



Development of Podcast as a Learning Medium at Senior High School to Build Students' Critical Historical Thinking Skills

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ABSTRACT

This study seeks to develop a podcast medium for history education aimed at enhancing students' historical thinking skills. Employing the Hannafin and Peck model, the research process involved needs analysis, design, development, and implementation stages. Field trial results indicated a significant improvement in students' learning outcomes, with a 45.59% increase and a high N-gain score of 0.72. Despite the relatively low average score of 26.47 on the essay questions designed to measure their overall historical thinking skills, the students demonstrated notable proficiency in the chronological thinking aspect. The innovative side of this study primarily lies in the use of podcast as a teaching medium in history education, a method not yet widely utilized in schools, offering an engaging alternative to traditional teaching approaches. Furthermore, the podcast was created using modern technology, specifically the Dolby On application, which effectively helped our focus on developing students' historical thinking skills.



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INTRODUCTION

The importance of education as the primary foundation for a nation's progress continuously demands teachers to demonstrate that the changing times do not hinder the development of their students' abilities in the era of globalization (Hammond et al., 2022; Indra et al., 2023; Roztock et al., 2019). In this context, teachers can utilize digital technology to create more engaging learning approaches (Mhlongo et al., 2023; Syarifuddin & Sinta, 2022). 21st-century learning offers an educational paradigm reflecting our current learning needs (Bayley, 2022; Rahayu et al., 2022), where students are expected not only to understand facts and information, but also to develop relevant skills applicable in various life contexts (Aisyah et al., 2023; Knaus, 2023). Particularly for history education, the use of technology is crucial, as it is deemed attractive, effective, and interactive (Syarifuddin et al., 2023; Syarifuddin & Sinta, 2022; Wirani et al., 2021).

On this notion, there is a crucial need for new innovations in education that can be used to create a more effective, efficient, engaging, and practical learning. Audio media, especially podcasts, currently stand out as a highly flexible option in learning activities. While many researchers have studied the use of audio media in education, podcasts, as a form of audio learning material, are not widely utilized (Diyah et al., 2021; Susilowati & Faiziyah, 2020). Podcasts are digital audio-based media files in the form of stories or dialogues (Fikri et al., 2022; Ketonen & Nieminen, 2023). Using podcasts as an educational medium represents innovation in the field of education, as podcasts can be flexibly utilized by students without the constraints of distance and time (Mobasheri & Costello, 2021).

In the current independent curriculum (*Kurikulum Merdeka*), history education has undergone a significant shift in focus, now emphasizing more on the development of critical skills, particularly historical thinking skills (Cairns & Garrard, 2023). These skills require students to hone analytical, synthetic, interpretative, and evaluative abilities regarding various historical information sources (Ni, 2023). Historical thinking skills involve several critical steps (Claravall & Irey, 2022), such as understanding past events, linking the relevance between said historical events and the present or even future situations, and critically interpreting historical documents to compile reliable historical facts (Bertram et al., 2021; Thorp & Persson, 2020).

Contemporary learning demands innovation in creating learning media that can facilitate students' understanding easily, with the goal of introducing more learning variations into history education and, in turn, developing their historical thinking skills (Bunari et al., 2023; Sumarmi et al., 2021). Based on interviews conducted by the researchers at High school of 1 Indralaya to several grade X (ten) students there, the school currently uses "traditional" teaching materials such as worksheets and other supplementary books provided by the teachers. As for the materials delivery, the teachers still leaned towards arguably the most conventional approach which is lecturing. Despite its long-standing history of being the most executed approach to delivering materials in class, lecturing has been regarded as being rather monotone and uninspiring, causing the learning atmosphere to feel boring and less engaging for the students—even more so in history subjects. These factors could ultimately impact students' historical thinking skills in a negative way, impeding their analytical, evaluative and interpretative abilities towards historical events.

According to the interview results, relying solely on worksheets is considered rather impractical and less interactive, as the delivery of the materials tends to be one-way only. This can lead to a lack of understanding of the learning material by the students and subsequently difficulties in problem-solving. The hope, then, following this, is that teaching history can be executed through methods that are more interactive, interesting, as well as facilitative of the students' historical thinking skills' development. In reality, however, as mentioned before, the preferred teaching method by the teachers is still rather monotone, leading to the students being quite passive in the learning process, which has shown to make them not absorbing the learning materials quite well, as shown with them not having strong skills in correlating past historical events to today's conditions, values and life contexts in general. Additionally, implementations of various modern technologies still seem to be minimum, especially remembering the fact that students of this current generation are practically technology-dependent. This factor should always be kept in mind as there is high potential of said technology to be able to help our students have a better, more effective learning through interesting and interactive media.

Considering the key points regarding said hustles in our history learning case, this study proposes an innovative approach in trying to solve it though implementing podcast in the learning process. Podcast is seen as a viable option in this case following its flexible nature and the fact that it also implements various multimedia features which would fit the learning preferences of today's students. The podcast to be developed in this study would discuss the history of Sriwijaya Kingdom as the first largest maritime kingdom in the Indonesian archipelago with the main goal of fostering students' critical, historical thinking skills. This podcast is designed to explore the history, culture, and achievements of this ancient kingdom through historical literature, with the aim of creating a deep learning experience for students so that they can better understand the glory of this maritime kingdom.

Relevant research to this study includes the work by Basenko and Baskakova (2021) titled "Podcasts in The Teaching Media Space," which verifies the hypothesis that the potential for podcast development in educational context is significant. Podcasts can influence the interests of the younger generation, provide a platform for interviews with famous figures, and universities can integrate podcasts into the learning process, especially when involving distanced learning approaches. Another relevant study by Ofianto and Ningsih (2021) titled "Development of Students' Historical Thinking Skills Through the Project-Based Learning Model" suggests that

the implementation of Project-Based Learning Model (PjBL) has a positive impact on the development of students' historical thinking skills. However, such implementation of PjBL still faces some drawbacks, such as a lack of collaboration among students in groups and a lack of guidance from the teachers during project completion.

These previous studies suggest that implementing digital media such as podcast could be a viable option in improving students' engagement and motivation in the learning activities which would ultimately improve their historical thinking skills. With this in mind, along with the lack of such execution of media like podcast in learning processes, the steps taken in this study would become an early trial in testing this belief regarding innovative ways of fostering students' critical-historical thinking skills, with hopes of encouraging other parties to continually develop and improve history teaching strategies in this direction.

This study was carried out with an aim of developing a podcast as a learning medium using Dolby On to help foster students' historical thinking skills at high school level following the nation's Independent Curriculum (Kurikulum Merdeka) where history education needs to be focused on the aspect of students' thinking skills. Carried out at High school of 1 Indralaya, the implementation of this digital media that is podcast is hoped to increase students' engagement and motivation in attending their history learning activities.

RESEARCH METHOD

This study was carried out through the Research and Development (R&D) approach as it dealt with the processes of producing new products, including educational media. More specifically, the adopted development model was the Hannafin and Peck model, consisting of three main stages, beginning with needs analysis stage, followed by design stage, and finished with development and implementation stage, with each stage having its own evaluation and revision steps (Nadzir, 2023; Tricia et al., 2023; Zebua et al., 2023). The research was conducted at High school of 1 Indralaya, with the primary subjects being students in class X4 (ten 4).

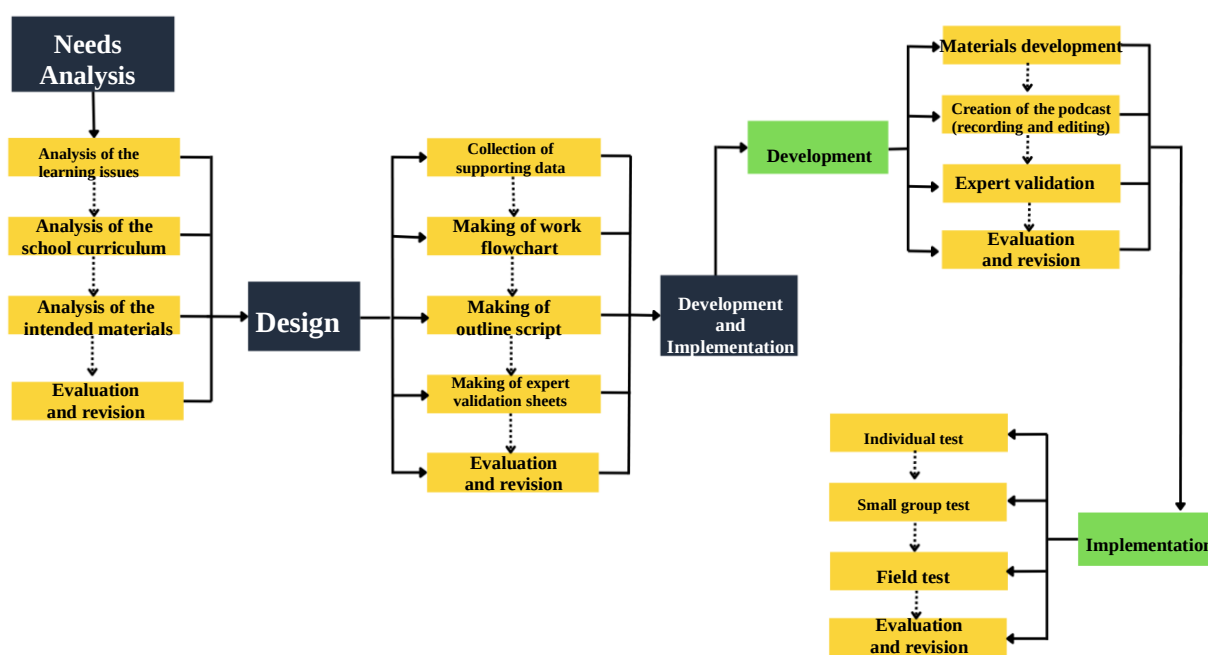


Figure 1. Development steps in the Hannafin and Peck model

In the Hannafin and Peck model, the first stage involves needs analysis, during which stage the researchers conducted interviews with the teachers and students in class X4 to identify the issues encountered during their history learning process. In addition to interviews, the researchers also distributed questionnaires to the students to further gather their personal

comments and feelings of the apparent learning issues (Nurhayati et al., 2023). Following the needs analysis, the next stage was the design stage. During this stage, the researchers started collecting the data, creating work flowcharts, developing an outline script for the intended product, and creating expert validation sheets in the form of questionnaires. These questionnaires would then be used as assessment instruments for several key aspects of the product being developed, which were the content or materials, the media, and instructional design of the podcast learning medium.

The final stage was development and implementation. During the implementation stage, the researchers conducted individual testing and small-group testing with the student participants in class X4 using questionnaires. This step aimed to identify potential shortcomings that might arise in the use of the podcast for learning, so that the researchers could gather input and direct feedback from the students, ensure technical readiness, and evaluate the effectiveness and user response to the developed podcast learning medium.

After conducting individual and small-group testing, the researchers then proceeded to field testing. In this step, the researchers utilized pre-test and post-test questions, each comprising 10 statements, to measure students' learning outcomes after using the podcast learning medium. In addition to the pre-test and post-test questions, there were also essay questions consisting of 5 items that would assess various aspects of the students' historical thinking skills. These essay questions were used to measure the level of historical thinking skills among the student participants in class X4 at High school of 1 Indralaya.

RESULTS AND DISCUSSION

Result

Developing podcast media for educational purposes brings freshness and innovation to the learning environment in schools, offering a new way to convey information and stimulate students' interest (Brehm, 2022). Its main advantage lies in its ability to deliver information through audio, creating a different and engaging learning experience for them. Its flexibility in terms of time and accessibility provides students with the freedom to learn whenever and wherever, aligning with their individual rhythms and preferences (Caolite et al., 2023; Carson et al., 2021). In addition to providing an engaging learning experience, podcasts also support the development of listening, understanding, and information retention skills.

In history education, podcasts can bring past events to life through sound, presenting an atmosphere and context that is challenging to achieve with traditional teaching methods. Students can listen to explanations about Sriwijaya as the largest maritime kingdom in the Indonesian archipelago from history experts, gain insights from direct sources, and immerse themselves in the historical narrative that stimulates their imagination (Indahsari, 2020). By leveraging podcast media, teachers can create a more dynamic learning environment and motivate their students to be more interested and engaged in history education (Dhamayanti, 2022). The product produced in this study is a podcast media with a content about Sriwijaya as the first largest maritime kingdom in the Indonesian archipelago. The developmental guideline used was the Hannafin and Peck model as explained in more detail below.

Needs Analysis

The needs analysis, as the first stage in this research and development study, provides the foundation for aligning the research design with the characteristics and conditions of the student participants. By understanding their learning needs and characteristics, the researchers can design optimal learning media tailored to their requirements. In the needs analysis stage, the researchers conducted an analysis of the main learning problems, curriculum analysis, and content analysis.

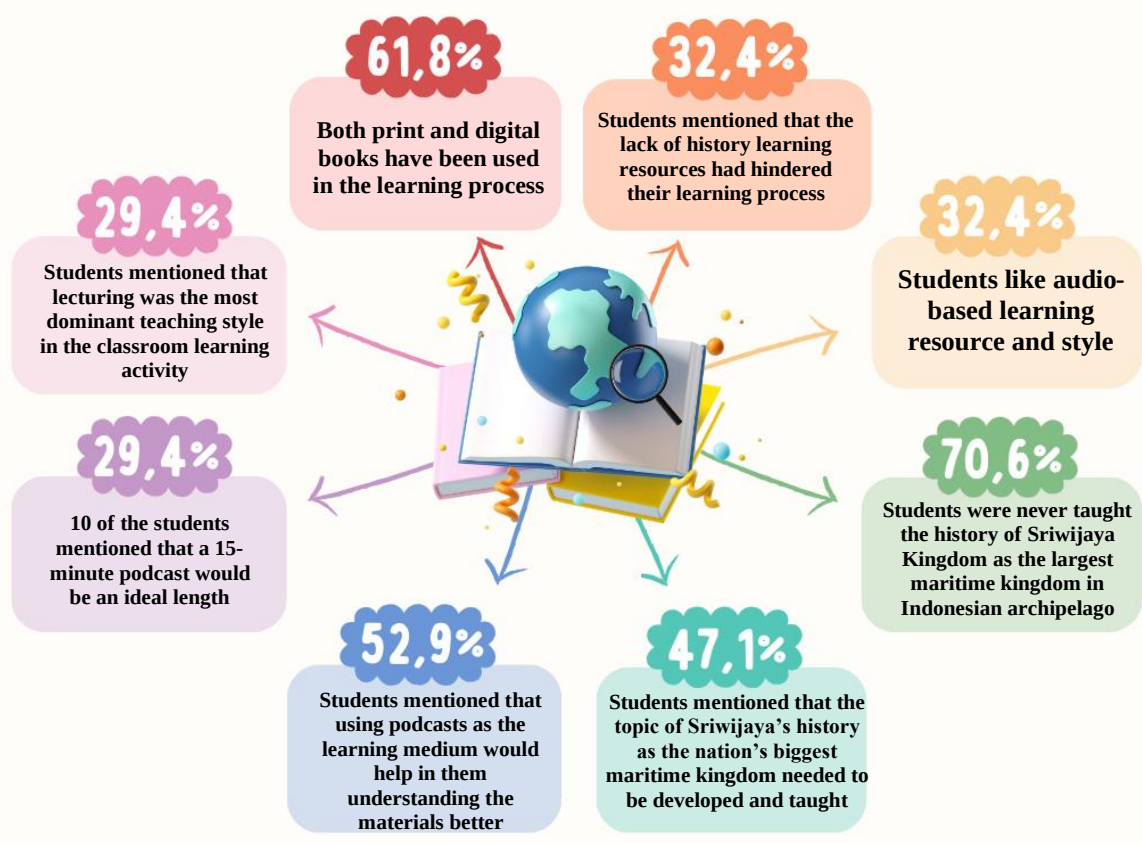


Figure 2. Results of the needs analysis stage

Based on the data analysis results, it was found that the methods and media used in the history learning process at High school of 1 Indralaya have limited variation. The majority of teachers still employed lecture methods in history classes, and the commonly used learning media included textbooks, worksheets (*LKS*) and a little amount of digital resources. For this the students expressed a desire for new learning experiences with more engaging teaching methods and learning media.

Design

Some collected supporting data include the Learning Achievement and the Learning Objective Flow Chart for Phase E in class X for the history subject, and the selected content is about Sriwijaya as the first largest maritime kingdom in the Indonesian archipelago. After selecting the content, the next step was to gather the materials data through historical literature studies, including books, articles, conference papers, archival documents, and other historical sources. Once all the data were collected, the researchers organized the learning material systematically by creating a content map.

Afterwards, the researchers designed a work flowchart for developing the learning media product in the form of a podcast. An outline script was also created to guide the conversation, ensuring the delivery of the materials was clear and structured, avoiding deviation from the main discussion points. This also facilitated the final production process and editing when incorporating sound effects and background music suitable for the theme of Sriwijaya as the first largest maritime kingdom in the Indonesian archipelago.



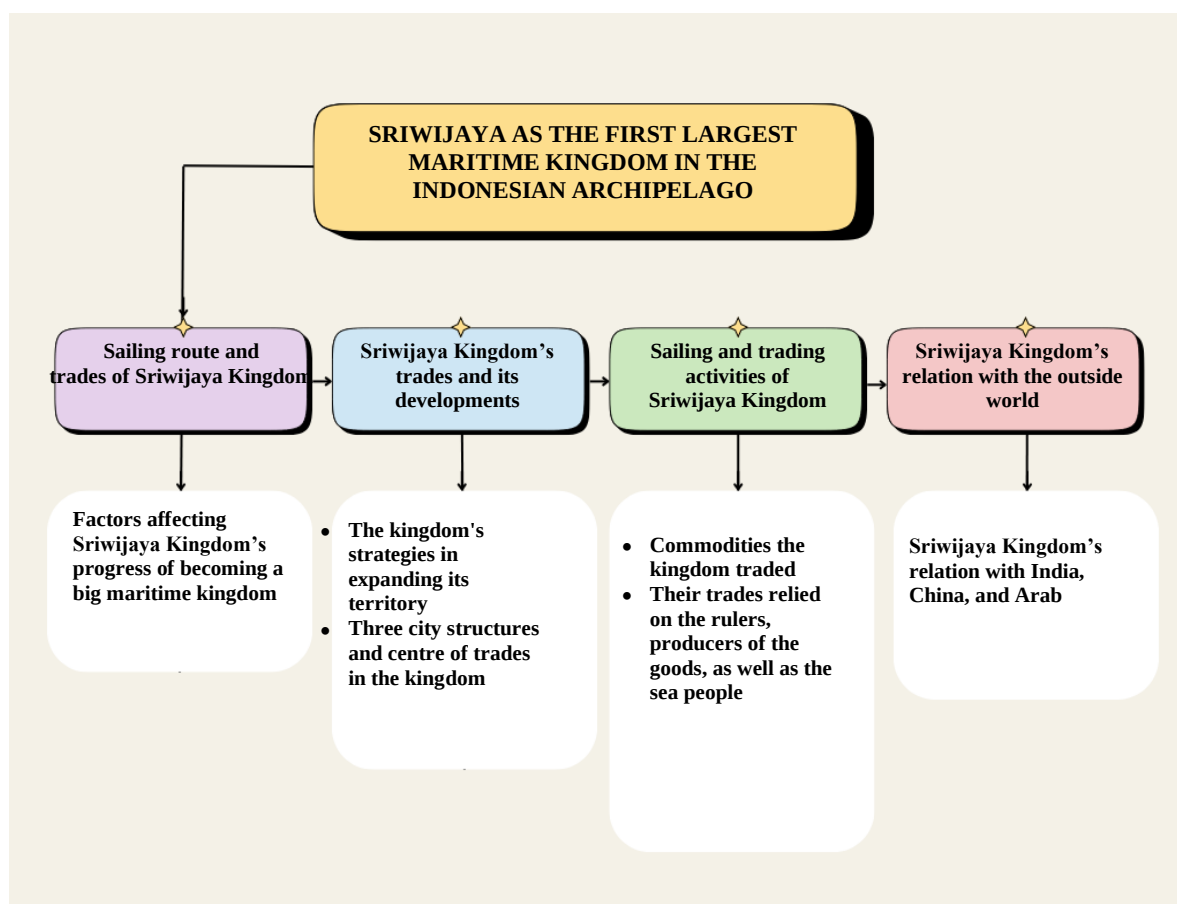


Figure 3. Materials map/mind map

Table 1. Outline the script of the podcast media

Segment	Content
Introduction	• Opening music • Brief introduction narrative related to the material on Sriwijaya as the first largest maritime kingdom in the Indonesian archipelago • Opening narration
Talking point 1	Explanation regarding the strategic sea routes and maritime trade of the Sriwijaya Kingdom
Talking point 2	Elaboration on Sriwijaya's maritime trade and its development
Talking point 3	Insight into the maritime and trade activities of Sriwijaya Kingdom
Talking point 4	Discussion on the collaborative relationships between Sriwijaya Kingdom and foreign states
Closing	• Closing narration • Closing music

Development

In this stage, the researchers began the process of actually creating the podcast media using Dolby On: Record Audio & Music application. The initial creation step involved preparing the content itself, including creating the podcast script. The recorded audio was then enhanced with adding background sounds and music that support the theme or content to make it more engaging.

Once the podcast media was created, the next step in its development involved the expert validation processes. This research utilized several validation aspects from content or materials expert, media expert, and instructional design expert. The results of the validation process by these experts regarding the podcast media on the topic of Sriwijaya as the first largest maritime kingdom in the Indonesian archipelago are presented in Table 2.



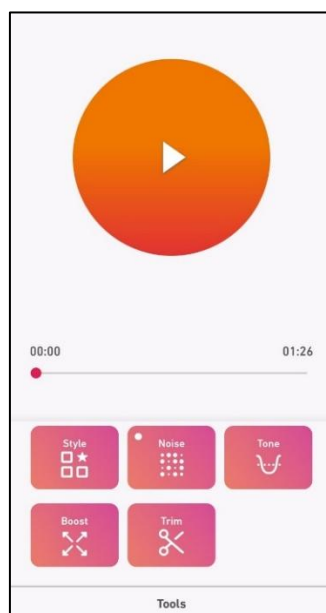


Figure 4. Audio recording process using dolby on: Record audio & music

Table 2. Validation results from the respective experts

Aspect validated	Average score	Category
Content or materials	4,45	Very valid
Media	4,45	Very valid
Instructional design	4,83	Very valid

In Table 2, we can see that the average scores from the expert validation process regarding the content, media, and instructional design aspects of the product fell within the criteria of being highly valid and suitable for testing with students. However, the experts also provided suggestions and comments to improve the podcast for better quality. Based on these suggestions and comments, the researchers then made appropriate revisions to the podcast media, as shown in the Table 3:

Table 3. Feedbacks and comments from the expert validators

Comment and advice	Before revision	After revision
Include citation sources within the podcast material script.	Poin Pembicaraan 1 Jalur Pelayaran dan Perdagangan Sriwijaya yang strategis Kerajaan Sriwijaya merupakan kerajaan maritim pertama dalam sejarah Indonesia. Kerajaan ini berdiri pada abad ke-7 hingga 13 Masehi. Wilayah ini menjadi pusat dari peradaban agama Buddha dan juga bandar utama besar pada masa tersebut. Bukti-bukti hubungan perdagangan Sriwijaya banyak ditulis orang-orang dari luar seperti I-Tsing, pendeta dari Cina, yang sudah beberapa kali berkunjung ke Sriwijaya pada abad ke-7 Masehi. Faktor yang memajukan Sriwijaya berkembang menjadi negara maritim adalah letaknya yang strategis merupakan jalur lalu lintas perdagangan internasional. Sriwijaya juga memiliki hasil-hasil bumi yang menjadi barang perdagangan internasional dan 3 Menit	Poin Pembicaraan 1 Hal yang pertama akan kita bahas dalam podcast ini yaitu mengenai: Jalur Pelayaran dan Perdagangan Sriwijaya yang strategis Diketing dari Budiantono (2009), kerajaan Sriwijaya merupakan kerajaan maritim pertama dalam sejarah Indonesia. Kerajaan ini berdiri pada abad ke-7 hingga 13 Masehi. Wilayah ini menjadi pusat dari peradaban agama Buddha dan juga bandar utama besar pada masa tersebut. Bukti-bukti hubungan perdagangan Sriwijaya banyak ditulis orang-orang dari luar seperti I-Tsing, pendeta dari Cina, yang sudah beberapa kali berkunjung ke Sriwijaya pada abad ke-7 3 Menit
Relate the material to everyday life.	Penutup Bagian perkembangan Sriwijaya menjadi sebuah kerajaan maritim terbesar di Nusantara, walaupun pusat Sriwijaya adalah Palembang yang bukan merupakan kota pelabuhan, namun mampu menguasai jaringan perdagangan terluas di sekitar Selat Malaka. Hingga pada akhirnya Sriwijaya mengalami kemunduran pada abad ke 13 M. 1 Menit	Penutup Meskipun Kerajaan Sriwijaya tidak ada lagi, namun warisan sejarahnya tetap memengaruhi kehidupan sehari-hari pada masa kini di Indonesia. Penemuan Buddha, agama, dan sejarah perdagangan maritim dapat ditemukan dalam aspek-aspek seperti seni arsitektur, dan tradisi kerajinan. Selain itu, letak strategis Sriwijaya di jalur perdagangan maritim menjadi bagian integral dari identitas ekonomi modern, terutama dalam konteks perdagangan. Bagian perkembangan Sriwijaya menjadi sebuah kerajaan maritim terbesar di Nusantara, walaupun pusat Sriwijaya adalah Palembang 1 Menit

Comment and advice	Before revision	After revision
During the introductory learning activities, the researchers did not incorporate disciplinary actions, and in the concluding section, prayer-related activities were not added.	KEGIATAN PEMBELAJARAN PENDAHULUAN (15 Menit) Pendidik: - Pendidik memulai pembelajaran dengan mengucap salam dan meminta seorang peserta didik untuk memimpin doa sebelum belajar serta memeriksa kehadiran. - Pendidik menyampaikan tujuan pembelajaran yang ingin dicapai. Peserta didik: - Peserta didik menjawab salam dan berdoa sesuai kepercayaan mereka masing-masing. - Peserta didik memperhatikan dan memahami penjelasan. PENUTUP (15 Menit) Pendidik: - Pendidik meminta peserta didik menyimpulkan tentang Sriwijaya sebagai kerajaan maritim terbesar pertama di Nusantara. - Pendidik memandu kegiatan belajar dengan memberikan pesan untuk tetap belajar dan di akhir dengan salam. - Pendidik memberikan tugas mandiri. - Pendidik memberikan arahan kepada peserta didik tentang materi pada pertemuan berikutnya. Peserta didik: - Peserta didik menyimpulkan tentang Sriwijaya sebagai kerajaan maritim terbesar pertama di Nusantara. - Peserta didik mengucapkan salam yang diberikan pendidik. - Peserta didik menyimak tugas yang diberikan. - Peserta didik mendengarkan arahan pendidik untuk materi pada pertemuan berikutnya.	KEGIATAN PEMBELAJARAN PENDAHULUAN (15 Menit) Pendidik: - Pendidik mengucap salam dan berdoa sesuai kepercayaan mereka. - Pendidik memulai pembelajaran dengan mengucap salam dan meminta seorang peserta didik untuk memimpin doa sebelum belajar serta memeriksa kehadiran. - Pendidik menyampaikan tujuan pembelajaran yang ingin dicapai. Peserta didik: - Peserta didik menjawab salam dan berdoa sesuai kepercayaan mereka masing-masing. - Peserta didik memperhatikan dan memahami penjelasan. PENUTUP (15 Menit) Pendidik: - Pendidik meminta peserta didik menyimpulkan tentang materi Sriwijaya sebagai kerajaan maritim terbesar pertama di Nusantara. - Pendidik memandu kegiatan belajar dengan memberikan pesan untuk tetap belajar dan di akhir dengan salam. - Pendidik memberikan tugas mandiri. - Pendidik memberikan arahan kepada peserta didik tentang materi pada pertemuan berikutnya. - Pendidik meminta seorang peserta didik untuk memimpin doa setelah selesai belajar kemudian mengucap salam penutup. Peserta didik: - Peserta didik menyimpulkan tentang materi Sriwijaya sebagai kerajaan maritim terbesar pertama di Nusantara. - Peserta didik menyimak tugas yang diberikan pendidik. - Peserta didik menyimak tugas yang diberikan. - Peserta didik mendengarkan arahan pendidik untuk materi pada pertemuan berikutnya. - Peserta didik berdoa sesuai kepercayaan mereka masing-masing dan menjawab salam.
The sentences in the podcast script lack communicative effectiveness.	Pendahuluan Ami sebelum bangsa Eropa menemukannya, Sriwijaya telah berdiri. Kerajaan Maritim terbesar pertama pada abad ke-7 dan ke-8 yaitu Kerajaan Sriwijaya yang berkedudukan di pulau Sumatra. Di pulau ini terkandung banyak kebudayaan Hindu, Buddha, dan Islam. Sriwijaya berkembang menjadi sebuah bandar dagang yang ramai dikunjungi para pedagang dari pulau-pulau di sekitarnya. Sriwijaya merupakan kerajaan maritim yang pertama di Indonesia. Sriwijaya merupakan kerajaan maritim terbesar pertama di Nusantara. Selamat datang di podcast sejarah, pada kesempatan kali ini kita akan sama-sama belajar mengenai Sriwijaya sebagai kerajaan maritim terbesar pertama di Nusantara.	Pendahuluan Ami sebelum bangsa Eropa menemukannya, Sriwijaya telah berdiri. Kerajaan Maritim terbesar pertama pada abad ke-7 dan ke-8 yaitu Kerajaan Sriwijaya yang berkedudukan di pulau Sumatra. Di pulau ini terkandung banyak kebudayaan Hindu, Buddha, dan Islam. Sriwijaya berkembang menjadi sebuah bandar dagang yang ramai dikunjungi para pedagang dari pulau-pulau di sekitarnya. Sriwijaya merupakan kerajaan maritim yang pertama di Indonesia. Sriwijaya merupakan kerajaan maritim terbesar pertama di Nusantara. Selamat datang di podcast sejarah, pada kesempatan kali ini kita akan sama-sama belajar mengenai Sriwijaya sebagai kerajaan maritim terbesar pertama di Nusantara.

After the podcast media on the topic of Sriwijaya as the first largest maritime kingdom in the Indonesian archipelago was deemed valid and suitable for testing by the experts and had been improved, the next step involved implementing the podcast media itself in the classroom learning environment, starting with individual (one-to-one) testing, followed by small group testing, and lastly field testing.

Implementation

After further development, the researchers conducted the product testing procedures consisting of individual (one-to-one) testing, small group testing, and field testing. The results of small group testing and individual testing can be seen in the table below:

Table 4. Students' response to the podcast during the implementation stage

Test	Average Score	Category
Individual (One-to-one)	3,94	Effective
Small Group	3,85	Effective

The table shows that the individual (one-to-one) testing obtained a score of 3.94, falling into the effective category. The small group testing received a score of 3.85, also in the effective category. During the individual testing and small group testing activities, the students also provided constructive feedback to the researchers as a guide for further improvement and adjustment. However, it can be concluded that the podcast media developed in this study had been considered effective for use in history education. Following this, the researchers then conducted the field testing activity using pre-test and post-test questions to measure students' initial knowledge of the content about Sriwijaya as the first largest maritime kingdom in the Indonesian archipelago. The results of students' scores in the pre-test session are presented below.

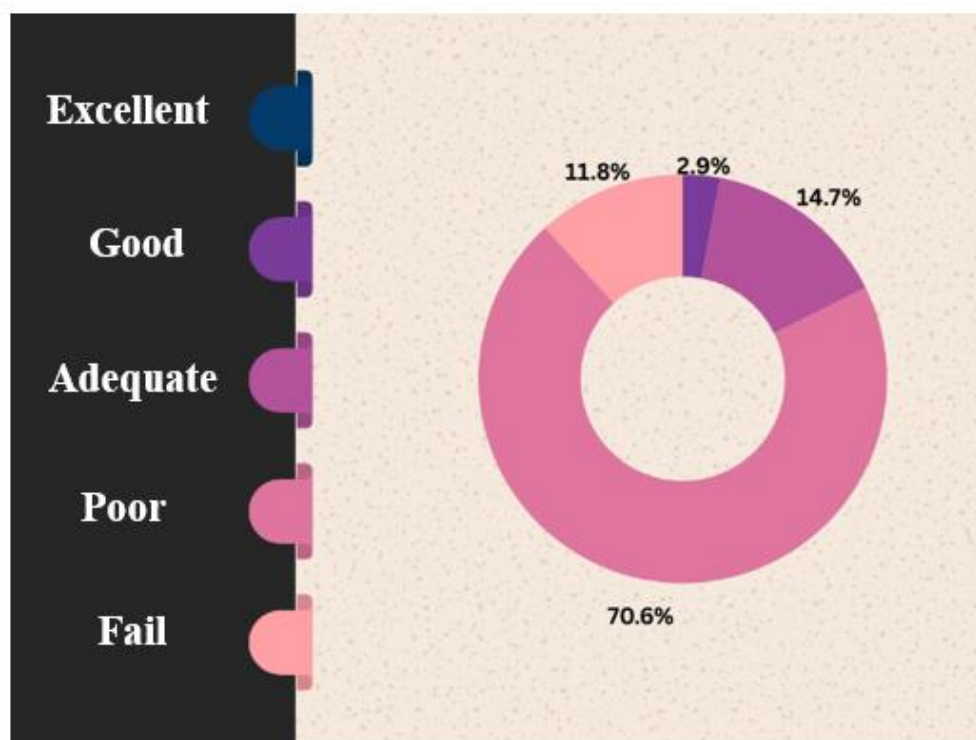


Figure 5. Recapitulations of students' pre-test results

There was only one student who got a score in the good category with a score range of 61-80 during the pre-test session. Meanwhile, there were 4 students who got scores in the very poor category with a score range of 0-20, while most of them got scores in the 21-40 range with 24 people in the poor category, and the remaining 5 people got scores in the 41-80 range in the fair category.

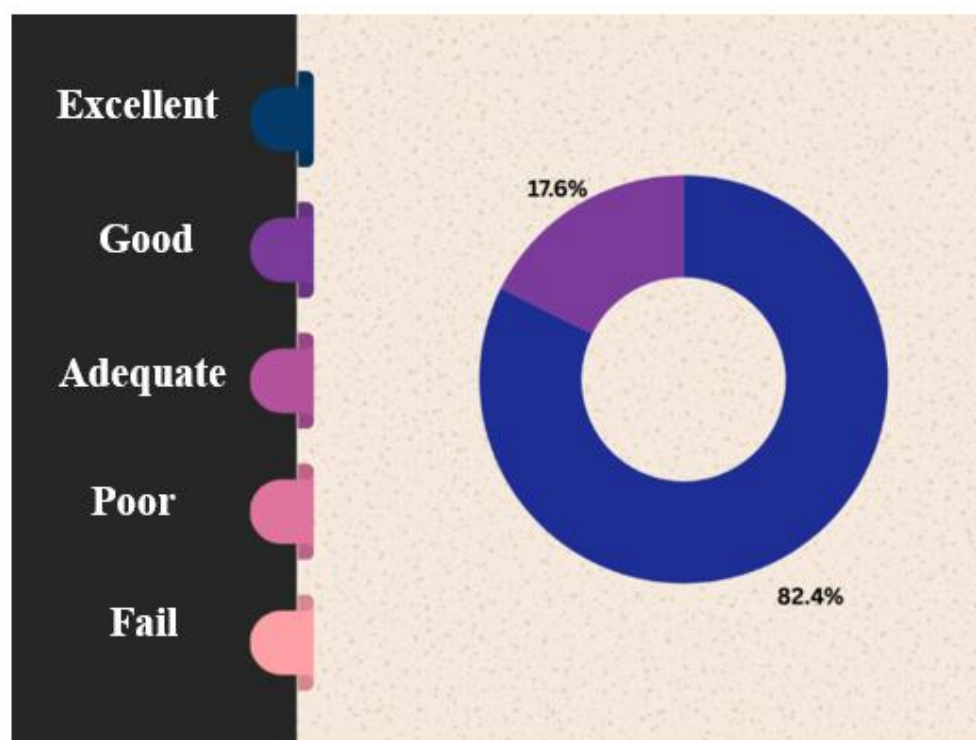


Figure 6. Recapitulations of students' post-test results

Among the 34 students in class X4, 28 of them received scores categorized as excellent (81-100), while 6 students scored in the good category (61-80). It can be concluded that the learning outcomes of the student participants in class X4 had increased after using the podcast media.

Based on the implementation of the podcast media with students in class X4 in Figure 7, it was found that the learning outcomes of these students at High school of 1 Indralaya increased by 45.59%, as evidenced by the pre-test and post-test results. Their average pre-test score was 37.35, while the average post-test score was 82.94. The N-gain formula was used to calculate the increase, resulting in a score of 0.72, categorized as very high.

The focus of this research, besides assessing the validity and effectiveness of the podcast media and measuring the students' learning outcomes on Table 5, was to improve their historical thinking skills. Referring to the scores they get from both the pre- and post-test sessions, it was clear that the aspect of chronological thinking as part of the overall historical thinking skillset was successfully achieved by the students. This was evident from the fact that all students in class X4 answered question number 1 correctly. On the other hand, skills in understanding historical events, analysing historical issues, and making decisions had not been fully achieved, as many of them were unable to answer the test questions correctly. Improving historical thinking skills is indeed a challenge that requires continuous efforts in the history learning process.

Table 5. Recapitulation of students' results on the essay questions

Question number	Number of students	Percentage (%)	Category
1	34	100%	Very good
2	5	14,70%	Very inadequate
3	0	0%	Very poor
4	9	26,47%	Very inadequate
5	0	0%	Very poor

Discussion

The use of podcast media in the context of education offers a clear and focused delivery of the content, simplifying the teaching process and saving time for the teachers alike (Reith-Hall & Montgomery, 2022; Syahputra & Novrianti, 2022). The monologue approach adopted in the developed podcast in this study, featuring a single speaker, allows for enhanced focus on the material, ensuring clarity in delivery and providing a more directed learning experience for the students (Pratama & Cahyaningsih, 2021). The product developed in this study, a podcast covering the topic of Sriwijaya as the first largest maritime kingdom in the Indonesian archipelago, follows the Hannafin and Peck model's Research and Development (R&D) stages of analysis, design, development, and implementation (Saputra & Putra, 2021; Yanti et al., 2020).

During the analysis stage, the identification of learning problems, curriculum analysis, and content analysis were conducted to bridge the gap between the current state of history education and the desired expectations (Efrindah & Yefterson, 2021). The questionnaire results from High school of 1 Indralaya revealed a lack of variety in history teaching methods and media. Class X4 as the primary research subject expressed a desire for a new learning experience with more engaging methods and media, with the majority of the responding students supporting the development of podcast media. The subsequent curriculum analysis highlighted the implementation of a independent curriculum (*Kurikulum Merdeka*) at High school of 1 Indralaya. Further analysis of the main target content or materials involved scrutinizing the target learning outcomes and teaching modules used by teachers in the school.

Once the needs analysis stages were completed, the next step was the design stage. Here, the researchers collected the main and supporting data, followed by creating a work flowchart as a guide during the media development process. An outline script was then generated to structure the podcast content itself, covering an introduction, four discussion points, a conclusion, and a designated duration to ensure concise and effective recording.

The development stage involved recording the podcast session using Dolby On: Record Audio & Music software, followed by editing the audio to enhance its quality. The use of audio editing features such as noise reduction contributed to clearer and more crisp sound. The final podcast then underwent a validation process from several experts covering the content or materials, media, and instructional design aspects of the podcast. The validation results indicated that the podcast was highly valid for learning application, leading to further improvements based on their expert feedback.

The expert validation process regarding the content or materials in the podcast returned with an average validity score of 4.45, categorised as highly valid. Meanwhile, the media aspect of the podcast received an average validity score of 4.45, also categorised as highly valid, and the instructional design aspect of it received an average validity score of 83, categorised as highly valid as well. Based on the feedback, criticism, and comments from the three experts, improvements were made to better enhance the quality, effectiveness, and user-friendliness of the podcast media.

Following the expert validation process, the next steps involved implementing the podcast in classroom learning through individual test, small group test, and field test activities. Student responses during the individual test activity returned with an average effectivity score of 3.94, categorized as effective. In the small group test activity, the average score was 3.85, also falling in the effective category. The last implementation step, field test, consisted of a pre-test session and a post-test session. In this stage, the researchers employed multiple choice and essay questions as the instruments to measure the students' historical thinking skills.

The average pre-test score for the student participants was 37.35, while their average post-test score was 82.94. Comparing these two test scores using the formula $\{(82.94-37.35) \times 100\}$, an improvement of 45.59% was observed. This increase indicates a good progress in the learning outcomes of tenth-grade students in class X4 at High school of 1 Indralaya. Furthermore, the pre-test and post-test results were used to calculate the N-gain score using its own formula, resulting in a score of 0.72, categorized as a very high improvement.

The improvement in the students' understanding was evident in their level of engagement when using the podcast media in their history learning. Students were more enthusiastic and active while listening to podcasts, positively impacting their overall understanding of historical concepts and information conveyed through this medium. In other words, students' activity during podcast listening reflected the effectiveness of this media in enhancing interaction and historical learning (Purwati, 2020; Wahyuni et al., 2020).

Based on the evaluation of the essay responses, the average score for the student participants in class X4 was 26.47, falling into the very low category. This result indicates that overall historical thinking skills among these students were still low. Nevertheless, when examining specific aspects of their historical thinking skills, it was evident that in the chronological thinking aspect, the students had achieved maximum results, with all 34 of them successfully answering question number 1 correctly and obtaining full marks.

The implementation of podcast media about Sriwijaya as the first and largest maritime kingdom in the Indonesian archipelago developed in this study has been considered effective and valid in improving students' learning outcomes. However, after the podcast media was applied, several challenges arose. Firstly, the monologue format of the podcast developed by the researchers made it difficult for students to focus due to the lack of visual elements such as images or videos. Secondly, difficulties arose because the podcast medium had to be played through students' mobile phones, but school regulations prohibiting the use of mobile phones posed an implementation barrier. Thirdly, the podcast production process was carried out in a regular room without suitable recording studio facilities.

Nevertheless, the implementation of podcast as a learning medium also offered several advantages. The flexibility of podcast media allowed students to access it more freely, anytime and anywhere. This medium also succeeded in boosting students' enthusiasm and interest, as podcast usage in education was previously non-existent at High school of 1 Indralaya. Therefore,

despite the challenges, the potential to improve learning outcomes and student interest remains, with attention focused on aspects requiring special consideration.

CONCLUSION

The development of podcast media using Dolby On for the teaching of Sriwijaya Kingdom's history at High school of 1 Indralaya successfully achieved a high level of validity and effective outcomes. The significant improvement in their pre-test and post-test scores, with an increase of 45.59% and an N-gain score of 0.72, showed that the use of podcast media can enhance students' understanding of historical materials, especially regarding Sriwijaya Kingdom.

However, even though the students' historical thinking skills overall remain relatively low, their chronological thinking skills stood out as a highly developed aspect. Additionally, the students showed an increased level of interest and engagement in the learning process, one other crucial point this study tried to see and discuss regarding the positive impact of implementing such new medium like podcast in learning. Consequently, with increased interest and engagement in the learning process, the students managed to have better learning skills, in this case specifically around analysing and evaluating the delivered historical events as the learning materials.

Some other key things to take note from this study include its research location being only at SMAN 1 Indralaya which limits the representativeness of the topic being covered and the data being analysed in general, as well as the relatively little time allocated for the research subjects involved (both students and teachers) to adapt themselves to this new teaching and learning approach. On top of this, the resulting podcast media could always be perfected, be it in terms of getting better audio and/or more appropriate materials, following more specific needs or criteria for the target learning process, especially in high school History education.

Keeping such evaluation in mind, future studies on this very topic around podcast as a learning medium (or the development of other innovative history learning media) are hoped to result in a more refined, suitable, interesting and thus effective outcome. Thus, it can be concluded that podcast media has brought positive impacts to history learning at High school of 1 Indralaya and holds the potential for further improvement by addressing specific aspects identified for enhancement.

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