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Media Timeline Development with the Focusky Application to Improve Chronological Thinking Skills

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Abstract. Students studying history must possess chronological thinking skills to identify time order, calculate calendar time, understand timelines, and reveal historical continuity and change. A wide range of instruments and media is required to support the development of these skills. This research aims to create media timelines to help students enhance their chronological thinking skills. The research techniques employed were Research and Development (R & D) and the ADDIE development model. The ADDIE stage is broken down into three parts, namely, analysis, development, and implementation. The sample subjects consisted of expert teams as expert validators, history teachers, and Class XI students to assess the product's practicality and determine the effectiveness of the developed media. Expert validation questionnaire sheets, student and teacher response questionnaire sheets, and description exams were used to collect data. The descriptive analysis approach was used to define the level of media validity and practicality,

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while the N-Gain approach was used to determine the effectiveness of the media. The results of expert validation showed an average score of 4.44 in the very good category. The teachers' and students' response tests yielded average scores of 4.97 and 4.31, showing that the media timeline is practical for learning history. The N-Gain value of 68% further indicates that the students' capacity to think chronologically improved. Clearly, using the media timeline in history class to develop chronological explanation skills is feasible, practical, and beneficial.

Keywords: chronological thinking; history learning; historical thinking; media timeline

1. Introduction

Chronological thinking is one of the essential abilities that students studying history (Erdem & Pamuk, 2020; Galán, 2015) need to develop because its comprehension is the act of arranging events logically, thereby enabling students to have a complete understanding of the sequence of activities from start to finish. Examples of chronological thinking skills are identifying the time order for each event; measuring, comprehending, and interpreting calendar timelines, and articulating thoughts about historical continuity and changes (Akbaba, 2020; Aktaş, 2021). Students need to develop this attribute because it is usually used to construct a thorough grasp of history, to analyze causes and effects, to discern the connections between these events, and to identify changes and continuity (de Groot-Reuvekamp et al., 2018; Fadli et al., 2021; Şeker, 2021). Although chronological thinking skill is an important attribute that must be acquired to understand historical meanings and narratives, field data shows that students' ability to explain certain events chronologically is still lacking, as is evident from their incoherent explanations of historical events. Students were also shown to be bad at linking or connecting past historical events because they are accustomed to learning methods that rely only on rote abilities, thereby ignoring the development of their critical and chronological thinking skills.

The teachers' inability to guide students in developing chronological thinking skills and the use of inappropriate learning media contributed to this issue. The problems identified are that students cannot assimilate the high-level chronological order of events because the adopted learning techniques and media only provide information about the materials and do not assist them in adequately explaining these activities. Consequently, learning tools that present historical data in chronological sequence are required to develop this skill.

History is the record of past events that are inextricably linked to space and time (Rosenlund, 2021). This essential aspect allows one to interpret the meaning of every activity that occurred within that period. It is impossible to explain past events thoroughly without the aid of time, the beginning and end of which tend not to be determined without a time marker used to readily categorize and compare it with other occurrences. To construct historical meaning, it is critical to learn about time (Ramalho., 2020) and the ability to comprehend it is one of the

chronological thinking skills that students need to possess. Without adopting the appropriate learning media these skills continue to be deficient.

One of the learning media that might help pupils with their chronological thinking abilities is media timeline. A media timeline is a set of lines that describes an event from start to finish and is used in the classroom to assist both teachers and students with history lessons. Students can arrange events according to when they occurred, connect one event to another, and analyze their causes and impacts to draw conclusions, and build historical narratives (de Groot-Reuvekamp et al., 2018; González & Ramírez, 2021; Ivanova, 2021). Using this media, students are expected to discern the time sequence in chronological order. Thus, a media timeline can provide a critical learning tool to strengthen historical thinking skills.

The problems encountered in this study were (i) the students' poor chronological thinking skills and (ii) the inappropriate learning resources employed by teachers in history classes to help improve this ability. The scope of this research is limited to developing a Focusky-based media timeline as a historical learning medium to improve the chronological thinking skills of students in Class XI using their learning materials. The scope is specific to that of colonialism and imperialism and the Indonesian people's resistance and strategy in dealing with the Europeans and the implications on the nation's social, cultural, economic, political, and educational sector.

2. Literature Review

2.1. Media Timeline

A media timeline is a succession of lines that highlight the growth or process of a sequence of events to stimulate ideas, attention, feelings, and interests to produce an engaging and memorable learning experience (Leibowitz, 2017; Pellizzari et al., 2021; Silva et al., 2021). This timeline is used to describe the link between events and time and to connect several occurrences. The messages are presented in chronological sequence to help one comprehend the activities that transpired over time (de Groot-Reuvekamp et al., 2018; González & Ramírez, 2021; Ivanova, 2021); that is, a media timeline is a medium used to convey an event chronologically. Its use causes students to become more interested and involved in the learning process and to improve their thinking skills in respect to the time series.

Teachers usually relay on maps to teach history, but a map has various flaws, the most notable of which is that it is restricted to the spatial/spatial aspect, and it cannot depict the chronological sequence of events (Collins, 2018). However, history is a subject that relies heavily on the concept of time; this is an important factor that separates it from other disciplines because it allows for real understanding and interpretation of various past occurrences. Because students can only read the places on the map, maps alone are unable to teach pupils to think at higher levels (Miaz et al., 2018) and pupils may be unable to understand each occurrence. The media timeline covers the lack of maps, and creating a media timeline using the Focusky application to increase chronological thinking abilities is an effective way to solve the inadequacies of the learning media used by instructors to date.

The Focusky application-based media timeline is a multimedia format that supports a wide range of material types, including video, audio, images, and text. Several studies have demonstrated that media in multimedia formats can help students improve their learning results and increase motivation and enthusiasm for studying, as opposed to learning media that is just text and images (Eltahir et al., 2021; Kang & Ritzhaupt, 2021; Pham, 2021). The generated media timeline can help students understand incredibly complicated historical learning material by simplifying it and encouraging them to remember events in chronological order. Using the media timeline might help them enhance their chronological thinking skills.

Several studies have demonstrated that using a media timeline to arrange data and events regularly is a good idea. According to Kenei et al. (2020), it is a useful tool for displaying medical data in accordance with time. Several media timeline studies have been carried out in the medical profession to depict the progression of an illness over time. For instance, Carvalho et al. (2021) used it to explain the spread of COVID-19 within a year. Ledesma et al. (2019) used it to visualize how clinical data enhances knowledge and aids medical personnel in recognizing complex data. The research carried out by Parsons (2014) advocates the use of media timelines to show how mobile learning has evolved over time which includes every stage of growth and change that occurs in the cellular learning process (Parsons, 2014) and shows that there is a need for future research to readily identify the flaws in the cellular learning process as well as offer new ideas. However, the only recent study on the use of media timelines in social and historical sciences was that of Nurulanjani (2018) who graphed the timeline of social studies learning media. In both the social sciences and in history, there is still a dearth of studies on media timelines and the researchers concluded that research into and development of media timelines, including their use in the learning process, especially in history, could potentially be very important in strengthening chronological thinking skills.

2.2. Chronological Thinking

The term "*chronological thinking*" refers to comprehending an event from beginning to end. It necessitates an awareness of the contrasts between historical conditions at a specific time and place, and current situations (Carretero et al., 2017). The chronological concept is crucial in studying history, and without it, this subject is difficult to understand as students find it difficult to investigate links between events or explain causal historical relationships (Tanaka, 2016; van Straaten et al., 2019). Chronology depicts the progression of events across time, making it simple to establish a connection between them.

Attempts to explain past events without considering the concept of time results in a break in the chain of events and a series of misunderstandings. The importance of chronological thinking has been demonstrated in several studies. Powell and Fuchs (2018) investigated seventh and eighth-grade high school students' grasp of several basic chronological ideas in history and social science themes. Akpınar and Kekeç (2019) demonstrated the effectiveness of the learning model in developing chronological thinking skills during social studies classes for seventh

graders. Safran (2014) researched the enhancement of the skills of fifth-grade students. The teachers' perspectives of the activities employed in the class to enhance chronological thinking abilities were investigated by Şeker (2021), while Huijgen et al. (2017) analyzed the theoretical knowledge of geography, time, and chronology in historical education, and Pala (2021) examined the teachers' views of specific topics, location, and time, and changed the social studies curriculum to improve chronological thinking skills. Several studies have been carried out on these attributes; however, relatively few currently focus on these thinking skills in historical studies. Although the idea of chronology is a critical component of history education, multiple studies have proved that there is relatively little emphasis on the media timeline to strengthen these abilities. History differs from other sciences, which focus solely on events that occur on the surface, regardless of when they occurred, and students of history must have the ability to think chronologically in order to describe highly complicated previous events in a basic and easy-to-understand manner as well as to identify causal connections and provide explanations for events. Chronological thinking abilities, are essential for building those historical thinking skills.

3. Research Methodology

Research and development (R & D) methods based on the ADDIE model (analysis, design, development, implementation, evaluation) were used to carry out this research which was divided into three stages: analysis, development, and implementation. The first phase involved analyzing basic needs through interviews with the teachers, curricular analysis, and an examination of the students' chronological thinking skills. The findings from this step were used to construct the media timeline. The development stage involved designing a media timeline, expert validation testing, and media trials. Four experts were involved in the validation process: two material specialists, one media design expert, and a linguist. The expert team evaluated the validity of the generated product; the validation assessment's findings were utilized as input for revision, and the feasibility of the developed instrument was measured using the criteria formulated by Sugiyono (2007), as shown in Table 1

Table 1. The Feasibility Criteria of the Developed Instrument

Score	Description
≥ 4.00	Very Feasible
3.00 - 3.99	Feasible
2.00 - 2.99	Less Feasible
1.00 - 1.99	Not Feasible

Source: Sugiyono (2007)

Following revisions based on feedback from the expert validators, the product was tested on a small group to discern the practical medium. Five history teachers and 56 students were given a limited trial of the program to assess its practicality. If the results showed that the generated media was useful, the product would be immediately deployed to a wider class; if the generated medium was less practical or impractical, the product would be revised, based on students' and teachers' feedback. In the final stage, the product was implemented because it was

approved by many respondents with the aim of assessing how effective the medium would be in developing chronological skills.

The third step was implementation, in which the product was extensively used in the field to assess the media timeline's progress in terms of developing chronological skills. The research subjects included four expert teams as validators, five history instructors, and 56 class XI students who were used to evaluate the product's practicality. Another 160 students from the same class evaluated the efficacy of the created medium. Expert validation, including the students and teachers' response questionnaire sheets and description exams, was used to measure chronological thinking skills as well as to collect the research data. Descriptive data analysis was used to describe the media validity and practicality level.

The N-Gain test was then used to determine how much the media timeline variable contributed to the improvement of chronological thinking skills, and the value obtained was used to determine the effectiveness of the medium. It was assumed that if the score fell in the medium or high range, the material generated had successfully boosted chronological thinking skills. Conversely, if the value was low, it indicated that the media was ineffective in increasing this attribute. The N-Gain criterion formulated by Richard Hake (1999) was used to determine the impact of media timeline on chronological thinking skills, as follows:

Table 2. Criteria for N-Gain Score

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

Source: Hake (1999)

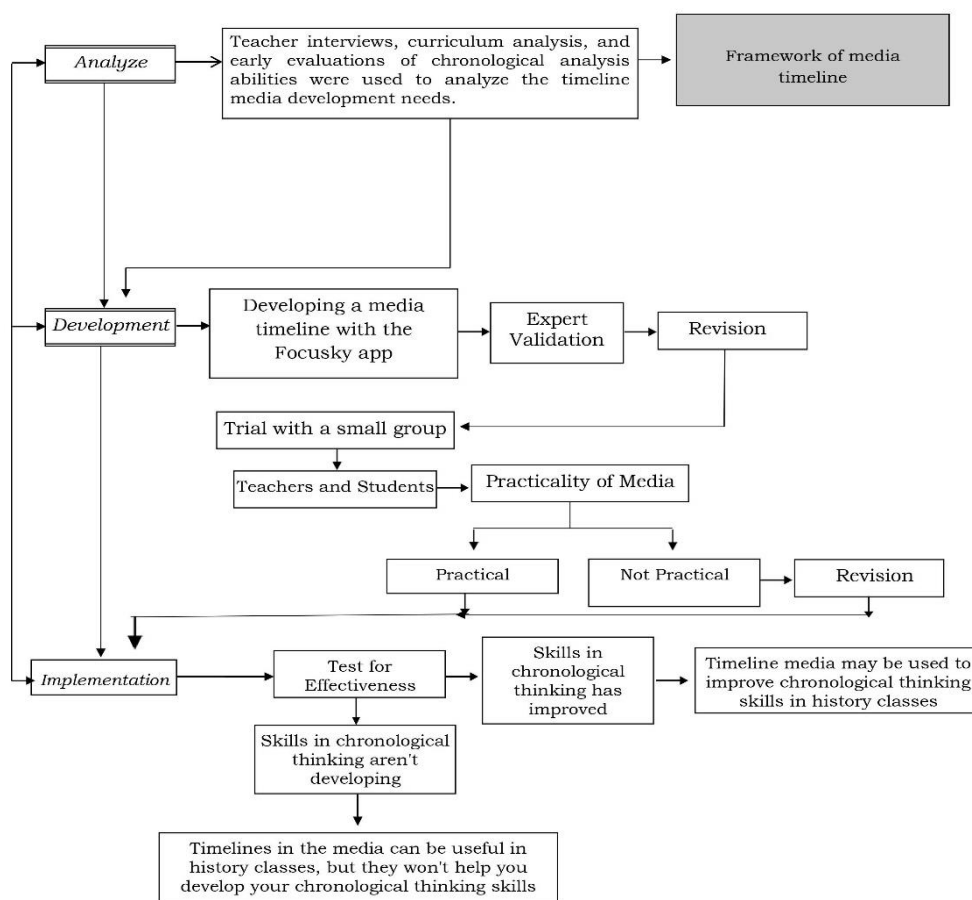


Figure 1. Timeline development procedure using the Focusky application

The proportional sampling strategy was used in this study and the sample size was adapted to suit the research goals. To demonstrate the study's impact effectively, sufficient samples were required. A sample that is too small may not reveal the study's effects, while a sample that is too large may increase expenditure and the time necessary to carry out the study (Barker et al., 2016).

The participants were class XI SMA students from preferred, medium, and non-favourite schools in Padang, West Sumatra, Indonesia. The necessity for valid, reliable, and comprehensive study data triggered the selection of these institutes in accordance with favoured, middling, and unfavourable categories. Three groups were also identified as indicative of West Sumatra schools and students.

Learning media such as maps were used in the control class whereas students in the experimental class were taught using a Focusky-based media timeline. The chronological skills test was administered twice, as a pre-test and a post-test. The pre-test aimed to determine the students' initial abilities before the learning process. The post-test was carried out after the experimental class was taught using the media timeline. The design of the chronological thinking skills exam is shown in Table 3.

Table 3. Design of the Chronological Thinking Skills Test

Group	Pre-test	Process	Post-test
Control	Chronological thinking skills	The teacher uses maps in the learning process.	Chronological thinking skills
Experiment	Chronological thinking skills	The teacher uses media timeline based on the Focusky application.	Chronological thinking skills

The examination of chronological thinking abilities was set up as essay questions. The test required students to meet three specified chronological thinking indicators: first, to explain each response chronologically; second, to make connections between historical events; and third, to develop causal explanations for historical occurrences.

To determine whether the items employed to assess students' chronological thinking skills were valid and reliable, they were subjected to validity and instrument reliability tests, shown in Table 4. The table shows that the three item indicators have a significance value larger than 0.05, which simply implies that these three legitimate questions were used as instruments to assess the students' chronological thinking abilities.

Table 4. Results of Item Validity

No	The items of chronological thinking	Nilai sig. (2-tailed)
1.	Chronologically explaining events	0.568
2.	Connecting events	0.625
3.	Give a causal explanation	0.673

The instrument reliability test results are shown in Table 5. The results of the Cronbach's Alpha examination of the instrument's reliability were $0.816 > 0.05$, and the tool was inferred as reliable for assessing chronological reasoning abilities.

Table 5. Test results for instrument reliability

Cronbach's Alpha	N of Items
0.816	56

In this study, quantitative and qualitative data analysis methods were integrated. To improve the resulting media, qualitative analysis was utilized, and an open questionnaire was employed to gather expert input on the quality of the media. These responses were reviewed during the creation stage to improve the quality of the media. An independent sample t-test with the SPSS version 25.0 program was used to investigate the influence of using Focusky-based media timelines on chronological thinking skills.

4. Results

4.1. Stage of Analysis

4.1.1. Interview with the Teacher

History teachers were asked about the media they use in class to teach this subject. The following is an excerpt from the interview conducted with a teacher about the learning media used in teaching history:

"In class, I seldom utilize other media; instead, I exclusively used those provided by the school, such as maps."

Questions were also asked to determine whether learning media motivate youngsters to engage in active learning. The teacher responded as follows:

"The present media is perceived to be ineffective at triggering the children's enthusiasm to participate in the learning activities. Only a few of the students were active in answering the posed questions."

Students are less involved in the learning process because teachers do not use a variety of media and they are also less able to answer the teacher's questions because they are dissatisfied with the teaching approach used to present the topic. The teacher was asked about the kind of questions the students found difficult to answer and responded:

"Students usually find it difficult describing historical events in chronological sequence, which includes searching for connections between them."

Students' inability to organize historical events chronologically and discern the connections between them was due to the voluminous amount of material provided by the teacher. Another factor contributing to this inability was that the media adopted are not geared to assisting students in comprehending the sequence of events because maps only indicate where these activities occurred and not their chronology. This type of learning has not enhanced the students' chronological thinking skills; in studying this subject, students need to comprehend historical events in the order in which they occurred, and that requires learning media that trigger chronological thinking skills and simplify the voluminous historical material.

4.1.2. Curriculum Analysis

The curriculum analysis in this study was conducted using an in-depth content analysis method on the history learning curriculum in Indonesia. Curriculum analysis entails assessing and analyzing Basic Competencies (KD) and indicators, and conformance to the present curriculum, specifically that of 2013. Based on the 2013 curriculum analysis, the aim of learning history in Indonesia is to increase the students' awareness of the importance of time and place or space concepts, to understand changes associated with the sustainability of the society and nation, as well as to develop those historical thinking skills which are the foundation of the ability to think logically, creatively, inspirationally, and innovatively. In short, it is essential to develop their chronological thinking skills. The results of the curriculum analysis require the construction of the media timeline to start by identifying the Basic Competencies (KD), learning materials, and objectives to be

attained. Table 6 shows the relationship between Basic Competence (KD), subject content, and learning objectives.

Table 6. The Findings of the Curriculum Analysis

Basic Competencies (KD)	Subject Matter	Learning Objectives
Analyzing the history of colonialism and imperialism, as well as the Indonesian people's resistance and strategy in dealing with the Europeans, and its implications for the nation's social, cultural, economic, political, and educational sectors.	The Development of European Colonialism and Imperialism. The strategy adopted by Indonesians to resist European colonialism until the early 20 th century.	Students learning by using a media timeline, have developed the ability to: <ul style="list-style-type: none"> • use other sources, analyze related facts on the emergence and growth of European colonization, as well as the strategy adopted by Indonesians to resist European colonization (Portuguese, Spanish, Dutch, English) to the twentieth century. • report the results of the analysis chronologically in the form of historical narratives about the emergence process and development of European colonization, as well as the resistance strategy adopted by Indonesians to resist European colonization up until the 20th century, based on information presented in the media timeline

The Basic Competencies about the history of colonialism and imperialism, and the strategy adopted by Indonesians to resist the Europeans and its implications on the nation were selected after thoroughly examining the material from Indonesia's colonial and imperialist periods. This material was selected as appropriate to develop the students' chronological thinking skills and was realized through a complex series of time and periodization, starting with the arrival of the VOC, the change of leadership from colonialism, the emergence of forced cultivation, and the aftermath of its influence. Students were stimulated to enhance their chronological thinking skills by analyzing interconnected eras with similar effects.

4.1.3. Analysis of Students' Chronological Thinking Skills

An essay was used to assess the students' chronological thinking skills in addition to three sets of basic questions that emphasized chronological components which were provided for only 56 students. Students were first tasked with developing a model or periodization based on Indonesia's history of European colonialism and imperialism. Second, they were asked to establish a link between events in

Indonesia under colonialism and the European empire. Third, they were asked to provide a full explanation of European colonialism and imperialism in Indonesia, including its origins and effects. The results of the initial analysis of the students' chronological thinking skills are shown in Table 7:

Table 7. Students' Chronological Thinking Analysis Initial Test Result

Category	Soal 1		Soal 2		Soal 3		Average
	F	%	F	%	F	%	%
True	16	28.57%	20	35.71%	10	17.86%	27.38%
False	40	71.42%	36	64.28%	46	82.14%	72.61%

Table 7 shows that only 16 students (28.57%) out of 56 answered the first question appropriately. Twenty of them (35.71%) answered the second question correctly and only 10 (17.86%) answered the third question appropriately. Based on these findings, it was concluded that students' chronological thinking abilities remained low, with only 27.38% able to answer and explain events in chronological sequence accurately, and 72.61% were unable to answer the questions correctly. Based on these findings, teachers' efforts to develop students' chronological thinking skills effectively and efficiently need to be boosted.

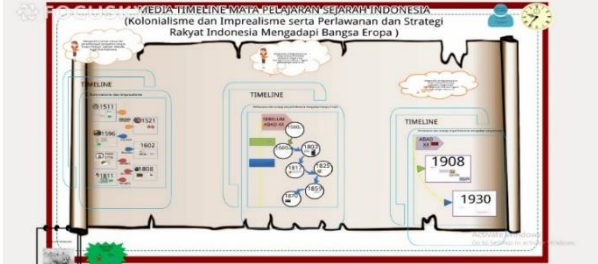

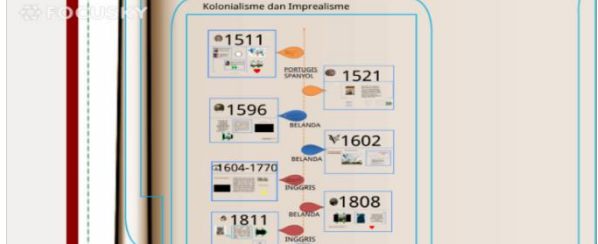
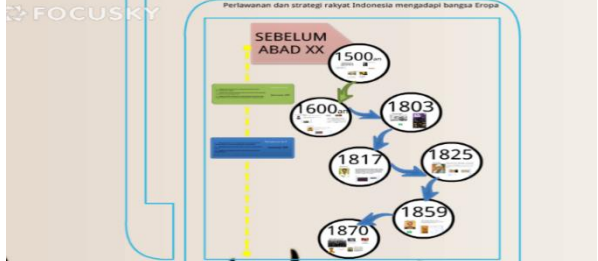
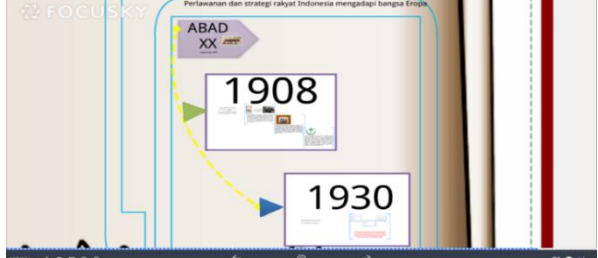

4.2. Development stage

4.2.1. Media Development

The selection of programs to be used as software developers was the first step in media development. Focusky was used to create media timelines because it is simple, free, and requires no other software. It did not require design skills because all that needs to be done was to select and download the appropriate template (Idaharyani, 2017). Focusky software is used everywhere and at any time to draw attention and interest, motivate learning, and encourage students to think and use tools that allow them to add new items, images, change text, music, graphics, and videos. A component or feature was determined after selecting the program intended to be used as a developer application. The main page, user manual, and content comprise the media timeline. The main page included all elements that guided both students and teachers in using the media content. The material was organized into three primary timelines to improve chronological thinking skills. Table 8 shows the format of the media timeline that was created.

Table 8: The results of using the Focusky design to create a media timeline

Section of the media	Description
	Showcase of media covers

Section of the media	Description
	<p>Front view of the media timeline</p>
	<p>Media usage instructions display</p>
	<p>The Initial Timeline View</p>
	<p>The Second Timeline View</p>
	<p>The Third Timeline View</p>
	<p>View from the Media End</p>

4.2.2. Validation by an Expert

Expert validation was carried out afterwards to determine whether the product improved chronological thinking skills. In this study, materials, media, and language experts were engaged and the help of experts in the relevant fields was also enlisted. The material specialists had a history education background and technology experts were media specialists, while linguists were professors with a background in language education. Expert validation results served as the basis for making certain changes, as shown in Table 9.

Table 9. Validation Test Results from Experts

Indicator	Score	Interpretation
Material	4.49	Very feasible
Media	4.53	Very feasible
Language	4.4	Very feasible
Mean	4.44	Very feasible

The expert team's validation test results produced an average score of 4.44 for the manufactured product, which placed it in the feasible category as useful as a historical learning medium to enhance chronological thinking skills.

4.2.3. Media Trial

After completion of the expert validation testing, media trials were performed to analyse the teachers' and students' responses concerning the practicality of the developed products. The trials involved five history teachers and 56 Class XI students. The findings demonstrate the practicability of the media timeline in history education. Table 10 shows its level, based on the teacher's answer.

Table 10. Response from Teachers on the Practicality of Media timeline

No	Aspect	Score	Interpretation
1	Content	4.46	Very good
2	Practicality	4.49	Very good
3	Language	4.32	Very good
4	Design	4.72	Very good
	Mean	4.497	Very good

The 'excellent' rating is evidence that the use of the media timeline boosted students' chronological thinking abilities in history learning, and that students found it practically useful.

4.3. Implementation Stage

The implementation stage was carried out in three classes with a total of 160 students as part of a large-scale test. The N-Gain test was used to determine the efficacy of the media, and its results are shown in Table 11.

Table 11. Media effectiveness test results through the N-Gain test

No	Indicator	N-gain Score	Category
1	Chronologically explaining events	0.64	Medium
2	Connecting events	0.74	High
3	Give a causal explanation	0.65	Medium
	Mean	0.68	Medium

The media timeline was effective in enhancing the students' chronological thinking skills, with an average contribution in the medium group. The indicator used to explain events chronologically boosted the students' skills by 64% after the treatment whereas their ability to connect the events improved by 74% for the second indicator. The third indicator, which explains the causality of an occurrence, showed an improvement of 65% after treatment. The average student's chronological reasoning skills improved by 68% after treatment in the middle group. Based on Table 11, it is evident that the media timeline is effective, with an average contribution in the medium category.

5. Discussion

This study reported that the media timeline is a realistic and practically useful historical learning tool that can enhance chronological thinking skills. The findings made by expert validation showed that the media timeline produced was effective and practical as a history learning medium, with an average score of 4.44. The material, media, and language aspects received excellent grades, based on their characteristics. In terms of material, there was a link between the timeline created, and the basic skills acquired; because the information is presented in chronological order, the students can easily develop historical narratives from the media presented. According to Brehmer et al. (2017), this approach helps students grasp the events in an orderly fashion and makes it simpler to trace the links connecting these events. In short, a media timeline tends to display a lot of information clearly and plainly, making it easier for the students. These findings support the research of Hope et al. (2013) in which media timelines were used to describe events observed by the children. When the participants were asked to explain their observations, the students employed the timeline and were easily able to describe the events that occurred, showing their ability to apply this medium to explain and simplify complex historical events.

Focusky was chosen as the program for creating media timelines because it is simple, free, and does not require any other software. It is a well-known tool for making media timelines, and the multimedia format supports videos, music, photos, and text (Eltahir et al., 2021; Kang & Ritzhaupt, 2021; Pham, 2021), so that the media timeline produced by the Focusky application has a pleasing appearance and is simple to use. The findings of this study support several research results (e.g., Budiarto et al., 2021; Sebbowa & Ng'ambi, 2020) on the effectiveness of the Focusky application which enables students to add new items, photos, change text, music, graphics, and videos and use them anywhere and at any time. The combination of text, images and videos enhances learning by enabling students to develop visual reflections and audio connections to the main

topic of the material and stimulates interest in learning. Because the timeline is written in easy-to-understand language, the text is straightforward and easy to read.

The developed Focusky media timeline has various advantages over the former approach previously used by teachers in Padang City high schools, which consisted of maps. This application-based timeline boosts the students' interest, motivation, and passion (Al Mardhiyyah et al., 2021), unlike learning media which consist solely of text and graphics. Several studies have reported that the media timeline helps to enhance learning outcomes, motivation, and interest in studying. According to Dale (1946), the use of multimedia improves learning material comprehension by approximately 80%. The designed media timeline simplifies complex history learning material and encourages the students to grasp events in chronological sequence, thus improving chronological thinking skills, and because the produced medium can be used both online and offline, students are encouraged to engage in autonomous and distance learning.

Text is a fundamental component of this learning media and is used to convey most of the information. However, lengthy texts are tiring to the point that readers tend to skip over some content (Casanave, 2019). A brief text with large font size in the media timeline was adopted, making it easy for students to view properly (Schüler et al., 2019) and to understand the material presented, so sparking their interest in learning (Jensen, 2019).

Because most students prefer visual content to lengthy text, the use of pictures and videos captured the students' interest and enthusiasm (Hu et al., 2021; Schüler & Merkt, 2021). The displayed pictures and videos encourage them to analyse each event in their own words (Rismark & Sølvsberg, 2019), aiding the development of higher-order thinking skills. According to Edgar Dale's (1946) cone of learning media, students who study by looking at pictures or watching videos perform better than those who merely listen to the lectures. The media timeline produced was extremely useful for improving chronological thinking skills.

From a practical standpoint, the teachers' and students' response tests yielded an average score of 4.97 and 4.31, respectively, implying that the media timeline proved to be extremely useful for learning history. Both teachers and students used the developed media efficiently in the learning process. The medium tends to be used repeatedly, online and offline, suggesting that the media timeline assists students in comprehending historical content, and encourages their interest studying independently because it is simple to use and accessible at any time and from any location.

The N-Gain score measures how effective the developed media is in enhancing the students' chronological thinking skills. The 160 students who had an average score of 0.68 were placed in the medium category which indicates that 68% of the media timeline affected the students' ability to develop their chronological thinking. The display of information in the form of a time sequence increased

student enthusiasm about understanding a historical event. The students also used timelines to construct cause-and-effect relationships (Rosenlund, 2021). Because the materials were given sequentially, the students were motivated to search for changes, and because the period of events is concisely conveyed using the media timeline, the students found it easier to understand the content. Learning media containing text, images, and audio are expected to accommodate all students' different learning styles (Tugirinshuti et al., 2021; Yulianci et al., 2021).

The results of this research show that the designed media timeline enhanced chronological thinking skills. These results are consistent with the findings of Teopilus et al. (2019), who discovered that this procedure triggers learning outcomes and assists students in comprehending past, present, and future occurrences within a given time frame. According to Atamuratov (2020), the media timeline allows students to connect with learning without the teacher's domination and allows them to be actively involved in the academic process. Students used the media timeline to examine the effects of European colonial practices and imperialism on Indonesians and other nations over the same period, and were able to identify the characteristics of historical eras and compare them with the present (de Groot-Reuvekamp et al., 2018). The students also investigated their origins and effects by identifying similar patterns and connections, gaining a fuller comprehension of the historical significance of European colonialism and imperialism. Their historical thinking skills improved as they searched for correlations, discovered connections between events, and drew conclusions. The Focusky-based media timeline that was produced was valid, dependable, and a practical tool for use as a historical learning medium to strengthen chronological thinking skills.

6. Conclusion and Future Research

The media timeline developed is valid and reliable for use as a historical learning tool to strengthen chronological thinking skills. The produced medium is also practical in terms of application, since it can be utilized both online and offline, encouraging students to engage in autonomous and remote learning. The Focusky application proved to be a crucial component in the creation of historical learning media. It can be easily used by teachers and students and presents a large amount of information clearly and plainly and can be used repeatedly to help the children develop their chronological thinking abilities. Presenting information in a chronological sequence reassures students and makes them interested in learning about historical events. The media timeline also establishes cause-and-effect relationships between these activities, so students can make comparisons and discern the relationships between similar events.

Further study needs to be carried out to analyze other interactive learning media that can enhance students' historical thinking skills.

7. Limitation of Research

Perfect research is not easily realized and the created media timeline is currently in its early stages of testing, with only three classes from two separate schools as

participants. Trials need to be carried out in multiple institutes with diverse conditions to obtain an ideal learning medium.

8. References

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