and analytical skills necessary to thoroughly understand the past [25], [27].To maximize the potential of students, several activities were employed, including projects, conversations, literacy instruction, and historical field trips [28], [29]. Consequently, history can be taught both through traditional methods in the classroom and by involving the students as active participants in the learning process. It was also discovered that scientific activities are necessary for students to read, analyze, and use various historical evidence in order to construct valid, accurate, and reliable narratives. This implies that the learning is not limited to memorizing dates, places, and names of historical figures, rather it is expected to encourage critical and analytical thinking as well as historical reasoning [30]. Lederman *et al.* [31] concluded that students need to be taught how to perform historical inquiries in a similar way as scientists.

According to the results of interviews with teachers and students, the traditional methods of evaluating students' understanding of history have been limited to multiple-choice and essay assessments. Till present, teachers have not utilized project-based evaluation to assess students' potential, particularly in terms of their historical thinking skills. Studies have shown that multiple-choice exams have several limitations, including the inability to accurately assess students' skills due to the limited options causing them to guess answers [32]. In this scenario, students are simply instructed to choose answers on multiple-choice exams but are unable to offer in-depth explanations [33], thereby limiting their chances of developing higher-order thinking skills. Similarly, essay assessments also have their drawbacks, as students exclusively concentrate on defending their responses to the questions, leading to a lack of engagement with historical materials [34]. These two exams do not offer students a true experience as they do not involve conducting a historical study on the topic. In contrast, the project assessment instrument encourages students to reconstruct historical data through the scientific phases of the project evaluation [33]. To complete historical projects, students actively participate in group discussions, the study of written materials, the interviewing of historical witnesses, and visiting historical places [35], which inspire them to take an active role in the process.

Based on the results from the analysis stage, the instrument was developed during the design phase. The e-project assessment instrument's design is divided into several sections, including i) the concept of historical thinking skills; ii) indicators of each aspect of historical thinking; iii) project activities to be completed by students; iv) the output criteria; v) the assessment rubric; and vi) scoring criteria. The tool was designed and refined into an assessment instrument that can be used to measure student potential and for conducting online assessments because it is web-based. The e-project instrument is an innovation surpassing its predecessors that were limited to face-to-face instruction. Online assessments offer several benefits, such as i) the flexibility for students to submit assignments from any location and at any time, provided they have an internet connection; ii) teachers can assess student assignments and provide feedback promptly; and iii) the capability to monitor student progress during the learning process [9], [36].

The development stage of the instrument involved conducting expert validation, item validity, and instrument reliability testing to ensure a highly accurate measurement and diagnostic tool for student skills. The results indicated that the e-project is reliable and valid for assessing historical thinking skills in distance learning, with all items having validity values within the range of 0.77 to 1.30 and a high-reliability rating of 0.78. These results align with [4], stating that project-based work can enhance historical thinking skills. Project assessments allow students to i) actively participate in the learning process [26]; ii) work together to complete tasks using scientific study [37], [38]; and iii) apply higher-order thinking skills, such as recognizing, analyzing, reconstructing, determining perspective, and drawing historical conclusions [39], [40].

Teachers can evaluate students objectively by using project-based assessments. This is supported by Lin [41] stating that project-based assessment is a useful model for measuring student competency. Arifin [42] stated that project evaluation involves the process of planning, collecting, organizing, analyzing, and presenting data within a set time frame. It provides students the opportunity to apply knowledge in diverse scenarios and assess competence based on their ability to complete tasks. Furthermore, project-based assessment helps to enhance students' problem-solving skills, critical and creative thinking, as well as report

writing. The assessment has the potential to successfully improve students' scientific thinking skills due to its alignment with the fundamental principles of scientific study that require higher-order thinking skills, such as critical, analytical, interpretive, and historical thinking [43]. Hairida and Junanto [44] concluded that utilizing local resources in project-based performance evaluations can improve students' reading skills.

5. CONCLUSION

Based on the findings, the online project evaluation designed to measure students' historical thinking skills throughout history study was valid and reliable. historical data through the scientific phase of project evaluation. The online project assessment is an innovation from the previous historical thinking skill, designed for face-to-face learning. This allows students to submit their assignments from any location at any time with an internet connection. By participating in project assessments, students have the opportunity to actively participate in the learning process. Project evaluation is a type of assessment that involves planning, collecting, organizing, analyzing, and presenting data within a defined time frame. It can help students develop problem-solving, critical thinking, and creative skills.

REFERENCES

[1] B. Bunari, M. R. Fadli, A. Fikri, J. Setiawan, A. Fahri, and I. M. Izzati, "Understanding history, historical thinking, and historical consciousness, in learning history: An ex post-facto correlation," *International Journal of Evaluation and Research in Education (IJERE)*, vol. 12, no. 1, pp. 260–267, Mar. 2023, doi: 10.11591/ijere.v12i1.23633.

[2] E. B. Claravall and R. Irey, "Fostering historical thinking: The use of document based instruction for students with learning differences," *The Journal of Social Studies Research*, vol. 46, no. 3, pp. 249–264, Jul. 2022, doi: 10.1016/j.jssr.2021.08.001.

[3] T. Z. Ningsih, Sariyatun, and L. A. Sutimin, "Development of portfolio assessment to measure the student's skill of using primary source evidence," *New Educational Review*, vol. 56, no. 2, pp. 101–113, 2019.

[4] S. M. Gestsdóttir, J. van Drie, and C. van Boxtel, "Teaching historical thinking and reasoning: Teacher beliefs," *History Education Research Journal*, vol. 18, no. 1, pp. 46–63, 2021, doi: 10.14324/HERJ.18.1.04.

[5] M. Martínez-Hita, C. J. Gómez-Carrasco, and P. Miralles-Martínez, "The effects of a gamified project based on historical thinking on the academic performance of primary school children," *Humanities and Social Sciences Communications*, vol. 8, no. 1, May 2021, doi: 10.1057/s41599-021-00796-9.

[6] M. Anis, H. Putro, H. Susanto, K. Hastuti, and M. Mutiani, "Historical thinking model in achieving cognitive dimension of Indonesian history learning," *PalArch's Journal of Archaeology of Egypt/Egyptology*, vol. 17, no. 7, pp. 7894–7906, 2020.

[7] P.-F. Sung, "Historical consciousness matters: National identity, historical thinking and the struggle for a democratic education in Taiwan," *Journal of Curriculum Studies*, vol. 52, no. 5, pp. 685–701, Sep. 2020, doi: 10.1080/00220272.2020.1789225.

[8] J. Setiawan, A. Ajat Sudrajat, A. Aman, and D. Kumalasari, "Development of higher order thinking skill assessment instruments in learning Indonesian history," *International Journal of Evaluation and Research in Education (IJERE)*, vol. 10, no. 2, pp. 545–552, Jun. 2021, doi: 10.11591/ijere.v10i2.20796.

[9] I. W. Santyasa, K. Agustini, and N. W. E. Pratiwi, "Project based E-learning and academic procrastination of students in learning chemistry," *International Journal of Instruction*, vol. 14, no. 3, pp. 909–928, Jul. 2021, doi: 10.29333/iji.2021.14353a.

[10] O. Ofianto, A. Aman, T. Z. Ningsih, and N. F. Abidin, "The development of historical thinking assessment to examine students' skills in analyzing the causality of historical events," *European Journal of Educational Research*, vol. 11, no. 2, pp. 609–619, Apr. 2022, doi: 10.12973/eu-jer.11.2.609.

[11] P. Seixas, L. Gibson, and K. Ercikan, *A design process for assessing historical thinking: The case of a one-hour test*. Routledge, 2015.

[12] I. Maryani, Z. K. Prasetyo, I. Wilujeng, and S. Purwanti, "Higher-order thinking test of science for college students using multidimensional item response theory analysis," *Pegem Journal of Education and Instruction*, vol. 12, no. 1, pp. 292–300, Jan. 2022, doi: 10.47750/pegegog.12.01.30.

[13] M. Raković *et al.*, "Examining the critical role of evaluation and adaptation in self-regulated learning," *Contemporary Educational Psychology*, vol. 68, no. 3, Jan. 2022, doi: 10.1016/j.cedpsych.2021.102027.

[14] A. Reisman, E. Brimsek, and C. Hollywood, "Assessment of historical analysis and argumentation (AHAA): a new measure of document-based historical thinking," *Cognition and Instruction*, vol. 37, no. 4, pp. 534–561, Oct. 2019, doi: 10.1080/07370008.2019.1632861.

[15] X. Liu, L. Li, and Z. Zhang, "Small group discussion as a key component in online assessment training for enhanced student learning in web-based peer assessment," *Assessment & Evaluation in Higher Education*, vol. 43, no. 2, pp. 207–222, Feb. 2018, doi: 10.1080/02602938.2017.1324018.

[16] I. W. Santyasa, N. K. Rapi, and I. W. W. Sara, "Project based learning and academic procrastination of students in learning physics," *International Journal of Instruction*, vol. 13, no. 1, pp. 489–508, Jan. 2020, doi: 10.29333/iji.2020.13132a.

[17] I. W. Suastra and N. P. Ristiati, "Developing critical thinking, scientific attitude, and self-efficacy in students through project based learning and authentic assessment in science teaching at junior high school," *Journal of Physics: Conference Series*, vol. 1233, no. 1, Jun. 2019, doi: 10.1088/1742-6596/1233/1/012087.

[18] A. Laila, C. Asri Budiningsih, and K. Syamsi, "Textbooks based on local wisdom to improve reading and writing skills of elementary school students," *International Journal of Evaluation and Research in Education*, vol. 10, no. 3, pp. 886–892, 2021, doi: 10.11591/ijere.v10i3.21683.

[19] N. Handayani, S. Aw, Z. Zamroni, M. Imanita, J. Setiawan, and M. R. Fadli, "Development of higher order thinking skill assessment instruments in social studies learning," *International Journal of Evaluation and Research in Education (IJERE)*, vol. 13, no. 2, pp. 923–933, Apr. 2024, doi: 10.11591/ijere.v13i2.26448.

[20] M. D. Gall, "The use of questions in teaching," *Review of Educational Research*, vol. 40, no. 5, pp. 707–721, Dec. 1970, doi: 10.3102/00346543040005707.

[21] A. Alhadabi and S. Aldhafri, "A Rasch model analysis of the psychometric properties of the student-teacher relationship scale among middle school students," *European Journal of Educational Research*, vol. 10, no. 2, pp. 957–973, Apr. 2021, doi:

10.12973/eu-jer.10.2.957.
[22] H. P. N. Putro, D. Arisanty, and M. Z. A. Anis, "Learning model of history to wetlands for historical consciousness," in *Proceedings of the International Conference on Social Studies, Globalisation And Technology (ICSSGT 2019)*, 2020, vol. 458, pp. 67–74. doi: 10.2991/assehr.k.200803.009.
[23] T. Patterson, "Historians, archivists, and Museum educators as teacher educators: Mentoring preservice history teachers at cultural institutes," *Journal of Teacher Education*, vol. 72, no. 1, pp. 113–125, Jan. 2021, doi: 10.1177/0022487120920251.
[24] M. R. Fadli, A. Sudrajat, A. Aman, and K. Amboro, "The influence of sorogan method in learning history to increase historical understanding and historical awareness," *International Journal of Evaluation and Research in Education (IJERE)*, vol. 10, no. 1, pp. 300–307, Mar. 2021, doi: 10.11591/ijere.v10i1.20972.
[25] O. Ofianto, E. Erniwati, A. Fitrisia, T. Z. Ningsih, and F. F. Mulyani, "Development of online local history learning media based on virtual field trips to enhance the use of primary source evidence," *European Journal of Educational Research*, vol. 12, no. 2, pp. 775–793, Apr. 2023, doi: 10.12973/eu-jer.12.2.775.
[26] A. M. Mahasneh and A. F. Alwan, "The effect of project-based learning on student teacher self-efficacy and achievement," *International Journal of Instruction*, vol. 11, no. 3, pp. 511–524, Jul. 2018, doi: 10.12973/iji.2018.11335a.
[27] R. Villena Taranilla, R. Cózar-Gutiérrez, J. A. González-Calero, and I. López Cirugeda, "Strolling through a city of the Roman Empire: an analysis of the potential of virtual reality to teach history in Primary Education," *Interactive Learning Environments*, vol. 30, no. 4, pp. 608–618, Apr. 2022, doi: 10.1080/10494820.2019.1674886.
[28] I. Sakki and A.-M. Pirttilä-Backman, "Aims in teaching history and their epistemic correlates: a study of history teachers in ten countries," *Pedagogy, Culture & Society*, vol. 27, no. 1, pp. 65–85, Jan. 2019, doi: 10.1080/14681366.2019.1566166.
[29] D. van Straaten, A. Wilschut, and R. Oostdam, "Connecting past and present through case-comparison learning in history: views of teachers and students," *Journal of Curriculum Studies*, vol. 51, no. 5, 2019, doi: 10.1080/00220272.2018.1558457.
[30] A. Nye, M. Hughes-Warrington, J. Roe, P. Russell, D. Deacon, and P. Kiem, "Exploring historical thinking and agency with undergraduate history students," *Studies in Higher Education*, vol. 36, no. 7, p. 763, 2011, doi: 10.1080/03075071003759045.
[31] J. Lederman *et al.*, "An international collaborative investigation of beginning seventh grade students' understandings of scientific inquiry: Establishing a baseline," *Journal of Research in Science Teaching*, vol. 56, no. 4, pp. 486–515, Apr. 2019, doi: 10.1002/tea.21512.
[32] A. C. Butler, "Multiple-choice testing in education: Are the best practices for assessment also good for learning?" *Journal of Applied Research in Memory and Cognition*, vol. 7, no. 3, pp. 323–331, Sep. 2018, doi: 10.1016/j.jarmac.2018.07.002.
[33] J. Vanderoost, R. Janssen, J. Eggermont, R. Callens, and T. De Laet, "Elimination testing with adapted scoring reduces guessing and anxiety in multiple-choice assessments, but does not increase grade average in comparison with negative marking," *PLOS ONE*, vol. 13, no. 10, Oct. 2018, doi: 10.1371/journal.pone.0203931.
[34] S. Bulqiyah, M. A. Mahbub, and D. A. Nugraheni, "Investigating writing difficulties in essay writing: Tertiary students' perspectives," *English Language Teaching Educational Journal*, vol. 4, no. 1, pp. 61–73, 2021, doi: 10.12928/eltej.v4i1.2371.
[35] L. Sirisrimangkorn, "The use of project-based learning focusing on drama to promote speaking skills of EFL learners," *Advances in Language and Literary Studies*, vol. 9, no. 6, pp. 14–20, Dec. 2018, doi: 10.7575/aiac.alls.v.9n.6p.14.
[36] C. Rapanta, L. Botturi, P. Goodyear, L. Guàrdia, and M. Koole, "Online university teaching during and after the COVID-19 crisis: Refocusing teacher presence and learning activity," *Postdigital Science and Education*, vol. 2, no. 3, pp. 923–945, Oct. 2020, doi: 10.1007/s42438-020-00155-y.
[37] K. Presler-Marshall, S. Heckman, and K. T. Stolee, "What makes team[s] work? A study of team characteristics in software engineering projects," in *Proceedings of the 2022 ACM Conference on International Computing Education Research*, 2022, vol. 1, pp. 177–188. doi: 10.1145/3501385.3543980.
[38] H.-W. Huang, "Effects of smartphone-based collaborative vlog projects on EFL learners' speaking performance and learning engagement," *Australasian Journal of Educational Technology*, vol. 37, no. 6, pp. 18–40, 2021, doi: 10.14742/ajet.6623.
[39] A. J. Wolfson, S. L. Rowland, G. A. Lawrie, and A. H. Wright, "Student conceptions about energy transformations: Progression from general chemistry to biochemistry," *Chemistry Education Research and Practice*, vol. 15, no. 2, pp. 168–183, 2014, doi: 10.1039/C3RP00132F.
[40] B. Nainggolan, W. Hutabarat, M. Situmorang, and M. Sitorus, "Developing innovative chemistry laboratory workbook integrated with project-based learning and character-based chemistry," *International Journal of Instruction*, vol. 13, no. 3, pp. 895–908, Jul. 2020, doi: 10.29333/iji.2020.13359a.
[41] C.-L. Lin, "The development of an instrument to measure the project competences of college students in online project-based learning," *Journal of Science Education and Technology*, vol. 27, no. 1, pp. 57–69, Feb. 2018, doi: 10.1007/s10956-017-9708-y.
[42] M. F. A. Arifin, "Cost analysis for heavy equipment in earthfill work – An optimization of heavy equipment fleet (Case study: Jabung ring dike project)," in *AIP Conference Proceedings*, 2017, vol. 1818, p. 020005. doi: 10.1063/1.4976869.
[43] I. Sasson, I. Yehuda, and N. Malkinson, "Fostering the skills of critical thinking and question-posing in a project-based learning environment," *Thinking Skills and Creativity*, vol. 29, pp. 203–212, Sep. 2018, doi: 10.1016/j.tsc.2018.08.001.
[44] H. Hairida and T. Junanto, "The effectiveness of performance assessment in project-based learning by utilizing local potential to increase the science literacy," *International Journal of Pedagogy and Teacher Education*, vol. 2, pp. 159–170, Dec. 2018, doi: 10.20961/ijpte.v2i0.25722.

BIOGRAPHIES OF AUTHORS

Ofianto is a Doctoral (Dr) and Lecturer Department of History Education, Faculty of Social Science, Universitas Negeri Padang, Indonesia. He completed the Doctoral Program (Dr) at Graduate School, Universitas Negeri Yogyakarta. His research focuses on educational research and evaluation. He can be contacted at email: ofianto@fis.unp.ac.id.

Nanda Saputra is a Lecturer Madrasah Ibtidaiyah Teacher Education, Faculty of Education, Sekolah Tinggi Ilmu Tarbiyah Al-Hilal Sigli, Indonesia. His research focuses Indonesian Language and Literature. He can be contacted at email: nanda.saputra2589@gmail.com.

Tri Zahra Ningsih is a Student Educational Evaluation Research Doctoral Program, Graduate School, Universitas Negeri Yogyakarta, Indonesia. Her research focuses on history education, historical learning evaluation, and learning design development. She can be contacted at email: trizahra.2023@student.uny.ac.id.

Surya Aymanda Nababan is a Lecturer History Education, Faculty of Teacher Training and Education, Universitas Islam Sumatera Selatan, Indonesia. His research focuses on history education and Indonesian history. He can be contacted at email: surya-aymanda@fkip.uisu.ac.id.

Zul Asri is a Lecturer History Education, Faculty of Social Science, Universitas Negeri Padang, Indonesia. His research focuses on history education, Indonesian history, history of Indonesia, and city. He can be contacted at email: zul_asri@fis.unp.ac.id.

Aman is a Professor and Lecturer Evaluation of research and learning Program. He has been working at Graduate Program, Universitas Negeri Yogyakarta. His research interests are curriculum development, evaluation learning history, and teaching skills. He can be contacted at email: aman@uny.ac.id.

Johan Setiawan is a Doctoral (Dr) and Lecturer Department of History Education, Faculty of Education and Teacher Training, Universitas Muhammadiyah Metro, Indonesia. He completed the master (M.Pd) and Doctoral Program (Dr) at Graduate School, Universitas Negeri Yogyakarta. His research focuses on history education, character education, Indonesian history, and history learning media. He can be contacted at email: johansetiawan767@gmail.com and johansetiawan@ummetro.ac.id.