Development of Online Local History Learning Media Based on Virtual Field Trips to Enhance the Use of Primary Source Evidence

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Abstract: It is important for students who learn history to have the skills to think, read and analyze historical sources because past events can only be reconstructed and understood from these numerous resources. Various media methods are needed to support the development of these skills, especially in online learning. Therefore, this research aims to create a virtual field trip (VFT) based history learning media to help students improve their thinking skills using primary source evidence. It was carried out by using the research and development (R&D) method consisting of four stages, namely analysis, designs, conducting trials, and testing media effectiveness. The sample subjects consisted of six teams as expert validators, seven history teachers, 70 and 280 Class X students who assessed the product's practicality and determined the developed media's effectiveness. Data were collected through expert validation, student and teacher response questionnaire sheets, as well as description exams. The level of validity and practicality of the medium were determined using descriptive analysis, while the N-Gain approach evaluated the media's effectiveness. The expert validation result is very good, with an average score of 3.77. The teacher and student response tests showed an average score of 4.67, indicating that the VFT medium is practical for learning history. The N-Gain value of 72% showed that the students' abilities to use primary source evidence are increasing. Therefore, using VFT based history classes to develop explanation skills using primary source evidence is feasible, practical, and useful.

Keywords: *History learning, use primary source evidence skill, virtual field trip.*

Introduction

One of the most important aspects of the historical thinking skill is using evidence from primary sources (Gestsdóttir et al., 2018, 2021; Gómez Carrasco & Miralles Martínez, 2016; Ofianto & Suhartono, 2015; Seixas, 2017; Seixas et al., 2015). According to Ofianto, Aman, Ningsih et al. (2022), this skill emphasizes on the use of historical sources in historical data inquiry activities. Numerous studies have shown the importance of using primary source evidence by students to understand past historical events (Anderberg et al., 2018; Anderson, 2013; Britt & Aglinskas, 2002; Cowgill & Waring, 2017; Hauck & Robinson, 2018; Oliver & Purichia, 2018; Tally & Goldenberg, 2005). Seixas (2017) stated that evaluating primary source evidence requires the ability to search for, locate, analyze, compare, categorize, use, and draw conclusions from the information offered by historical sources. Therefore, primary source evidence must be effective to provide an adequate understanding of local history. The inquiry activities of historians, history professors, and students need to be pertinent and in accordance with the historical material.

Finding and analyzing local historical sources or places may be accomplished in several ways, such as by discussing with historical witnesses and visiting historically important areas. Historians frequently utilize direct visits associated with the subject being investigated are the most advanced approach to finding historical data about previous occurrences (Larner, 2014; Manley et al., 2019; Yan & Hyman, 2018; Yildirim et al., 2018). This activity involves historians, teachers, and students engaging with existing sources and is frequently referred to as a historical field trip. Compared to simply reading dated written records, this practice unquestionably has a greater impact on a historian, teacher, and student's comprehension of historical events. Wartofsky (2012) reported that the greatest way to teach pupils about historical

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events is through field excursions. Numerous research reveal that students' enthusiasm, motivation, and historical comprehension dramatically rise through historical field visits (Cox, 2018; Krug, 1970; Neumann, 2021; Rantala & van den Berg, 2015; Zachrich et al., 2020).

However, conducting historical field trips has become challenging due to the COVID-19 pandemic restrictions on social mobility. In Solok City, West Sumatra, Indonesia, an interview with 20 high school history teachers from seven schools discovered that none engaged in historical tourism activities during the pandemic. Furthermore, five out of seven high and vocational schools in Solok City regularly conducted historical field excursions at least one academic year prior to the COVID-19 epidemic. The activity of taking students on historical field trips, which was discontinued during the COVID-19 pandemic, is a consequence for the teacher who has not been able to find the best alternative to this activity.

This same problem was confirmed by Restian (2020) and Sag Sencal (2020), who found that the COVID-19 pandemic substantially impacted various aspects of people's lives, including the educational system. According to Purwanto et al. (2020), one of the government's strategies for stopping the spread of the COVID-19 pandemic is implementing the learn and work from home, limiting religious activities, restricting means of transportation, and restricting activity in public spaces. Face-to-face learning is being replaced by the online method through technology due to limitations on mobility and social interaction between people. Bariham et al. (2020) stated that the best pedagogical technique for teachers to use while teaching students using digital technology during the pandemic is virtual learning. Therefore, for the online learning process to work effectively, technology-based learning techniques, models, methods, media, and tools are essential (Kumar & Sharma, 2021). This research aims to determine an alternative learning process for educational material needed to understand the local history to be employed in the the process. Bramantyo and Ismail (2021) stated that several tourist destinations, museums, and other historical places were closed during the COVID-19 pandemic to stop the virus spread. Therefore, it is essential to use virtual learning tools that give students the impression they are virtualizing actual historical sites. According to Pace et al. (2020), learning has become virtual through the use of technology as a result of the shutdown of physical schools due to the COVID-19 pandemic. Therefore, to ensure the success of online learning, teachers must provide procedures, approaches, advice, and materials. The success of the online learning process is primarily determined by technology-based learning techniques, models, methods, media, and tools.

Based on the aforementioned issues, this research aims to provide teachers and students a remedy by creating local history learning media based on virtual field trips (VFT), a digital technology that enables students to conduct historical field trips online. VFT allows students to research historical sources and locations while utilizing cutting-edge technology. Additionally, it can make students feel like they are in the actual setting. Numerous research have demonstrated that VFT is the most effective method for encouraging students to investigate historical sources during the COVID-19 pandemic. Students will have the same access to historical information through VFT's options for seeking, discovering, exploring, identifying, analyzing, and drawing conclusions.

Numerous research on VFT as learning tools focus on improving student learning independence, outcomes, and motivation. Wibowo et al. (2020) research on using the Virtual Tour Museum (VTM) in online history learning during the pandemic demonstrated how the VTM inspires and gives entertainment. According to research by Abidin et al. (2020), VFT in history lessons during the COVID-19 pandemic may train students' independence in finding something new, increase their communication skills, and build a feeling of responsibility. However, no research has been conducted on ways to enhance the skills of using primary sources of evidence. Therefore, it is crucial to conduct research on creating local history learning media based on VFT to advance the skills of employing primary source data.

Literature Review

Local History

According to the 2013 curriculum, teaching local history to students is crucial because (a) almost all historical periods in Indonesia saw contributions from all regions, (b) at the national and regional levels, and (c) they are required to introduce significant historical events that occured across the country. This is consistent with Hasan's assertion (4) that local history occupies the primary role in learning history since it is relevant to students' immediate surroundings and cultures (Hasan, 2012). According to Saripudin et al. (2022), learning resources on local history serve as a foundation for developing students' identities, cultures, and social lives. Additionally, learning local history allows students to conduct, observe and evaluate scientific research at historical places around their community (Sayono et al., 2020). Therefore, it can be inferred that local history is crucial for students to understand since it connects to their familiar region and culture. Learning about local history by teaching students the values of specific local wisdom help to develop their character and enhance their higher-order thinking abilities.

Use Primary Source Evidence Skills

Understanding historical events require knowledge of historical sources, which is fundamental to explaining previous human existence (Gestsdóttir et al., 2018). Writing historical works necessitates using historical sources because, without them, the writings produced are literary (Hasan, 2012). However, historical sources cannot provide knowledge or facts about events without being properly examined (Seixas, 2017). Reading the information in general, takes a

different approach than historical materials, which Seixas refers to as the application of primary source evidence skills (Gestsdóttir et al., 2018).

According to preliminary studies, the ability to look for, identify, choose, contextualize, and analyze historical materials is referred to as the skill to use primary source evidence (Anis et al., 2020; Gestsdóttir et al., 2018; Laksana, 2016; Mena, 2021; Seixas, 2017). There are six advantages that students can gain from using primary source evidence, including the ability to (1) find and select sources of historical questions, (2) explain its contexts, (3) analyze primary sources in order to gauge the author's perspective, (4) compare various primary sources, (5) determine what specific primary sources can and cannot address, and (6) use it effectively (Peck & Seixas, 2008). Using primary sources as evidence can provide students the chance to thoroughly investigate historical materials to determine an event's veracity (Wineburg, 2010). According to the aforementioned notion, it is critical to have the skill to comprehend and analyze the past to ensure data obtained is valid, dependable, and accurate.

Virtual Field Trip

During the pandemic, teachers had the option of using VFT to offer historical materials in online lessons. However, due to VFT's accessibility and lack of pricey fees, some benefits of using it include the ability to cut expenses and time limitations. VFT is less expensive than a typical physical field trip because it does not incur fees for transportation, lunch, or teacher time away from Class (Adedokun et al., 2011). According to Placing and Fernandez (2002), and Tutwiler et al. (2013), VFT is a substitute tool for distant learning that enable teachers to provide students access to information and experiences they would not have otherwise had.

VFT are an example of multimedia learning that combines several media. Consumers who use VFT feel like they are in the current world since it provides a virtual replica of their current surroundings (Ho, 2020; Tuthill & Klemm, 2002). VFT is field trip instruction that has been digitally packaged and is an excellent teaching tool for the pandemic due to its low social mobility. Students can interact with numerous real-world surroundings through virtual reality using VFT (Ho, 2020; Kenna & Potter, 2018). It is highly useful for gathering historical knowledge during the pandemic compared to actual field trips because it makes reconstructing historical events easier and more effective (Seifan et al., 2020). Students may use VFT to quickly and simply discover the historical information they want, as well as other benefits. With VFT, students may explore more historical sites without being constrained by time or space (Han, 2021). Furthermore, they may take a virtual tour of several historical locations simply by seeing the visual display offered using VFT.

Students' motivation, attitude, and research experience are all improved by VFT, which should give students chances to interact meaningfully with the classroom environment on a variety of levels. These include peer and teacher interaction with learning resources (like artifacts and field trip resources), student-teacher interaction, as well as chances to ask, respond to, also discuss questions regarding experience (Stoddard, 2009). Students tend to visualize a real field trip with the aid of well-designed VFTs, which incorporate maps, photos, and video clips in several formats.

The usage of VFT media in the learning process can support 21st-century learning by fostering investigative skills, intellectual analysis, critical thinking, expanding multicultural knowledge, and stimulating higher cognitive processes. Furthermore, interaction, exploration, analysis, active learning, and skill assessment are possible using VFT (Stainfield et al., 2009). This means that VFT can help students with their scientific research, address some of the issues plaguing education, and improve their willingness to participate. Students who participate in virtual field trips are also better equipped to think critically because teachers often only provide content in Class that is in line with textbook theory, thereby preventing them from growing as thinkers. Students are challenged to solve problems via observation, while VFT deliver project-based learning. Through interactive media components, VFT can help them improve their critical thinking skills. According to Melinda et al. (2017), this VFT medium can improve how well students at SDNU Keraton-Kencong understand social studies content. Videos are shown as part of a virtual field trip to allow for observation and analysis without having to physically visit the location or be given a chance to speak with an expert. Students can take VFT to places never visited by utilizing video media as a means of transportation. This will enable them to learn a subject without physically visiting the location but experiencing the occurrence by utilizing this video.

The use of VFT has many benefits for learning, including (1) increasing student involvement in the learning process (Beldarrain, 2006). (2) Fostering students' independence in learning by allowing them to access and gather information without having to leave their homes or places of learn (Bond et al., 2022; Makransky & Mayer, 2022). (3) Giving students a chance to make their observations in order to foster interaction (Stainfield et al., 2009), (4) interacting with historical materials (Ho, 2020), and (5) improving student learning outcomes, communication skills, independence, and responsibility (Petersen et al., 2020). Based on the aforementioned theory, the VFT is one of the greatest alternative learning mediums employed by teachers during the pandemic. This is based on VFT's assumption that students can experience the circumstance.

Methodology

Research Design

The research development (R&D) approach was used to conduct this research. The step of the research process includes analysis, media design, media testing, and media effectiveness testing. At the analysis stage, the learning media utilized by teachers and the local history learning process in schools during the pandemic were identified and analyzed. This is followed by the early stage, where interviews, focus group discussions (FGD), and observations serve as the primary data-gathering methods. The outcomes of the analysis step form the basis for creating media designs. The second phase is creating a media plan and choosing the content to be produced while keeping in mind the objectives, based competencies, and accessibility of currently available local historical sources. The third phase involves testing the medium through media trials, including expert opinions and small-group product testing. The expert evaluation comprises two experts, each from linguists, media professionals, and subject matter, who judged the veracity of the generated content, totaling six professionals. The research team improved the media to make it more ideal by considering the evaluation and suggestions from the expert team. Seven high school history teachers from Solok City, as well as 70 students, participated in small-group product trials to evaluate the viability of the generated material. The final product generally spreads to a larger class, which presumed the results demonstrate the practical and beneficial nature of the medium. In the event that the final output is less useful or impracticable, student and instructor input is used to make revisions to the final product. The media validity standards must adhere to the following rules in Table 1.

Table 1. The Suitable Criteria of the Developed Instrument

Score	Description
≥ 4.00	Very Suitable
3.00 – 3.99	Suitable
2,00 – 2.99	Less Suitable
1.00 – 1.99	Not Suitable

This research aims to evaluate how well primary source evidence-use skills are being developed through the media, which received much positive feedback.

The final step is the effectiveness test, when the finished output is shown to a larger group of students to gauge how effectively the VFT media has prepared the students to utilize primary sources as proof. The analysis of the produced material includes 280 students with the N-Gain test used to determine how much the media affected students' skills in using primary sources of evidence. The media influence test was conducted using a t-test with an independent sample. The developed media effectively improves primary source evidence skills, assuming scores fall in the medium or high range. In contrast, a low number means that the media is ineffective at boosting these skills. This was carried out to assess the effect of VFT on the utilization of primary source evidence using Richard Hake's N-Gain criterion (Hake, 1999).

Table 2. Criteria for N-Gain Score

Interval	Criteria
$g \geq 0.7$	High
$0.3 \leq g \geq 0.7$	Middle
$g < 0.3$	Low

Research Participant

Table 3 shows that 940 students from seven different schools in Solok City, West Sumatra, Indonesia participated in the experiment to assess the effectiveness of the media. The school chosen are those in categories of very excellent, medium, and bad. This is in accordance with the research goal of producing accurate, valid, reliable, and comprehensive data. The potential diversity of students can be accurately represented by the three school categories of clever, average, and not-so-bright.

Table 3. The Total Participant of the Research

No	Schools List	The Number of Students
1	School A	132
2	School B	145
3	School C	147
4	School D	121
5	School E	143
6	School F	134
7	School G	118
	Total Students	940

This research involved students from Class X Senior High School (SMA) because they need to learn historical sources, historical research, and historical writing, as well as learn how to differentiate between them through learning historical source material. Students need to use their reading skills to use, analyze and interpret skills to gather information from historical sources and create written narratives. Reading, analyzing, and interpreting historical sources are three skills strongly tied to using primary source evidence. Therefore, it is very reasonable that Class X Senior High School students participate in this research.

A homogeneity test was conducted to determine if the data from each school had the same variance executed using statistical levels. Test outcomes are shown in Table 4.

Table 4. The Result of the Homogeneity of Variance Test

Test of Homogeneity of Variance					
		Levene's Statistic	**df1**	**df2**	**Sig.**
The result of students' final exam	Based on Mean	2.866	6	687	.078
	Based on Median	4.012	6	687	.081
	Based on Median and with adjusted df	4.012	6	478.961	.076
	Based on trimmed mean	3.912	6	687	.081

Table 4 has a homogeneity mean value of 0.078, which is greater than 0.05, therefore, the data is homogenous. These results prompted researchers to draw the conclusion that the data may be used for a t test to evaluate the impact of virtual field trip media on the skill of using primary source evidence.

Teachers and students participate in a variety of roles in this study, including (i) as test subjects to evaluate how practical virtual field trip media are and (ii) as users of virtual field-based history learning media during the learning process, where teachers use VFT media as a teaching tool and students use VFT media for learning.

. A total of seven SMA/SMK history teachers, 70 media practicality exam students, and 280 students from different groups participated in the effectiveness test. This is in addition to the six experts who assessed the media based on their specialties. The participants were selected based on the issues that need to be addressed, the requirements, and the desired outcomes of the research. These institutions were chosen based on their status in the good, medium, and bad categories in accordance with the requirement for authentic, trustworthy, and thorough research data. Additionally, three groups were recognized, namely representatives of West Sumatra schools, students who were unable to participate in the historical field excursions during the outbreak, and those that used primary source data. The sample for this research modified in accordance with the goals, was chosen using a proportionate approach. A large sample can raise expenses and time, while those that are too small may not reflect its effect (Barker et al., 2016).

Research Instrument, Data Collection, and Data Analysis

The research instrument included notes from the focus group discussions, interviews, expert validation, practical test, and project assessment forms. For FGD activities, interviews, observations, and project assessment rubrics were used to gather research data, which were analyzed using quantitative and qualitative data. A qualitative analysis was utilized to enhance the final products, and media quality experts' opinions were gathered through an open questionnaire. These replies were examined to enhance the media quality being produced. Furthermore, an independent sample t-test was performed using the SPSS version 25.0 program to ascertain the impact of conducting VFT using primary source evidence.

The students in the control group utilized PowerPoint as their conventional learning medium, while those in the experimental Class made use of educational software based on VFT.

Contrary to the control class, which got information about the history of Pagaruyung Palace as text and a few images via PowerPoint media, the experimental class received local history material via virtual field trip-based learning media. The only materials available to the students in the control group were the text and images. Students in the experimental class have direct access to virtual media, giving the impression that they are actually in the situations they are learning about. To determine if the experimental class and the control class resulted in substantially different student test scores, the learning outcomes of the two groups were then examined.

The competence test for the pretest and posttest was completed twice using primary sources of evidence. Prior to receiving treatment, a pretest was used to ascertain students' baseline skills, and after using the media VFT on the experimental class, the posttest was administered. The scores from the two classes were compared to determine the differences in the scores of the two groups. Furthermore, the effect of the media was examined using an independent sample t-test, while the N-gain test evaluated the aftermath of the impact. Table 5 shows how the skills examined were created using evidence from primary sources.

Table 5. Design of the Use Primary Source Evidence Skills Test

Group	Pretest	Process	Posttest
Control	Use primary source evidence skills	The teacher uses Powerpoint in the learning process.	Use primary source evidence skills
Experiment	Use primary source evidence skills	The teacher uses virtual field trip media.	Use primary source evidence skills

An evaluation form was used to assess the primary sources of skills, and through group assignments, students were required to write a historical account of local history. Students must also use many historical sources for each narrative created, with virtual media sources. Indicators for project evaluation include (i) the breadth of presentation and substance of the developed narrative, (ii) the utilization of relevant original materials by students, and (iii) the language employed for the reader to quickly understand the message being delivered.

The instrument's validity and reliability test were conducted to determine whether the items used to assess students' skills with primary source evidence were valid and reliable. The results are displayed in Table 6:

Table 6. Results of Item Validity

No	The items of chronological thinking	Sig. (2-tailed)
1.	Students' use of relevant primary sources when creating narratives related to the topic	0.618
2.	The complexity of the narrative's construction and its presentation	0.731
3.	The language used so that the reader may quickly understand the meaning being communicated.	0.643

Table 6 shows that the three item indicators have a significance value greater than 0.05. These three honest inquiries served as measuring sticks for students' skills in using primary sources as evidence. Additionally, Table 7 displays the outcomes of the instrument reliability test.

Table 7. Test Results for Instrument Reliability

Cronbach's Alpha	N of Items
.786	70

The instrument's reliability was tested using Cronbach's alpha, and the findings were 0.786>0.7. The media was therefore assumed to be reliable for assessing the use of primary source data.

This research combined quantitative and qualitative techniques for data analyzes. A qualitative analysis was used to enhance the resultant media, while an open questionnaire was utilized to obtain opinions from experts on how well it was produced. These replies were further examined using an independent t-test sample. The SPSS version 25.0 software was used to examine the impact of the VFT media on the skill of the primary source. However, to continue testing the impact using the independent simple t-test, the research data is normally distributed and homogenous with a significance value greater than 0.05.

Findings / Results

Stage of Analysis

Interview with the Teacher

A question on the educational process during the COVID-19 pandemic was posed to the history teacher. The following is a summary of some of the teachers' responses:

> *"In the first half of the PSBB during the pandemic, the learning process was fully carried out online, followed by blended learning in the second half, and face-to-face by dividing the morning and afternoon shifts into two equal parts".*

According to the interviews, the learning process at high and vocational school Solok City, which was conducted online using the blended technique, was constrained by social mobility. This was carried out in an effort to stop the spread of the virus and to adhere to legal requirements.

The instructional media employed in the distance learning process was also analyzed. The following is a summary of some of the teachers' responses:

> *"We mostly utilize WhatsApp Groups because many pupils still cannot use the Zoom and Google Meet applications. In terms of learning media, we occasionally display PowerPoints via Zoom and occasionally hand out printouts of learning materials, with guidelines for individual learn using textbooks".*

From the interview findings above, teachers used WhatsApp Groups, Google Meets, and Zoom Meetings to conduct distant learning during the COVID-19 pandemic. Most learnings were carried out through WhatsApp Groups due to the numerous inconsistencies associated with using Zoom Meetings and Google Meets. Teachers utilize PowerPoints during lessons and provide handouts with related materials.

Furthermore, the historical field trips were organized by schools during the pandemic. A summary of some of the teachers' responses is provided below:

> *"Before the COVID-19 pandemic, some schools have a learn tour program by visiting historical sites in the West Sumatran environment every mid-event semester. Students were often taken out of school to visit some local historical places, such as the Istana Pagarayung in Batu Sangkar and the Rumah Hatta in Bukittinggi. This was routinely done once in a learning year. However, during the pandemic, these activities were suspended because schools and the West Sumatra Education office failed to authorize this activity".*

The solutions applied as a result of societal constraints were also determined. The teacher responded as follows:

> *"We have not found a solution to the historical field trip activities halted by the government due to the pandemic."*

Based on interview results, a historical field trip program to local historical locations was routinely carried out by high and vocational school in Solok City once a year. However, this activity was discontinued due to the COVID-19 pandemic, and the teachers were unable to provide alternative ways to continue the field trip.

Curriculum Analysis

The high school history curriculum in Indonesia was examined by creating local history learning media based on VFT to enhance skills in using primary source evidence. The researcher examined the skills required for students in classes X, XI, and XII to learn history. Table 8 shows the findings of the analysis.

Table 8. Skills Gained Through Historical Study

Class X	Class XI	Class XII
• Analyzing the causal link of a historical event by looking at the interaction of a few different variables • Evaluating the significance value of a historical occurrence	• Identify the main topic, concept, or theory underlying the development of a historical event. • Assessing a historical document using internal standards for objectivity and author bias. • Constructing a historical narrative from several sources with a consistent historical interpretation	• Assess the author's objectivity and bias in a historical source using acceptable external standards. • Constructing a historical event from a variety of sources

Table 8 shows that students are willing to develop their potential to learn history and possess Higher-Order Thinking Skills (HOTS) from primary sources. Students in Class X are expected to be able to evaluate the relationships between the causes and effects of historical events as well as the reconstruction of historical values present in today's society. Furthermore, students must use a variety of historical sources to assess these two indicators to ensure that the causes of an event and its effects are accurate, trustworthy, and thorough. Similarly, after examining the values of previous events and those applicable to date, they must interact with historical materials to compare and contrast their worth.

Table 8 shows that students in Class XI are more engaged in using various historical texts to create narratives. HOTS that necessitate inquiry via scientific phases are one of the three potentials developed in Class XI. The major skill that must be mastered by students in Class XII in order to construct historical narratives is the ability to use primary source evidence.

Furthermore, the standards for teaching history in high school after examining the skills that must be developed. Table 9 shows some research findings about high school history education fundamentals.

Table 9. Principles of History Learning

Principles of History Learning	Aspects of historical thinking skills needed
Learning about history is based on the continuity of historical events with modern life, between past occurrences at the national and local levels. This is in addition to an understanding of local historical occurrences based on the veracity of preliminary events.	• Change and continuity • Use Primary Source Evidence.

Table 9. Continued

Principles of History Learning	Aspects of historical thinking skills needed
Students are instructed to locate evidence of history (especially artifacts) and abstract remnants, such as traditions, thoughts, views of life, values, and habits passed down from historical events through assignments. This is to develop an understanding of the continuity between past and present life experiences.	• Skills in using primary source evidence
Each student is required to conduct historical learns on local historical events, particularly those that have occurred since the national movement. They also need to evaluate the significance of these local historical events in relation to national events. This is done in order to relate historical occurrences at the local and national levels.	• Skills to use primary source evidence • Skills for cause and consequence • Skills for change and continuity
Students have the chance to use a variety of sources during the history-learning process, including texts, reference materials, documents, experts, or artifacts. This gives them a chance to become historians.	• Skills to use primary source evidence

According to Table 9, the development of students' historical thinking skills, particularly the capacity to comprehend primary source evidence, analyze cause and consequence, and understand change, is emphasized in the high school history curriculum. The previously discussed three facets of historical thinking become the key competencies that students need to possess.

An analysis of the need for the creation of VFT local history learning resources

Another technique utilized to gather research data was the distribution of requirement analysis questionnaires for developing local history learning media based on VFT. The criteria of the research objectives served as the basis for creating the questionnaire for the respondents comprising twenty history teachers from high school in Solok City, West Sumatra, Indonesia. The questionnaire analysis results are shown in Table 10.

Table 10. Analysis of Virtual Field Trip Media Development

No	Statement	Percentage				
		Always	Often	Quite	Rarely	Never
1.	Developing a stronger historical foundation necessitates the skill to search for, discover, identify, analyze, and draw conclusions from various historical sources.	100%				
2.	Students must visit historical sources outside their school to acquire more knowledge.	80%	20%			
3.	A range of historical sources is needed for students to create historical narratives.	85%	15%			
4.	Visiting historical sites helps students learn about and comprehend historical events when learning local history.	95%	5%			
5.	Before the COVID-19 pandemic, I routinely escorted students to investigate historical sources, particularly those related to local history.	60%	20%		20%	
6.	I routinely encourage students to conduct historical research outside the class, especially concerning local history during the COVID-19 pandemic.					100%
7.	Activities for historical field trips do not occur due to social mobility restrictions.	80%	20%			
8.	I proposed a solution in relation to historical field trip activities during the pandemic.				10%	90%
9.	VFT learning resources are seen to be a potential solution for online historical field trips.	100%				
10.	The development of local history learning resources based on VFT is urgently required during the COVID-19 pandemic.	100%				

According to the needs analysis results for creating local history learning resources based on VFT conducted by distributing questionnaires to 20 high school and vocational history teachers in Solok City, the following was discovered. (I) Using primary source evidence was an important skill for students in reconstructing local history. (ii) There were very few written local historical sources available in schools, and (iii) visiting local historical sites was an important skill.

Furthermore, (iv) teachers found it difficult to implement historical field trips during the pandemic. (v) History teachers at Solok City senior high schools and vocational high schools frequently conducted local history field trips before the pandemic but none during its spread. (vi) VFT learning media is capable of serving as a solution for online history field trips, hence (vii) developing VFT learning media is critical.

Designing for the Media

A media design used to determine the content to be generated is designed with a media draft used to construct the local history learning media based on VFT that is accurate, trustworthy, and useful. The information created is connected to West Sumatra's regional history with relevance, consistency, and sufficiency as the basis for content selection (de Sá Leite et al., 2018). The content created needs to be pertinent to the abilities to be developed, and the learning materials must represent a number of indicators of competence with adequate content needed to raise students' potential and predetermined goals.

Table 11 shows the local historical media framework based on a VFT to enhance the ability of using primary source evidence:

Table 11. Local History Learning Media Framework Based on Virtual Field Trip to Improve Skills Use Primary Source Evidence

Learning Objectives	Competency to be developed	Indicators	Material
Develop historical thinking skills	Skills to use primary source evidence	- Search and find various historical sources - Identify, analyze, and interpret various sources history - Building historical narratives based on data obtained from various sources	of Local History of Pagarayung Palace

The table shows that Pagaruyung Palace was selected as the topic to be prepared for the VFT learning medium. The content is chosen based on how comprehensive the sources are at Pagaruyung Palace, including the written documents, the people, and the objects, making them extremely relevant and congruent with the competencies to be developed.

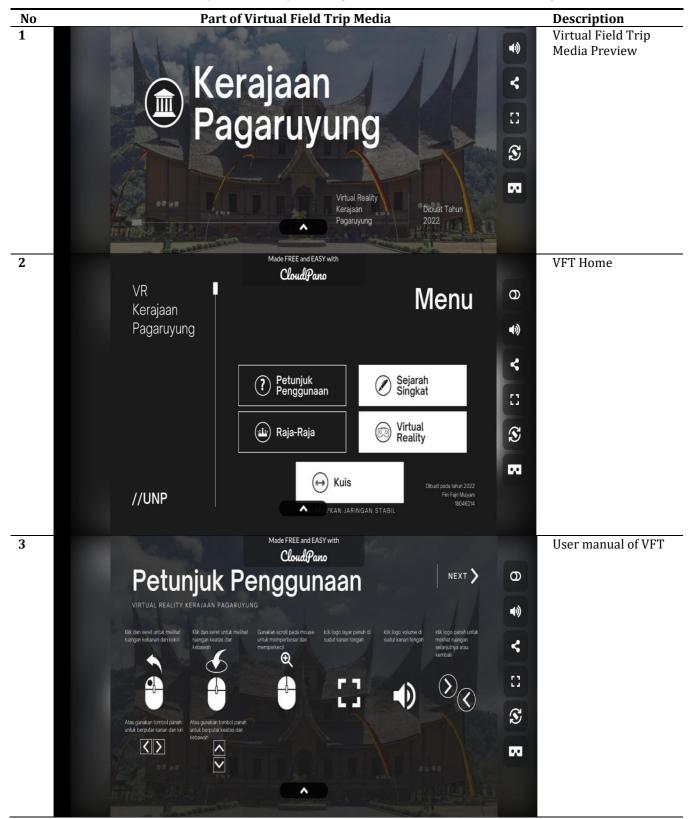*Table 12. Draft Local History Learning Media Based on the Virtual Field Trip*

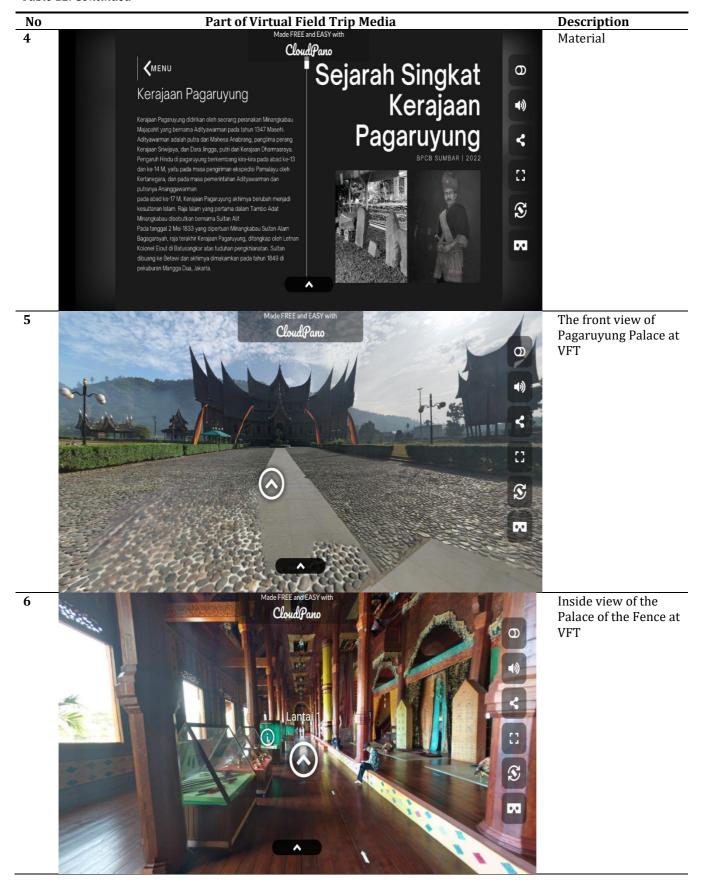| No	Part of Virtual Field Trip Media	Description
1		Virtual Field Trip Media Preview
2		VFT Home
3		User manual of VFT

Table 12. Continued

No	Part of Virtual Field Trip Media	Description
4		Material
5		The front view of Pagaruyung Palace at VFT
6		Inside view of the Palace of the Fence at VFT

Table 12. Continued

No	Part of Virtual Field Trip Media	Description
7		Inside view of the Palace of the Fence at VFT
8		View of the back of the Pagaruyung Palace on VFT
9		View of the tombs around the Pagaruyung Palace at VFT

Table 12. Continued

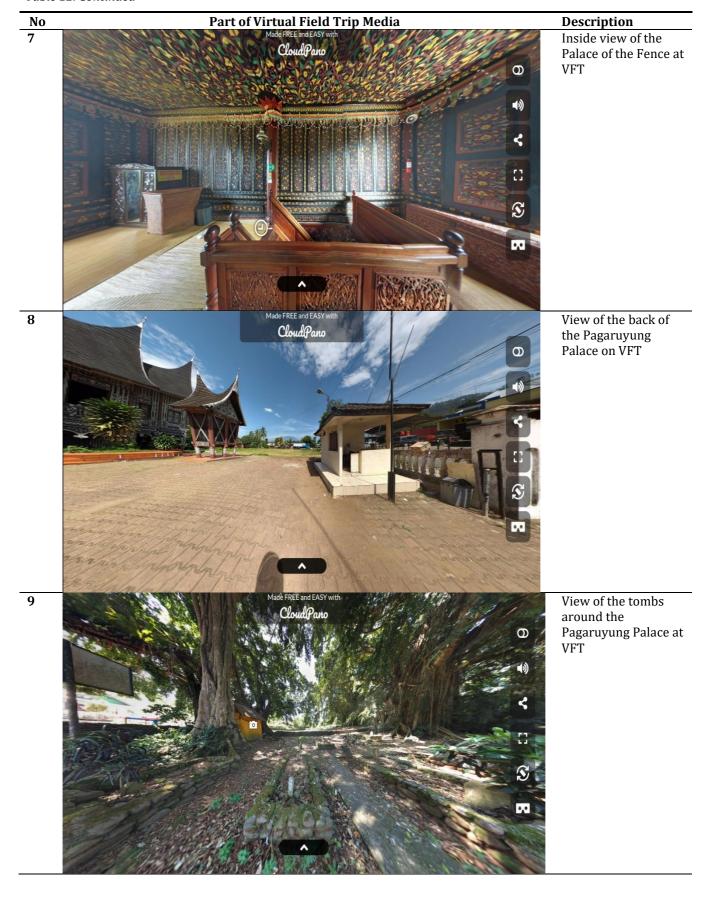| No	Part of Virtual Field Trip Media	Description
10		The display of the inscriptions around the Pagaruyung Palace

Product Trial

The objective of the practicality test is to ascertain whether the produced medium could be applied to the remote learning of history. Seven teachers of history from high and vocational school Solok City and 70 students participated in the practicality exam. The participating instructors and students represent the high and vocational schools in Solok City. Table 13 shows the practicality test results:

Table 13. The Results of the Practicality Test

No	Aspect	Score	Interpretation
1	Content	4.68	Very Good
2	Practicality	4.82	Very Good
3	Language	4.45	Very Good
4	Design	4.81	Very Good
	Mean	4.69	Very Good

The table shows that a very excellent category corresponds to a practicality test average score of 4.69. The four areas, namely substance, practicality, language, and design, were ranked in the very good category. This indicates that the learning resources created for the VFT are useful for teaching local history and enhancing the ability to use primary sources as evidence.

The Media Effectiveness Test

A media effectiveness test using a t-test was conducted to determine whether the VFT media developed is successful in enhancing the use of primary source evidence skills. The media trials in a large sample of 280 high school and vocational high school students in Solok City provided the data for the t-test. The same responder was subjected to two tests, a pretest and a posttest, to evaluate the effectiveness of the media. Table 14 shows the outcomes of the impact test using the t-test.

Table 14. The Results of the t-Test of the Experimental Class and Control Class

t-Test Results	Significance
of the Independent Sample Test	0.000

Based on the findings, it can be concluded that there is a substantial impact of using VFT learning media on primary source evidence skills of high and vocational school Solok City students because the significance value of the t-test is 0.000 or less than 0.05. Furthermore, this virtual field trip material may be used as an alternative by educators who wish to teach history, particularly local history.

Furthermore, the N-Gain assessment was used to determine the percentage increase in students' use of primary source evidence abilities for each indication. The N-Gain exam is utilized to measure how much the students' skills to use primary

source evidence improve. Researchers created the N-Gain test indicators using primary source evidence skills that were modified and adapted from Seixas et al. (2015). Table 15 is a presentation of the N-Gain test results:

Table 15. The N-Gain Test Results

No	Indicator	N-gain Score	Category
1	Students' use of relevant primary sources to the topic	0.76	High
2	The breadth of presentation and content of the narratives built	0.67	Medium
3	The language used is easily understood by the reader	0.73	High
	Mean	0.72	High

According to the chart above, using the VFT learning resources can improve students' abilities to use primary sources, as evidenced by 0.72, or 72%, in the high category. Based on the aforementioned findings, the VFT local history learning materials for high school and vocational high school students in Solok City help enhance their ability to use primary source data. The findings show that the local history learning media based on a VFT intended to be valid, reliable, practical, and effective were used to help students develop their skills.

Discussion

In conclusion, the local history learning resources based on virtual field tripsVFT are suitable, reliable, and effective for history learning, particularly for online instruction. Based on the N-gain value, using VFT media increased students' understanding of historical sources by 72%, which fits into the high group compared to the criteria for the N-gain value. These findings led to the conclusion that developed media aid in developing higher-order thinking skills in history lessons, particularly those involving the use of primary evidence. The results of this research offer history teachers at Solok City high school an alternative strategy for taking their students on VFT. Many other research, including those by Wibowo et al. (2020), Abidin et al. (2020), Cheng and Tsai (2019), Challenor and Ma (2019), Huizenga et al. (2019) and Villena Taranilla et al. (2022) have taken a similar approach to use VFT to support distant learning. The research by Wibowo et al. (2020) focuses on employing virtual VFT media to increase student learning interest, results, and independence. However, to help students develop their independence in learning something new, their communication skills and a sense of responsibility need to be evaluated (Abidin et al., 2020). Research by Challenor and Ma (2019), Huizenga et al. (2019), and Villena Taranilla et al. (2022) showed that virtual tour activities can improve students' motivation, interest, and learning outcomes in learning history. Prior research has concentrated on enhancing students' learning autonomy, motivation, and enthusiasm. Mead et al. (2019) stated that field VFT media can help students develop higher-order thinking skills, including data analysis and the synthesis of numerous sources. VFT used to enhance higher-order mental skills is almost similar to the research of Mead et al. (2019). This research presents an innovation for using VFT in history lessons to enhance students' skills in using primary sources as evidence.

Students tend to be more involved in learning with a more enjoyable learning experience because of VFT's potential to let them see, hear, and interact with a variety of real-life environments (Jacobson et al., 2009), which improves motivation, engagement, and student learning outcomes (Ho, 2020). VFT application can enable teachers to teach how to find, recognize, analyze, contrast, interpret, and generalize a historical narrative based on available sources. Students will actively search for various historical sources relevant to the topics being research through VFT media. Furthermore, using the navigational tools provided by VFT media, students may search the demonstrated virtual environment for the data needed (Aiman et al., 2020). It is compared to other sources to determine the accuracy and trustworthiness of the VFT data. Bond et al. (2022), Elban (2018), and Min et al. (2017) used the VFT significance to investigative scientific efforts needed to activate critical, analytical, and historical thinking skills.

Students can better examine every square inch of the display space since the media may show the surroundings in a 360^0 view. Additionally, this display encourages students to learn, which increases their enthusiasm for the subject (Aryani et al., 2022; Meinecke et al., 2022). VFT provides numerous advantages over other learning tools. For instance, when compared to actual field trips, it can (1) save time and money, (2) simulate the real world in a virtual setting with the realistic impression, (3) make difficult-to-access historical sources available to students, (5) make learning more student-centered to increase student engagement (Beldarrain, 2006), (6) allow students to access information independently and from anywhere (Chance & LoBaugh, 1994), and (7) encourage students to make their observations to encourage interaction, exploration, analysis, and the development of higher order thinking skills in science (Ofianto, Aman, Sariyatun, et al., 2022; Wibowo et al., 2020).

In contrast to conventional learning tools, which can only supply information in text or pictures, VFT media offers a direct experience where students are actively involved in the learning process. As a result, the knowledge acquired stays in their memories for a long time (Ho, 2020; Kenna & Potter, 2018; Stainfield et al., 2009). Texts and images do not offer engaging learning opportunities for kids because they only help them understand abstract concepts while making guesses about actual happenings (Karabag, 2015; Williams et al., 2022). According to research, teaching students' simple abstract concepts will not have a lasting influence since they will rapidly forget the teaching method and the abstract

material. However, it is different when a teacher gives students a chance to participate in learning activities where they actively search for, locate, analyze, and create opinions. Elban (2018) and Karabag (2015) stated that this process will help students retain the knowledge they have learned for a long time. Therefore, it can be concluded that the VFT learning medium serves as an online alternative to traditional historical field trip activities and is effective in improving the capacity to use primary source evidence.

Conclusion

In conclusion, the created local history learning media, based on the VFT, can be used to teach history, particularly online, and help students become more adept at using primary source data. However, when compared to other learning media, which simply display information in the form of words and images, its capacity to create a 360^0 display becomes beneficial to the created product, thereby making the knowledge acquired more complex. The 360^0 display gives the impression that students can view the actual environment, comprising historical sources. Furthermore, developed media can also solve the hefty expenses incurred by students when they make historical field trips. Therefore, the learning media for the VFT, which successfully enhances the ability to use primary source evidence, may be an alternative to online historical field trip activities. Teachers can utilize these findings to improve their lessons on history and students' critical thinking skills. Additionally, students are more likely to participate in the learning process when local history is presented via VFT because it adds a new element to the process. The findings of this research offer suggestions to the government for improving the quality of education, particularly in learning history. The results also corroborate earlier findings based on learning VFT. It is expected to motivate subsequent studies on the effects of VFT on advanced thinking skills in learning history, including historical thinking, analytical thinking, historical awareness, and historical reasoning.

Recommendations

Based on the research outcomes, history teachers are advised to conduct historical field excursions postponed due to the COVID-19 pandemic using the VFT. Furthermore, to build higher-order thinking skills, the produced medium needs to be used as an alternative to learn local history. The findings may be used to create a teaching resource capable of motivating and engaging students in learning history while strengthening their ability to research historical sources and write the associated narratives. It can also be incorporated by stakeholders into the formulation of educational policy, particularly with regard to high school history teaching. Future research need to determine how well VFT help with other aspects of historical thinking, like establishing historical significance, identifying change and continuity, analyzing cause and effect, taking historical perspectives, and understanding the ethical implications of its interpretations.

Limitations

Apart from the ability of the media developed to improve students' use of primary source evidence skills, this research actually still needs improvement from further studies. This research is restricted to high school pupils in Solok City and uses the Pagaruyung Palace as its primary historical source. Additional historical VFT sources will be needed for future study, both in West Sumatra and in other locations with bigger trial populations.

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Authorship Contribution Statement

Ofianto: Conceptualizing and designing, gathering and evaluating data, and preparing manuscripts. Erniwati: Providing technical support, supervising, and approving the final product. Fitrisia.: Data collection and analysis, paper compilation, and data interpretation. Ningsih and Mulyani: Data collection and analysis, as well as manuscript revision.

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