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The Effect of Visual Narrative-Based Pear Deck Media on Students' Historical Empathy in History Learning: A Quasi-Experimental Study

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Abstract

Historical empathy is a key component of historical thinking that enables students to understand past events contextually by considering the perspectives, experiences, and social conditions of historical actors. However, history learning in secondary schools remains largely text-oriented and focused on factual memorization, which limits students' affective engagement and contextual understanding. This study aimed to examine the effect and effectiveness of Pear Deck in enhancing students' historical empathy in history learning. A quantitative quasi-experimental approach with a pretest–posttest control group design was employed. The participants were 60 high school students divided into an experimental group using Pear Deck and a control group receiving conventional instruction. Data were collected using a historical empathy questionnaire developed to measure cognitive and affective dimensions. The results indicated an important difference between the experimental and control groups, with a greater increase in mean historical empathy scores in the experimental group (M = 81.97, SD = 4.23) than in the control group (M = 78.17, SD = 2.97), and an effect size of 0.36 (high category). These findings demonstrate that the use of Pear Deck enhances students' historical empathy through interactive visual narratives that promote emotional engagement, contextual understanding, and reflection on past events. A limitation of this study is that it was conducted in a single school with a relatively small sample, indicating that further research in broader contexts is needed to support generalization of the findings.

Keywords: *Historical empathy, history learning, Pear Deck, visual narrative.*

Introduction

History learning at the secondary school level is essential for developing critical thinking skills, historical awareness, and an understanding of national dynamics (Liu et al., 2021; Sung, 2020; Thorp & Persson, 2020). However, in practice, history learning is often limited to memorizing facts, historical figures, and chronological events. As a result, students tend to struggle to understand history as a complex and meaningful human experience. This limitation prevents

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students from developing the ability to position themselves within the perspectives of people in the past, a skill known as historical empathy (Endacott & Sturtz, 2015; Marino, 2024).

Historical empathy is essential because it enables students to understand not only *what happened* in history, but also *how and why* those events were experienced by people in their historical contexts (Bartelds et al., 2020; Kazlauskaitė, 2020). Through this perspective, history learning can contribute to the development of critical awareness, tolerance, and appreciation for the diversity of human experience. However, this affective dimension remains largely overlooked in history classrooms in Indonesia, where instruction tends to emphasize cognitive outcomes alone (Husna et al., 2020). Consequently, instructional innovations are needed to provide more immersive learning experiences that foster the development of students' historical empathy.

One promising technological alternative in the learning process is Pear Deck, an interactive presentation platform that offers greater interactivity than conventional digital tools. Pear Deck allows teachers to integrate visual narratives with images, text, and real-time quizzes (Anggoro & Pratiwi, 2025; Javed & Odhabi, 2018). This medium can increase student participation while providing opportunities for learners to explore historical narratives in a more contextualized manner. Previous studies indicate that Pear Deck, as an interactive response system, enhances student activity and engagement through its structured interactive features. Randall et al. (2024) found that prospective teachers' engagement increased due to real-time response questions, open-ended reflection prompts, anonymous participation, and the collective display of student responses that support class discussion. These findings are supported by Anggoro and Pratiwi (2023), who reported that Pear Deck is perceived as engaging because it enables continuous interaction through reflective questions, written responses, and immediate feedback. In the present study, these features are applied to history instruction through visual narratives accompanied by reflective questions, encouraging students to actively interpret the context and meaning of historical events rather than passively receive information. Integrating Pear Deck–based visual narratives into history learning has the potential to enhance students' historical experiences and support the development of a more empathetic understanding of the past.

The concept of historical empathy in history education has developed substantially over the past two decades and is now regarded as a central component of historical thinking. Historical empathy

refers to the ability to understand the actions, perspectives, and experiences of people in the past by situating them within their social, cultural, and temporal contexts, without judging them through present-day perspectives (Karn, 2024). This concept encompasses two interrelated dimensions: cognitive and affective. Previous studies indicate that narrative-based learning and the use of primary sources support the development of both dimensions by encouraging students to interpret historical experiences reflectively and to form emotional connections with the past (Berg & Persson, 2023; Heuer, 2020). These findings affirm that historical empathy functions as an integrative construct that unites cognitive understanding and affective engagement in history learning.

With the rapid advancement of technology, an increasing number of studies have examined the role of information technology in fostering historical empathy. The use of digital documents and interactive narratives has been shown to enhance student engagement while broadening students' understanding of the contexts of historical events (Calvert et al., 2019; Sariyatun et al., 2025). Additionally, research by Szőnyi (2024) indicates that visual, story-based media encourage students to engage more reflectively with historical experiences, particularly when addressing traumatic events in history.

Research on the development of historical empathy through digital media in history education has advanced considerably, yet several limitations remain. For example, Petousi et al. (2022) examined the use of interactive digital storytelling based on collaborative narratives in history learning and found that interactive story structures enhanced students' emotional engagement and reflection on past experiences. However, their study was conducted in a distance learning context and did not systematically measure historical empathy as an integrated affective–cognitive learning outcome within formal classroom settings. Similarly, Darmawan et al. (2025) showed that integrating digital media in the form of digital history textbooks within the Living History model increased students' historical empathy, but the interaction was not real-time and emphasized pedagogical design rather than the use of interactive classroom platforms that enable immediate student responses. Moreover, a recent empirical review of historical empathy research confirmed that, although various pedagogical strategies and media have been employed to foster empathy, limited attention has been given to the specific role of interactive digital platforms in facilitating measurable perspective taking, reflection, and emotional engagement (Harnes, 2025). These

findings indicate a research gap regarding the use of visual narrative–based interactive digital media implemented in formal history classrooms and explicitly designed to develop and assess historical empathy. The present study addresses this gap by examining Pear Deck as a visual narrative–based interactive platform with real-time response features that actively engage students in historical perspective taking while enabling the systematic measurement of historical empathy as an affective–cognitive learning outcome. Building on the identified research gaps, the novelty of this study lies in two key aspects. First, although prior research has shown that narrative-based learning and the use of historical sources can support the development of historical empathy, such studies have rarely integrated interactive digital media that enable students to provide reflective responses in real time during history instruction. This study addresses this gap by positioning historical empathy—encompassing both cognitive and affective dimensions—as a primary learning outcome developed through students' active interaction with visual historical narratives. Second, unlike previous technology-based studies that primarily employ digital tools as passive presentation media, this research utilizes Pear Deck as an interactive visual narrative platform that supports two-way interaction, written reflection, and active student participation. In doing so, the study extends current understandings of the role of digital media in history education, highlighting its function not only as a cognitive support tool but also as a means of fostering students' emotional awareness and historical perspective. Accordingly, this study seeks to address the following research questions:

1. How does the use of visual narrative–based Pear Deck media facilitate the development of students' historical empathy in history learning?
2. To what extent does the use of visual narrative–based Pear Deck media influence students' levels of historical empathy based on empirical measurement results?

Literature Review

Historical Empathy in History Education

Historical empathy is a key concept in history education that emphasizes the idea that understanding the past cannot be reduced to the mere acquisition of facts, chronology, and historical figures, but must also involve efforts to comprehend past human experiences in a

contextual, rational, and meaningful manner. In contemporary history education research, historical empathy is defined as students' ability to interpret the actions, thoughts, and emotions of historical actors by consciously situating them within the social, cultural, political, and moral contexts of their time, supported by the critical use of historical evidence (Davis et al., 2001; J. Endacott & Brooks, 2013; Savenije & de Bruijn, 2017).

Contrary to the common perception of empathy as merely sympathy or emotional involvement, scholarship in history education emphasizes that historical empathy is fundamentally a form of historical reasoning. It requires a balance between emotional engagement with the past and critical distance from it, ensuring that students avoid anachronism and presentism (Endacott & Brooks, 2018; Wineburg, 2001). In this sense, historical empathy serves as a bridge between the cognitive, ethical, and civic dimensions of history learning. In the present study, historical empathy is conceptualized using the framework proposed by Guney and Seker (2012), who define it as a cognitive–affective construct reflected in learners' responses to historical narratives and events through their comprehension, imagination, and interpretation of past human experiences within their historical contexts. Their empirical findings identify eight interrelated dimensions of historical empathy, comprising four affective and four cognitive components.

According to Guney and Seker, the affective dimension of historical empathy comprises four aspects. First, personal connection refers to relating historical events to one's own beliefs or life experiences while remaining mindful of the historical context. Second, imagination involves envisioning the situations and contexts encountered by historical actors. Third, identification entails identifying with historical figures and the moral choices they faced. Fourth, humanization refers to recognizing historical actors as human beings with emotions, limitations, and choices shaped by their specific historical circumstances. The cognitive dimension of historical empathy also includes four components. Fifth, understanding historical events involves comprehending events in a coherent and meaningful sequence. Sixth, understanding different perspectives refers to the ability to recognize the diversity of viewpoints held by historical actors. Seventh, understanding the tentativeness of historical conclusions reflects an awareness that historical interpretations are provisional and open to revision in light of new evidence. Finally, critical perspective taking is the ability to analytically adopt the viewpoints of historical actors without necessarily endorsing or justifying their actions. Guney and Şeker's framework aligns with theories

of history education that emphasize inquiry-based learning, the use of historical sources, and multiperspective narratives as essential for developing historical empathy (VanSledright, 2010). History instruction that fosters empathy moves beyond factual and descriptive approaches toward interpretive learning that positions students as active interpreters of the past through engagement with historical narratives, sources, and dilemmas (Kazlauskaitė, 2022). Within this framework, historical empathy is not treated as a byproduct of instruction but as an affective–cognitive learning outcome that is intentionally and measurably designed. Accordingly, the eight dimensions of historical empathy proposed by Guney and Şeker serve as the conceptual foundation for instrument development and data analysis in this study.

Media Pear Deck and Visual Storytelling in History Learning

The development of digital technology has transformed history learning from a transmissive approach to more participatory and reflective practices. Interactive digital media enable students not only to receive historical information but also to actively engage in the interpretation of the past (Patterson et al., 2022; Tanjung & Sitompul, 2020). In this context, Pear Deck is positioned not merely as a presentation tool but as a pedagogical medium that supports inquiry- and reflection-based history learning. Pear Deck offers several key features, including real-time interaction, visual prompts, and formative feedback. These features align closely with interpretive approaches to history education, which emphasize students' active engagement with historical contexts, perspectives, and challenges (McCulloch & Woodin, 2010). In particular, the use of open-ended questions and short-response prompts provides students with opportunities to express their interpretations and reflections on historical events more freely.

From a pedagogical perspective, integrating Pear Deck into history instruction aligns closely with the concept of visual storytelling. Visual storytelling involves combining historical narratives with visual elements such as archival photographs, maps, illustrations, and brief texts to create coherent representations of past events. This approach echoes Bruner's (1997) work on the power of narrative in meaning making and enables students to view the past as a tapestry of lived experiences rather than a disconnected collection of dates and facts. Visual storytelling is grounded in the principles of multimedia learning and dual coding theory. Mayer (2020) explains that learning is more effective when verbal and visual information are integrated, thereby supporting

deeper cognitive processing. Similarly, Paivio (1990) claims that representing information through both verbal and visual codes enhances retention and comprehension. In history education, the integration of narrative and visual elements helps students construct mental representations of what occurred, when it happened, and who was involved, thereby laying a foundation for the development of historical empathy.

Beyond supporting cognitive clarity, visual storytelling also carries strong emotional appeal. Research suggests that historically grounded visuals can humanize historical actors and engage students with the emotional dimensions of experiences shaped by suffering, conflict, and moral complexity (Marcus et al., 2018). Importantly, however, such emotional engagement must be accompanied by historical understanding and reflective interpretation to foster a more reasoned and disciplined form of historical empathy.

This study aimed to examine how Pear Deck supports the development of the eight dimensions of historical empathy proposed by Guney and Şeker. Real-time, open-ended questions encourage students to make personal connections and engage their imagination, enabling them to relate historical narratives to their own experiences. The presentation of visual narratives helps humanize the past by allowing students to view historical figures as real individuals with emotions and constraints shaped by their time. Reflective prompts that require students to explain reasons and viewpoints foster an understanding of diverse perspectives and promote critical perspective taking. At the same time, evidence-based discussions and teacher-led clarification support students' understanding of historical events and their awareness of the tentative nature of historical conclusions.

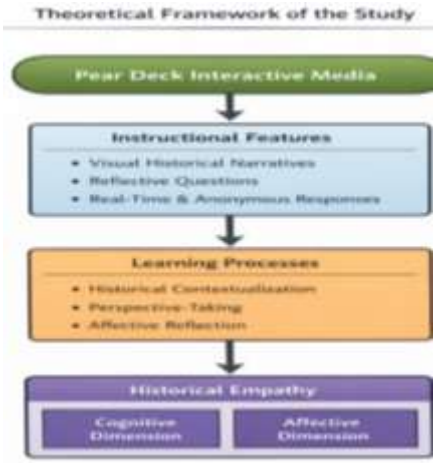

Figure 1. Research Theory Framework

Method

Types of Research

This study employed a quantitative approach with a quasi-experimental design to examine the effect of visual narrative–based Pear Deck media on the improvement of students' historical empathy. A quantitative approach was selected because it allows for the objective measurement of changes in historical empathy through standardized instruments and validated statistical analyses (Rieber, 2020). The quasi-experimental design is particularly appropriate in this context, as it enables a comparison between learning conditions using Pear Deck and conventional instruction, thereby allowing the causal relationship between the intervention and learning outcomes to be identified more clearly.

This study employed a quasi-experimental pretest–posttest control group design to assess students' historical empathy before and after the intervention (Miller et al., 2020). This design was selected due to the practical limitations of implementing full randomization in school settings while still preserving internal validity (Borg & Gall, 1983). The primary outcome variable in this study was historical empathy, a key competence in contemporary history education. Specifically, the study focused on the development of eight dimensions of historical empathy encompassing both affective and cognitive aspects, as proposed by Guney and Şeker: personal connection, imagination, identification, humanization, understanding historical events, understanding different perspectives, understanding the tentativeness of historical conclusions, and critical perspective taking (Table 2). Historical empathy was selected as the focus of this research because it encourages students not only to memorize historical facts but also to understand the perspectives, emotions, and experiences of people in the past (Endacott, 2019). Nevertheless, previous studies have shown that historical empathy remains underexplored as a primary outcome in history education research in Indonesia, where greater emphasis is typically placed on factual and cognitive dimensions (Krasnova, 2022).

Participants

The participants of this study are grade XI students from high schools in Jember Regency. Sampling was conducted using specific criteria aligned with the research objectives. Due to limited

access to students, the researcher coordinated with the school administration and history teachers to determine the sample. Eligible participants were required to have completed Indonesian history coursework, possess access to digital devices (laptops or smartphones) compatible with Pear Deck, and not be involved in other research on similar topics during the experimental period. Each class consisted of 30 students, following the class divisions established by the school and agreed upon in consultation with the researcher. The relatively small class size was intended to support active student participation during the intervention. In total, 60 students participated and were divided into two groups: an experimental group (30 students) that received instruction using visual narrative–based Pear Deck media and a control group (30 students) that received history instruction using Fokusky media. Participants in both groups were balanced in terms of gender, age, and academic characteristics (Table 1).

In addition, participant involvement adhered to ethical research principles. Students and school administrators were informed about the study's objectives, procedures, and data confidentiality safeguards. Informed consent was obtained from both the school and the students prior to data collection, in accordance with the research ethics guidelines of the CIOMS (2016).

Table 1

Characteristics of Student Participants

No	Characteristics	Information	Frequency
1	Gender	Male	13 control and 13 experiment
		Female	17 control and 17 experiment
2	Age	16	30 control and 30 experiment
3	Grade level	Senior high school grade XI social studies	30 control and 30 experiment

Data Collection Tools

Data in this study were collected using questionnaires to obtain a comprehensive understanding of the effects of visual narrative–based Pear Deck on students' historical empathy. The primary instrument was a questionnaire designed to measure students' historical empathy based on the indicators proposed by Guney and Seker (2012) (Table 2). Prior to implementation, the instrument underwent validity and reliability testing using SPSS version 29. Item validity was examined using the Product Moment correlation test (Table 3), and construct validity was assessed through exploratory factor analysis.

The Kaiser–Meyer–Olkin (KMO) measure yielded a value of 0.849, indicating excellent sampling adequacy, while Bartlett's Test of Sphericity was statistically significant ($\chi^2 = 1431.184$, df = 276, $p < 0.001$), confirming the suitability of the data for factor analysis. Based on the eigenvalue > 1 criterion, four factors were extracted, collectively explaining 72.552% of the total variance, which represents a high proportion. The rotated component matrix showed that all items had factor loadings of ≥ 0.50 and clustered consistently with the theoretical indicators of the historical empathy instrument, with no substantial cross-loadings. In addition, all items demonstrated communality values above 0.48, indicating that each item contributed adequately to the construct being measured (Figure 2).

Reliability testing was conducted using Cronbach's alpha to examine the internal consistency of the historical empathy instrument. The results showed alpha coefficients greater than 0.70, indicating that the instrument demonstrates adequate reliability for use in educational research. According to Taber (2018), a Cronbach's alpha value above 0.70 is generally considered acceptable for research purposes.

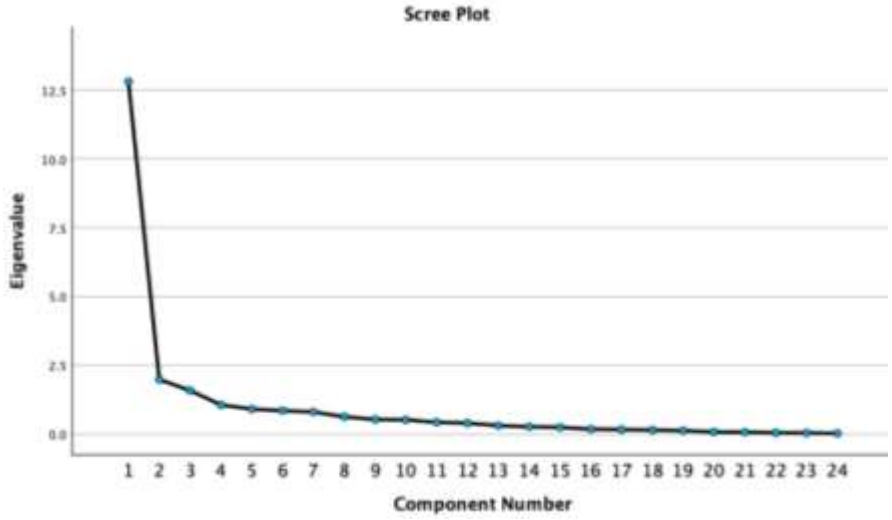

Figure 2. Scree Plott Graph of Historical Empathy Scale

Table 2

Grid for the Historical Empathy Questionnaire Instrument

Aspects	Specific Indicators	Code Item	Question Item
Cognitive Aspects			
Making Personal Connections	Relating historical events to personal experiences or social realities of the present	MPC-1	I can understand the suffering of the people during the colonial period because it is similar to the injustice that occurs today
		MPC-2	History lessons helped me understand the current state of society
		MPC-3	I feel like past events can be a lesson for my life
Imagination	Ability to imagine the emotional situation of historical figures	IMG-1	I can imagine the feeling of a fighter fighting against colonialism without complete weapons
		IMG-2	I can imagine the lives of the people in the face of Japanese colonialism
		IMG-3	I imagine the atmosphere of the past as if I were present in it
Identification	Putting yourself in the position of a historical figure	IDN-1	I can understand why historical figures make difficult decisions.
		IDN-2	I try to think like a historical figure when making important decisions
		IDN-3	I feel as if I am part of the struggle of these historical figures
Humanization	Seeing historical figures as human beings with emotions and limitations	HUM-1	I understand that historical figures can also make mistakes.
		HUM-2	I appreciate the struggle of historical figures even though they have weaknesses.
		HUM-3	I don't judge historical figures only on the right or wrong side
Affective Aspects			
Understanding the Events	Understanding the emotional impact of historical events on society.	UE-1	I feel sad to know the suffering of the people during the Japanese colonial period
		UE-2	I feel proud of the struggle of the Indonesian nation in the past
		UE-3	The story of history made me think more deeply about the value of humanity.
Understanding Different Perspectives	Understanding different points of view in historical events	UDP-1	I try to understand the reasons for opposing sides in historical events
		UDP-2	I realized that the view of history can be different depending on who wrote it
		UDP-3	I try to understand the point of view of other nations towards the events in Indonesia
Understanding the Tentativeness of the Conclusions	Recognizing that historical interpretations are temporary and subject to change	UTC-1	I realized that views on history can change with the discovery of new evidence
		UTC-2	I don't immediately believe in a single historical source before comparing it
		UTC-3	I think that every historical event has more than one version.
Critical Thinking (Perspective Taking)	Critically analyze historical sources and events from various perspectives	CT-1	I analyze historical sources before drawing conclusions
		CT-2	I use historical facts to assess the actions of past figures
		CT-3	I compare several historical sources to understand an event

Instrument validity testing was conducted to ensure that the instrument accurately measured the intended construct (Feest, 2020). This process enabled the identification of valid and invalid items prior to their use in the pretest and posttest assessments of students' historical empathy. The data obtained from the pilot testing were analyzed using the Product Moment correlation method with SPSS version 29.

According to the decision criteria proposed by Pallant (2020), an item is considered valid if the significance (Sig.) value is less than 0.05, whereas an item is considered invalid if the Sig. value is greater than 0.05. Based on these criteria, the results of the pretest instrument validity testing conducted with students are presented below.

Table 3

Instrument Validation Test Results

Instrument Validity Test				
Question No.	Rcount	Rtable	Sig	Information
1	0.638**	0.361	0.000	Valid
2	0.572**	0.361	0.001	Valid
3	0.544**	0.361	0.002	Valid
4	0.609**	0.361	0.000	Valid
5	0.724**	0.361	0.000	Valid
6	0.626**	0.361	0.000	Valid
7	0.756**	0.361	0.000	Valid
8	0.587**	0.361	0.001	Valid
9	0.576**	0.361	0.001	Valid
10	0.673**	0.361	0.000	Valid
11	0.731**	0.361	0.000	Valid
12	0.522**	0.361	0.004	Valid
13	0.784**	0.361	0.000	Valid
14	0.823**	0.361	0.000	Valid
15	0.756**	0.361	0.000	Valid
16	0.719**	0.361	0.000	Valid
17	0.581**	0.361	0.000	Valid
18	0.643**	0.361	0.000	Valid
19	0.612**	0.361	0.000	Valid
20	0.527**	0.361	0.000	Valid
21	0.675**	0.361	0.000	Valid
22	0.743**	0.361	0.000	Valid
23	0.761**	0.361	0.000	Valid
24	0.537**	0.361	0.000	Valid

Note. This table demonstrates the *instrument validation test results*

According to the reliability decision criteria outlined by Pallant (2020), data are considered reliable if the Cronbach's alpha value exceeds 0.70, whereas values below 0.70 indicate that the data are not reliable.

Table 4

Instrument Reliability Test Results

Research Data	N	Cronbach's Alpha	Information
Historical Empathy Instruments	24	0.938	Reliabel

Note. This table presents the historical empathy instrument reliability

The table shows that the historical empathy instrument has a Cronbach's alpha value of 0.938 (> 0. 70), indicating that the instrument is reliable. It can therefore be concluded that the instrument demonstrates strong internal consistency.

Data Analysis

Data analysis in this study was conducted in stages to ensure that each statistical decision aligned with the quasi-experimental design and the characteristics of the data. The analyzed data consisted of students' historical empathy scores obtained from pretest and posttest instruments administered to both the experimental and control groups. All data were first coded and entered into IBM SPSS version 29 for analysis. The initial stage focused on descriptive statistics to provide an overview of the data distribution. This analysis included calculations of the mean, standard deviation, minimum and maximum values, and score distributions for historical empathy in each group. The descriptive results were used to identify general trends in changes in students' historical empathy before and after the intervention and to support preliminary interpretations of differences between the groups.

The next stage involved testing the assumptions required for parametric analysis. Normality was assessed using the Shapiro–Wilk test, as each group included fewer than 100 participants, to determine whether the distribution of historical empathy scores approximated normality. Homogeneity of variance was then examined using Levene's test to confirm the equivalence of variances between the experimental and control groups. The results of these tests indicated that the assumptions of normality and homogeneity were satisfied, allowing the use of parametric statistical procedures. Following the confirmation of these assumptions, hypothesis testing was conducted using an independent samples *t*-test. This analysis compared historical empathy scores between the two independent groups: the experimental group, which received instruction using Pear Deck media, and the control group, which received conventional presentation-based

instruction. The primary focus of the analysis was on posttest scores to determine the effect of the intervention on students' historical empathy after the completion of the instructional sequence.

In addition to testing the statistical significance of differences between groups, this study calculated effect size using Cohen's *d* to assess the magnitude of the impact of Pear Deck media on students' historical empathy. The inclusion of effect size analysis allows the findings to indicate not only whether differences are statistically significant but also the practical strength of the intervention's influence within the context of history learning.

Table 5

Effect Size Criteria

Effect Size	Category
0.01	Small Effect
0.06	Moderate Effect
0.14	Large effect

Note. This table shows the effect size criteria that refer to the Cohen (1988)

Research Procedure

This research was conducted through several systematic stages to ensure that the implementation of visual narrative–based history learning using Pear Deck could be measured clearly. During the preparation stage, a preliminary study was conducted to identify the needs of history learning in senior high school classrooms, particularly in relation to students' low levels of historical empathy. Subsequently, instructional materials were prepared, including lesson plans (RPP) and historical empathy assessment instruments. Prior to their use, the instruments underwent validity and reliability testing. These tests were conducted with 30 students outside the experimental and control groups using 24 questionnaire items. At the implementation stage, two groups were involved: a control group and an experimental group. The control group received instruction using Fokusky media, while the experimental group used Pear Deck. At the beginning of the learning process, both groups completed a pretest to assess their initial levels of historical empathy. Each group then participated in history learning using the assigned media. After the instructional sessions were completed, both groups were administered a posttest to measure changes in historical empathy following the intervention. The pretest and posttest data were subsequently analyzed using predetermined statistical techniques to support decision making and conclusions. Finally, the findings were discussed in relation to relevant theoretical frameworks and previous research.

Table 6

Implementation of Learning in Control Classes and Experimental Classes

Aspects	Control Class	Experimental Classes
Learning Media	Focusky as a visual presentation medium	Pear Deck as an interactive visual narrative medium
Number of meetings	5 learning sessions	5 learning sessions
Duration of each session	2x45 minutes	2x45 minutes
Material	History of Indonesia	History of Indonesia
Pre-test	Historical empathy pre-test is given before the first learning session	Historical empathy pre-test is given before the first learning session
Implementation of learning	Presentation of material using Focusky slides and oral explanations by teachers	Presentation of visual narratives accompanied by reflective questions using the Pear Deck
Stage 1	Introductory Session of learning materials and objectives was delivered through Focusky slides; Students listen and record the teacher's explanation	An introduction to the material is presented through the initial narrative visuals on the Pear Deck; Students respond to initial questions in writing to activate initial knowledge
Stage 2	Chronological presentation of historical events using Focusky; Interaction limited to oral question and answer	Presentation of chronological visual narratives; students write down the context of the event through open-ended questions on the Pear Deck
Stage 3	Advanced explanations focus on facts and concepts; Short oral discussions	Visual dilemmas of historical figures are presented; Students write reflections on the perspective of the characters through anonymous written responses
Stage 4	Reinforcement of material and summaries using Focusky; Short exercises are done conventionally	A summary of the visual narrative accompanied by reflective questions; Student responses are displayed collectively for discussion
Stage 5	Implementation of individual historical empathy post-tests	Implementation of individual historical empathy post-tests

Findings

Normality Test Results

After establishing the validity and reliability of the instrument, the next step involved testing the statistical assumptions, specifically the normality test. The purpose of the normality test was to determine whether the data were normally distributed. Normality was assessed using students' pretest and posttest scores from both the experimental and control groups. The Shapiro–Wilk test was employed, and all analyses were conducted using SPSS version 29.

According to the normality criteria outlined by Pallant (2020), data are considered normally distributed when the significance value is greater than 0.05, whereas a significance value less than 0.05 indicates that the data are not normally distributed.

The results presented below report the outcomes of the normality tests for the pretest and posttest data from both the experimental and control groups.

Table 7

Normality Test Results

Class		Shapiro-Wilk			
		Statistic	Df	Sig.	Information
Pretest	Control	0.945	30	0.126	Normally distributed data
	Experiment	0.938	30	0.080	Normally distributed data
Posttest	Control	0.966	30	0.433	Normally distributed data
	Experiment	0.974	30	0.655	Normally distributed data

Note. This table demonstrates the normality tes results

Table 7 shows that both the pretest and posttest data have significance values greater than 0.05 (Sig. > 0.05). Therefore, the data are considered to be normally distributed. As a result, the normality assumption required for subsequent parametric analyses has been satisfied.

Homogeneity Test Results

The next prerequisite analysis involved a homogeneity of variance test using posttest data from the control and experimental groups. This test was conducted to determine whether the variances between the two groups were equivalent. According to the decision criteria, a significance value greater than 0.05 indicates homogeneous variances, whereas a significance value less than 0.05 indicates non-homogeneous variances. The results of the homogeneity test for the posttest data of the control and experimental groups are presented below.

Table 8

Homogeneity Test Results

Value	Levene Statistic	Df2	Sig	Information
Based on Mean	3.915	58	0.053	Homogeneous

Note. This table demonstrates the normality test results

Based on the data presented in Table 8, the significance value based on the mean for the posttest scores of the control and experimental groups was 0.053. Because this value exceeds 0.05, it can be concluded that the posttest data from both groups are homogeneous.

Historical Empathy Test Results

After the prerequisite assumptions were met, the next step was to examine differences in historical empathy between the control and experimental groups. This analysis was conducted using an independent samples *t*-test with the support of IBM SPSS Statistics. Interpretation of the results was based on the calculated *t* value compared with the critical *t* value at a 5% significance level, as well as the two-tailed significance (Sig.) value. Differences between the two groups were further examined through the mean difference reported in the *Mean Difference* column.

Table 9

Results of Students' Historical Empathy Pre-Test

Class	N	Mean	Std. Deviation	t	p
Control class pretest	30	75.00	3.08	0.24	0.806
Experiment class Pretest	30	74.80	3.19		

The descriptive statistics showed that the mean pretest score in the control group was M = 75.00 (SD = 3.08), whereas the experimental group had a mean of M = 74.80 (SD = 3.19). The relatively small difference between these means suggests that both groups demonstrated comparable initial levels of historical empathy. These results indicate that, prior to the intervention, there were no meaningful differences in historical empathy between the two groups.

Table 10

Results of Students' Historical Empathy Post-Test

Class	N	Mean	Std. Deviation	t	p	Eta Squared
Control class posttest	30	78.17	2.97	-4.03	0.001	0.36
Experiment class posttest	30	81.97	4.23			

The results of the independent samples *t*-test revealed a significant difference in posttest historical empathy scores between the control and experimental groups. The control group, which used

Focusky media, achieved a mean historical empathy score of 78.17 (SD = 2.97), whereas the experimental group, which used visual narrative–based Pear Deck media, obtained a higher mean score of 81.97 (SD = 4.23). The analysis yielded *a value of t* −4.03 with p = 0.001, indicating that the difference in average score between the two groups was statistically significant ($p < 0.05$). These findings demonstrate that students in the experimental group exhibited higher levels of historical empathy than those in the control group following the instructional intervention.

To determine the effectiveness of visual narrative–based Pear Deck media in enhancing students' historical empathy, an effect size analysis using eta squared was conducted. The analysis yielded an effect size value of 0.36, which, according to standard interpretation criteria, falls within the large effect category. This result indicates that Pear Deck media has a strong influence on improving students' historical empathy. Based on the findings from the independent samples *t*-test and the effect size analysis, it can be concluded that the use of visual narrative–based Pear Deck media has a significant and substantial impact on increasing students' historical empathy. The higher posttest mean score in the experimental group compared to the control group further demonstrates that history instruction integrating interactive, visual narrative–based media is more effective in fostering students' historical empathy than conventional visual presentation media.

Discussion

Improving Students' Historical Empathy Using Visual Narrative-Based Pear Deck Media

Based on the analysis of pretest and posttest data from both the control and experimental groups, a significant difference was observed following the intervention. The control group, which used conventional media, obtained a mean posttest score of 78.17 (SD = 2. 97). In contrast, the experimental group that used visual narrative–based Pear Deck media achieved a higher mean posttest score of 81.97 (SD = 4. 23). These findings provide empirical evidence that the use of visual narrative–based Pear Deck media in history instruction is more effective than conventional methods. The results demonstrate that Pear Deck enhances students' historical empathy, particularly across cognitive and affective dimensions. This study contributes novelty to history education research by demonstrating the effectiveness of Pear Deck in fostering historical empathy. These findings are consistent with Marino (2024), who emphasizes that historical empathy comprises both cognitive and affective dimensions, requiring students to understand

historical contexts while appreciating human experiences of the past. The real-time interactive features of Pear Deck, which integrate visual narratives, text, images, and reflective questions, encourage students to engage in historical imagination. Historical imagination plays a crucial role in deep historical understanding, as it invites students to project themselves into past situations and experiences (Bullot & Reber, 2025).

Historical empathy in history learning develops through interconnected cognitive and affective processes, particularly contextualization and perspective taking. Contextualization enables students to understand historical events and actions by situating them within the social, political, and cultural conditions of their time, while perspective taking encourages students to imagine the viewpoints, motives, and dilemmas faced by historical actors without imposing present-day judgments (Barton & Levstik, 2004; J. L. Endacott & Brooks, 2018; Wineburg, 2001). Historical empathy emerges when these processes are not only conceptually understood but also reflectively experienced during the learning process.

Visual storytelling plays an important role in facilitating both contextualization and perspective taking. When historical content is presented through visual elements such as illustrations of social scenes, photographs, and timeline designs, students gain a clearer and more concrete understanding of historical contexts than text alone can provide. Grounded in narrative transportation theory, the integration of visual components into storytelling can draw learners into the lived experiences of people in the past, thereby enhancing cognitive and emotional engagement simultaneously (Green, 2021). In history education, visual storytelling extends beyond the transmission of information and functions as a bridge to understanding what life was like for individuals at particular moments in the past.

However, the development of historical empathy depends not only on visual storytelling but also on its integration with reflective practices. It is at this point that Pear Deck functions as an effective instructional tool. In this study, historical visual narratives were presented through instructional slides, supplemented by reflective prompts delivered via Pear Deck. These slides incorporated open-ended questions embedded within the content to encourage students to independently consider the contextual features of the historical period under study, such as evaluating prevailing social conditions or the challenges faced by historical actors.

The written response feature of Pear Deck enables students to step into the perspectives of historical actors by inviting them to consider the choices or emotions those figures may have experienced within a given context. By articulating what historical actors might have thought or decided in specific situations, students engage in a structured form of historical imagination (Yilmaz, 2007). This process is important because it allows for emotional engagement while maintaining critical distance, thereby avoiding ahistorical emotional sympathy. In addition, the anonymity of responses in Pear Deck encourages broader participation, as students who are typically less vocal in class are able to express their interpretations and reflections in a more comfortable and thoughtful manner.

The findings of this study indicate that the development of historical empathy is the outcome of an intentionally designed learning process. Visual media function as contextual triggers, while the interactive features of Pear Deck sustain students in ongoing cycles of reflection and engagement with multiple perspectives. In this sense, Pear Deck serves not merely as a medium for knowledge transmission but as a learning environment in which learners, historical sources, and historical contexts interact dynamically. The results suggest that historical empathy does not emerge automatically; rather, it is cultivated through instructional design that deliberately integrates these elements.

From a pedagogical perspective, the use of Pear Deck in history instruction promotes an interactive, participatory, and engaging classroom environment. Students are actively involved through visual elements displayed in real time, and learning occurs through two-way interaction rather than one-directional presentation typical of conventional media. This approach aligns with social constructivist theory, which emphasizes that meaning is constructed through social interaction (Duan et al., 2023). Through text-based discussions, images, and interactive questions, students not only receive historical information but also actively construct meaning in history learning (de Leur et al., 2020). The use of visual narratives has also been shown to support students' understanding of temporal relationships among historical events (Han et al., 2022). Similarly, Kazlauskaitė (2020) highlights that visual narratives strengthen historical empathy by fostering emotional engagement and deeper temporal connections. Through these temporal connections, students are better able to recognize causal relationships between historical events.

In this way, Pear Deck functions as a cognitive bridge that integrates visual and narrative elements, linking affective experience with rational historical understanding.

According to Reis et al. (2021), learning experiences become more effective when cognitive information is accompanied by emotional engagement. Historical visualization through Pear Deck—using historical photographs, documentary materials, or digital illustrations—serves as an effective means of helping students recall historical events while fostering emotional involvement. By integrating cognitive and affective dimensions, Pear Deck supports the development of students' historical empathy.

The Effectiveness of Using Pear Deck Media in Improving Students' Historical Empathy

This study shows a significant difference in historical empathy between the control group, which used Focusky, and the experimental group, which used Pear Deck. The findings support the view that visually enriched historical narratives can enhance students' understanding and engagement. These results are consistent with Bleeze (2024), who reported that historical empathy develops most effectively when students engage in discussion, interpretation of sources, and moral reflection. Using Pear Deck, students participated in reflective activities that supported higher-order historical thinking. Interactive features such as short written responses and anonymous contributions allowed students to share their perspectives more comfortably, in line with the findings of Bailey et al. (2021). Moreover, the study suggests that digital narrative-based learning environments enhance students' psychological safety, thereby encouraging more active participation.

A set of Pear Deck activities can support the development of students' historical empathy and promote a student-centered approach to history learning. Within this framework, the teacher functions as a facilitator who guides discussion and ensures that students' interpretations remain grounded in historical evidence. Tsiviltidou and Vavoula (2023) note that digital narratives are effective tools for fostering reflective and contextual understandings of history. In the context of this study, students reported that Pear Deck made history feel more vivid and relevant to their own lives, allowing them to engage more deeply with the human dimensions of past events. Nevertheless, challenges accompany the use of this media. Not all students possess the same level of digital literacy, requiring teachers to ensure that all learners can effectively use Pear Deck's

features. Additionally, some students exhibited heightened emotional responses to narratives of historical tragedy. In teaching historical empathy, educators must therefore maintain a balance between emotional engagement and factual accuracy to prevent students from falling into the romanticization of the past (Hartendorp et al., 2023).

Nonetheless, the effectiveness of Pear Deck as a visual narrative–based interactive medium has been shown to enrich history learning. The findings of this study make a meaningful contribution to the development of digital pedagogy that positions empathy as a core element of humanistic education. This perspective aligns with Ahlskog (2024), who argues that historical empathy involves not only understanding the past but also cultivating moral awareness that supports more reflective engagement in the present.

The quantitative findings of this study show a significant difference in historical empathy between the experimental group that used visual narrative–based Pear Deck media and the control group. The independent samples *t*-test further revealed that students who learned using Pear Deck demonstrated higher levels of historical empathy than those who learned through traditional media. These results support the view that, beyond historical content itself, the ways in which history is presented and explored play a critical role in shaping students' historical empathy.

A more refined understanding of historical empathy emerges when learning is integrated with visual storytelling and reflective dialogue. Visualizing historical events helps students situate themselves within historical contexts, while Pear Deck prompts guide active engagement in perspective taking. When students articulate their understandings, viewpoints, and emotional responses to the circumstances faced by historical actors, they simultaneously activate cognitive and affective processes that define historical empathy. Overall, the findings support the conclusion that historical empathy is most effectively developed through learning experiences that are actively contextualized and engaging, rather than through the passive transmission of historical information.

Conclusion

Based on the findings of this study, it can be concluded that visual narrative–based Pear Deck media in history instruction is effective in enhancing students' historical empathy. The use of Pear

Deck strengthens not only the cognitive dimension, such as understanding past events, but also the affective dimension by fostering emotional connections with historical experiences. The results show that students become more active and participatory in the learning process, particularly in interpreting historical visual narratives presented interactively. Through the use of Pear Deck, the classroom environment becomes more engaging and dynamic, as the platform supports two-way interaction between teachers and students. Students are able to respond directly to questions and narratives in real time, while teachers can continuously monitor and assess students' understanding. This instructional approach is effective in addressing the monotony often associated with text-centeredhistory learning. From a theoretical perspective, the study highlights that interactive technology can serve as a bridge between cognitive and affective domains in history education, shifting learning away from mere factual memorization toward the development of historical awareness and social empathy.

The findings reveal that students in the experimental group achieved significantly higher historical empathy scores than those in the control group after participating in Pear Deck–based history instruction. These results suggest that the use of interactive visual narratives combined with reflective questioning effectively supports students' contextual understanding and perspective-taking of historical events. Moreover, Pear Deck–based learning enables two-way interaction between teachers and students through real-time written responses, allowing teachers to monitor students' understanding throughout the learning process. From a theoretical perspective, this study emphasizes that interactive learning technologies can serve as a bridge between the cognitive and affective dimensions of history education, shifting learning beyond factual mastery toward the development of historical empathy and contextual awareness of the past.

However, this study has some limitations. First, it was conducted in a single school with a relatively small sample size, which limits the generalizability of the findings and suggests the need for further research in broader contexts. Second, the study focused only on the short-term effects of Pear Deck use; the long-term impact on the development of historical empathy was not examined in depth. Third, the study did not explore external factors, such as teacher characteristics or students' social environments, which may also influence the development of historical empathy.

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