

DEVELOPMENT OF A HISTORICAL E-BOOKLET ON INDONESIAN ANCIENT KINGDOMS TO ENHANCE LEARNING INTEREST AND OUTCOMES IN FOURTH-GRADE STUDENTS

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Abstract

This research aimed to develop a historical e-booklet on Indonesian ancient kingdoms as an innovative learning medium to enhance learning interest and outcomes among fourth-grade students. The study employed a Research and Development (R&D) approach using the Four-D (4D) model, involving 23 students as participants. Validation by content and media experts yielded "qualified" and "very qualified" ratings, respectively, indicating that the e-booklet aligns with curriculum standards in content, language, presentation, and usability. Small and large group trials demonstrated positive responses from both students and teachers. Statistical analysis using a paired sample t-test showed significant improvement in both learning interest and outcomes ($p < 0.05$), with N-gain scores of 0.7924 (high) for learning interest and 0.6149 (moderate) for learning outcomes. The engaging visuals, interactive elements, and concise layout of the e-booklet contributed to increased student motivation and comprehension, especially in understanding historical figures, relics, and events. This study concludes that historical e-booklets are effective digital learning media to stimulate interest and improve academic performance in history-themed social studies among primary students. The findings provide practical implications for digital media integration in elementary education and support the use of e-booklets as accessible, enjoyable, and pedagogically sound learning tools.

Keywords: *Development; Media; E-Booklet; Learning Outcomes; Interest in Learning*

Abstrak

Penelitian ini bertujuan untuk mengembangkan media pembelajaran inovatif berupa e-booklet sejarah tentang kerajaan-kerajaan di Indonesia guna meningkatkan minat dan hasil belajar siswa kelas IV sekolah dasar. Penelitian ini menggunakan pendekatan *Research and Development* (R&D) dengan model *Four-D* (4D), melibatkan 23 peserta didik. Hasil validasi dari ahli materi dan ahli media menunjukkan kategori "layak" dan "sangat layak", menunjukkan bahwa e-booklet sesuai dengan standar kurikulum dari segi isi, bahasa, tampilan, dan kemudahan penggunaan. Uji coba kelompok kecil dan besar menunjukkan respons positif dari siswa dan guru. Analisis statistik menggunakan uji t berpasangan menunjukkan peningkatan signifikan pada minat dan hasil belajar ($p < 0,05$), dengan skor *N-gain* sebesar 0,7924 (tinggi) untuk minat belajar dan 0,6149 (sedang) untuk hasil belajar. Visual yang menarik, elemen interaktif, serta tampilan ringkas dalam *e-booklet* menjadi faktor pendorong peningkatan motivasi dan pemahaman siswa, terutama dalam mengenal tokoh, peninggalan, dan peristiwa sejarah. Hasil penelitian menyimpulkan bahwa *e-booklet* sejarah efektif digunakan sebagai media pembelajaran digital yang mampu meningkatkan minat dan prestasi belajar siswa dalam materi IPS bertema sejarah. Temuan ini memberikan implikasi praktis bagi integrasi media digital di pendidikan dasar.

Kata Kunci: Pengembangan; Media; *E-Booklet*; Hasil Belajar; Minat Belajar

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Introduction

Based on data obtained from observation activities, questionnaire responses, and interviews with the fourth-grade teacher and some fourth-grade students, a problem was found in low learning outcomes. It decreased student interest in learning, especially in social studies subjects on the material of Indonesian ancient kingdoms. From the results of interviews with the fourth-grade teacher, the students' learning outcomes on this material were still considered low; this was evidenced by only 45% of the students' average scores of the material that reached the learning outcomes set by the school. In addition, the fourth-grade teacher also stated that students had a low interest in learning social studies, especially on the material of the Indonesian ancient kingdoms, due to the large amount of material that must be read and understood. This was supported by the results of the student questionnaire, in which 70% of students stated that learning social studies on the material of Indonesian ancient kingdoms was a lot of reading and memorizing. According to the fourth-grade teacher, in addition to the material containing a large amount of reading, the low interest and learning outcomes of students in the material on the Indonesian ancient kingdoms were also due to the lack of learning media used on the material.

The results of interviews with a fourth-grade teacher and several students explained that in the teaching and learning process, media learning was rarely used and more often used student worksheets (LKS) and textbooks, which contained a large amount of text, few pictures, and less color, resulting in students being less enthusiastic during the learning process. In addition to textbooks, the teacher also used learning media in the form of videos displayed on projectors. Some students admitted that they could not understand the material if they only used learning media in the form of learning videos and books. This resulted in a decrease in students' learning outcomes and their interest in the subject of the Indonesian ancient kingdoms. Learning media is important in teaching and learning (Wahyuningtyas & Sulasmono, 2020). This was because learning media served as tools that supported the learning process, through which the intended message became clearer, allowing learning goals to be achieved more effectively and efficiently (Nurrita, 2018). Learning media was anything that could be used to convey messages from a teacher to pass on data so that it could increase the attention, interest, thoughts, mindsets, and feelings of students in learning activities, thereby encouraging learning activities to achieve learning goals (Muammar & Suhartina, 2018; Nurdiansayah, 2019). In other words, learning media assists students in increasing understanding, digestibility, and memory of the material (Ramli, 2012). Besides being a tool in delivering material, practical, innovative, and interactive learning media also increase students' interest in learning and improve their learning outcomes (Magdalena et al., 2021; Nurdiansayah, 2019).

Learning interest was the desire and interest of students in the lessons they learned,

which led them to pay attention and actively engage in mastering the knowledge and experience, creating a sense of satisfaction and pleasure (Sughiarti, 2016). A high level of learning interest allowed students to be more active in the learning process. Learning interest had several indicators, including: 1) Feeling happy: Students who had an interest in learning will feel happy about something they were learning. 2) Attention: Students interested in learning paid great attention to lessons were more likely to study harder. 3) Interest: If the subject matter aligned with the student's interests, they studied seriously because they felt drawn to the content. 4) Satisfaction: Students who had an interest in learning tended to pay more attention to a lesson and understood it more easily, resulting in a sense of satisfaction. 5) Attachment: Students who were interested in learning tended to feel attached to lessons without being prompted, as the content suited their needs. 6) Participation: Students who were interested in learning tended to be more active in participating in learning (Slameto, 2013). Out of the indicators mentioned, only two were fulfilled, indicating that the students had a low interest in the material of the Indonesian ancient kingdoms. To enhance students' interest in learning, the material should be presented in an engaging and non-monotonous way, incorporating both content and learning design that allows students to explore the subject freely, involving all learning domains (cognitive, affective, psychomotor), which in turn increases student engagement and makes the teacher's performance more captivating during instruction (Baharuddin & Wahyuni, 2015). In line with this opinion (Supriyono, 2018) Said that one way to increase students' interest in learning was by using interesting learning media.

Learning interest and media use in learning also influenced the high or low learning outcomes (Ula, 2013). According to Syaiful Bahri Djamarah and Aswan Zain, the indicators of learning success can be seen from students' level of absorption and their observable behavior (Supardi, 2013). The learning outcomes referred to were the achievements attained by students, measured by the criteria or grades that had been established. Learning outcomes were changes in students' behavior after experiencing learning activities, where these changes were formulated in learning goals that described the expected behavior after the learning process (Rifai & Anni, 2018).

In this study, the learning goals to be achieved were taken from the learning outcomes set by the government. Namely, students recognize the diversity of culture, local wisdom, and history (both figures and periodization) in the province where they live and connect with the context of life today (Kemendikbud, 2022). Based on the learning outcomes mentioned above, the primary issue identified was in Chapter 5, 'Stories About My Region,' specifically the sub-topic 'What Was My Region Like in the Past.' This sub-topic discussed the origins and history of the students' residence, which was related to the history of the ancient Indonesian kingdoms. The interview data from students revealed that they found the material challenging to understand because it had a long text with dense information containing many names, terms, and years that students must memorize. This was in line with Matanasi's opinion (Amboro, 2020) that history was often synonymous with subjects that contained much material and were monotonous. Therefore, to address the identified issues, it was necessary to develop engaging learning media, which contained

minimal text and could facilitate students' understanding of the material, enhance their learning interest, and improve learning outcomes, thereby ensuring that the learning goals were achieved, particularly in the social studies subject on the Indonesian ancient kingdoms. Barzano et al. and Papadakis et al. (Budiamai et al., 2021) stated that social studies are a subject that can be taught using digital tools, which can influence both the learning process and student outcomes. Digital tools can take the form of digital booklets, also known as e-booklets.

E-booklets could be used as an alternative learning medium that serves as a solution for a better understanding of social science material, which contains much information (Asinta & Prasetyaningtyas, 2021). E-booklets played an important role in improving learning outcomes because they helped students understand fact-based material more easily, increased their interest in learning, and enabled them to easily grasp lesson concepts (Rahmatih et al., 2017). E-booklets were also highly effective and practical, making them a valuable tool for improving understanding of material concepts (Hoiroh & Isnawati, 2020). Learning in e-booklets could be presented interestingly and concisely, enriched with images, and easy to understand; besides that, e-booklet learning media could be used in the learning process both independently and in groups in class (Violla & Fernandes, 2021). Due to its informative content and visually appealing design, the e-booklet has the potential to stimulate students' curiosity, thereby facilitating a deeper and more effective understanding of the learning material (Hanifah et al., 2020). The information in the e-booklet was written in concise language, allowing it to be understood in a short amount of time (Damanik, 2021). The structure of the e-booklet had to be arranged neatly and in detail so that students could appropriately capture the information conveyed; besides that, the combination of engaging images and the use of easily comprehensible language will support students in grasping the presented material (Wulandari, 2023). Therefore, in this study, the learning media developed to overcome the problems was historical e-booklet learning media. Besides being accessible anywhere and anytime, the historical e-booklet enabled students to understand the material more easily, as it was supported by colorful and easily accessible images, which were expected to enhance students' interest and learning outcomes in the topic of Indonesian ancient kingdoms. In addition, the e-booklet media developed in this study not only functioned as a learning aid but also provided a real contribution to the literature on digital media development by presenting local history content that was contextual, relevant, and easily accessible to students.

Research Method

This historical e-booklet learning media was developed using a *Research and Development* (R&D) method with the *Four-D Model* (4D) development model. The 4D model consisted of four stages: (1) *Define*, (2) *Design*, (3) *Develop*, and (4) *Disseminate* (Trianto, 2015). However, in this study, the process was carried out only up to the development stage because, at this stage, the researcher's goal had been achieved. Specifically, the feasibility of the developed media for use in the learning process has been

determined. The design in this research used a *group Pretest-Posttest* design. In this study, students were given a *pretest* before being treated and a *posttest* after being treated; thus, the treatment results could be known more accurately because they could compare with the situation before being treated (Sugiyono, 2021). This study was conducted in a fourth-grade class at an elementary school on the island of Java. Data collection occurred during the odd semester of the 2024/2025 academic year. The population of this study consisted of 23 fourth-grade students enrolled in the 2024/2025 academic year. Data was collected through cognitive tests, interviews, observations, questionnaires, and documentation. The stages carried out in this study are as follows:

Define

This stage consists of several steps. The first is the beginning-end analysis, which aims to determine the problem. Learner analysis to determine students' characteristics, followed by task analysis to examine the learning objectives and competencies to be achieved. After that, concept analysis was carried out to identify concepts in the primary material to be provided. The next step was a learning goals analysis to determine the specific learning goals to be achieved.

Design

This stage consisted of 4 steps: test preparation, media selection, format selection, and initial design. Test preparation involved developing *pretest* and *posttest* instruments based on the learning goals. These tests were then administered to sixth-grade students, and the items were analyzed to determine which items could be used or eliminated. The media selection step was adjusted based on analyzing the students' needs regarding the learning media used and the intended learning goals. The format selection step was carried out to determine and design the content of learning media, including the layout of images, videos, and text. The preparation of historical e-booklets and student response questionnaires for the developed products was created at the initial design stage, along with an expert validation sheet.

Develop

The development stage aimed to realize the design created during the design phase. After the product was developed, material and media experts validated it, and the results were used to make revisions to refine the product. The validation results were then presented based on the formula from (Ernawati & Sukardiyono, 2017) with validation criteria adapted from (Irwanto, 2020) as shown in **Table 1**.

Table 1. Qualified Criteria

Percentage Range	Criteria
75% < score ≤ 100%	<i>Very qualified</i>
50% < score ≤ 75%	<i>Qualified</i>
25% < score ≤ 50%	<i>Less qualified</i>
0% < score ≤ 25%	<i>Unqualified</i>

The revised product was then tested on a small scale by students to find out their responses to the historical e-booklet learning media and assess the developed product's

quality. Furthermore, a large-scale trial was conducted to determine the effectiveness of a *historical e-booklet* in improving learning outcomes and learning interest. Students' learning interest was measured using a questionnaire consisting of 25 items based on the *Guttman* scale, with answer options of "Yes" or "No." with the assessment being carried out based on the criteria presented in **Table 2**. The questionnaire was administered before (initial interest) and after (final interest) using the historical e-booklet. The aspects measured in the interesting questionnaire are presented in **Table 3**.

Table 2. Guttman Scale Assessment (Riduwan, 2015)

Response	Positive Statement	Negative Statement
Yes	1	0
No	0	1

Table 3. Interest Indicators

Aspects	Indicators	Item		Total Items
		Positive Statement	Negative Statement	
Sense of joy	Students' opinions about the lesson.	6, 4	7, 3, 5	5
	Students' emotional experience during learning activities.	1, 8	2	3
Students engagement	Active participation during learning.	9, 11, 13	10, 12, 14	6
	Learning awareness.	15	16	2
Interest	Students' response to the assigned tasks.	17	18	2
	Curiosity about the lesson.	19	0	1
	Students' perception of the learning media.	22, 24	23, 25	4
Students attention	Students' attention while learning in class.	20	21	2
Total				25

Learning outcomes were measured using a *pretest-posttest* questionnaire consisting of 30 multiple-choice items, which had previously been validated for validity and reliability. The results of the learning interest and learning outcomes questionnaires were subsequently analyzed, beginning with a normality test to determine whether the data were normally distributed. A homogeneity test was then performed to assess whether the data groups in the study originated from the same population by comparing their variances. If the data were normally distributed and homogeneous, a hypothesis test was conducted using parametric statistics with a *paired sample t-test* in SPSS version 21. This test aimed to examine the differences in students' mean scores between the *pretest* and *posttest* and the differences in their before-and-after learning interests. To determine the improvement in both learning outcomes and learning interest before and after using the historical e-booklet learning media, an n-gain analysis was conducted. The criteria for interpreting the n-gain scores were as follows: $0.70 \leq N \leq 1.00$ (high), $0.30 \leq N < 0.70$ (moderate), and $0.00 \leq N < 0.30$ (low).

Result and Discussion

Result

This research used the 4D development model in developing historical e-booklet learning media for social studies, specifically on the topic of Indonesian ancient kingdoms. The development of historical e-booklet learning media began with the *defining* stage. At this pre-research stage, the researcher found several problems after conducting interviews with the fourth-grade teacher. Based on the interview results and documentation obtained, it was found that the teaching of social studies, particularly on the topic of Indonesian ancient kingdoms, had not been optimal because, in the learning process, the teacher still relied on printed LKS books and rarely used electronic learning media based on multimedia technology. This caused a lack of students' interest in learning about the Indonesian ancient kingdoms, resulting in decreased student learning outcomes. Learning media itself could play a role in increasing students' interest and learning outcomes. (Magdalena et al., 2021). At this stage, the researcher conducted observations and interviews with several students. From the results of class observations and interviews with 10 students, it was found that students' interest was still lacking due to the limited use of engaging learning media, which caused a decrease in students' learning outcomes. Based on the learning outcomes, the data of fourth-grade students on this material was still very low. This was evident from the learning outcomes of fourth-grade students who had not reached the minimum completeness criteria set by the teacher. According to data obtained by the researcher from a fourth-grade teacher, 23 students had low scores and had not reached the minimum competency standard set by the teacher for this material.

The learning media developed by the researcher was a historical e-booklet learning media, which was considered by the potential problems that exist in fourth grade. Learning media was not just a physical object but everything that already contained learning material, so it allowed someone to use it to learn to gain knowledge, skills, or changes in attitude (Syaiful et al., 2014). After the media was determined, the researcher analyzed the competencies and goals of the social studies that would be developed, as in **Table 4** below.

Table 4. Competencies and Goals Analysis

Phase B/ Social Studies Grade IV Chapter 5: 'Stories About My Region' Topic A: 'What Was My Region Like in the Past'	Phase B Competencies	The students recognized the diversity of culture, local wisdom, and history (both figures and periodization) in the province where they lived and connected them in the context of everyday life.
	Goals	1. Identified the kingdoms that once developed in their area of residence. 2. Recognized historical figures from their local area. 3. Identified historical relics found in their region. 4. Understood the developments that occurred in their place of residence. 5. Identified efforts to preserve historical heritage in their local area.
	Lesson Topics	1. Explored Hindu, Buddhist, and Islamic kingdoms that once existed.

(Indonesian ancient kingdoms)	2. Relics period from Hindu, Buddhist, and Islamic kingdoms. 3. Understood the methods and benefits of preserving historical heritage from the Hindu, Buddhist, and Islamic kingdoms.
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Afterward, the researcher conducted a concept analysis to determine the content to be included in the historical e-booklet. The selected materials were aligned with the previously analyzed competencies and goals, consisting of the history of Hindu Buddhist and Islamic kingdoms that influenced the development of the local area, historical relics from the Hindu Buddhist and Islamic kingdoms, benefits and ways to preserve historical heritage and evaluation questions designed to measure students' understanding of the material. The evaluation questions in the historical e-booklet were developed based on an analysis of the learning goals and adjusted to match the identified competencies and goals.

The second stage was the *design* stage. In this phase, the researcher developed *pretest* and *posttest* instruments, followed by validity and reliability testing involving 23 sixth-grade students from the same elementary school. The validity test results showed that out of 40 trial items, 32 questions were valid, but the researcher only used 30 questions because two questions had bad and easy categories, so they were not used. In the reliability test, the results obtained were $0.931228 > 0$ is .413, where $r_{hitung} > r_{tabel}$, so the question was declared reliable with a very high correlation. In addition, this stage included the selection of media and formats such as images, videos, and text to be used, as well as the layout arrangement within the designed media. Social studies was a subject that had abstract and complex concepts, so effective media was needed, which included images, videos, or interactive learning software to better visualize those concepts (Suhelayanti et al., 2023). After the media was determined, the initial design of the historical e-booklet was developed. The content format included a foreword, table of contents, activity flow, user guide, learning goals and achievements, learning activity sections consisting of "Let's Observe," "History of Kingdoms in Indonesia," "Let's Discuss," and detailed material explanations. These explanations covered Hindu kingdoms, Buddhist kingdoms, Islamic kingdoms, historical heritage from the kingdom periods, methods for preserving historical heritage, benefits of preservation, and a summary. Additional components included the evaluation section, acknowledgments, bibliography, and developer profile.

The third stage was the development stage, where the media were instructed according to the initial design and subsequently underwent expert validation and testing. The learning media developed was then validated by media experts and material experts. The validation process included evaluating the design and each component within the media by both experts. The results of product validation can be seen in **Table 5**.

Table 5. Expert Validation Results

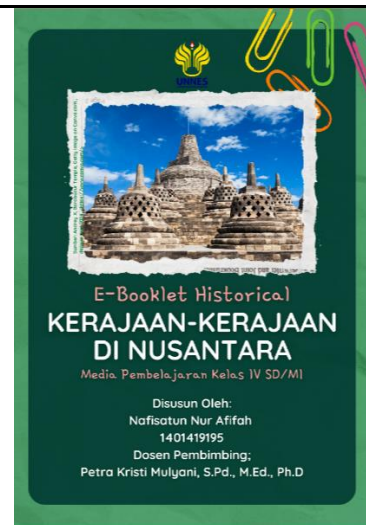
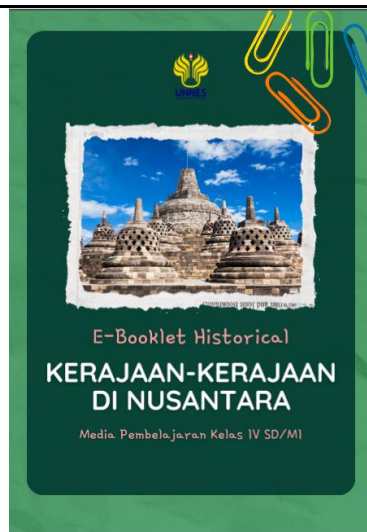
No.	Expert	Percentage	Criteria
1	Material	74%	Qualified
2	Media	90%	Very qualified

The results of the assessment conducted by a material expert to evaluate the content feasibility of the media resulted in a score of 74% with qualified criteria, which means that the material was accurate and aligned with the learning goals. In terms of language, it was easy for students to understand because it used the language commonly heard in daily life. From the presentation aspect, the material was presented informatively, briefly, clearly, and following the competencies and learning goals. The readability aspect of historical e-booklet media was deemed retrieved for delivering material on the Indonesian ancient kingdoms and could help students understand this material. This aligns with the criteria for selecting learning media, which include alignment with the intended learning goals and suitability for supporting content that involves facts, concepts, principles, or generalizations (Arsyad, 2019). In addition, the material expert also provided some suggestions to improve several components, including using only 1-2 font types, changing the background color to avoid excessive contrast, adding source attributions to images, making images *pop up* for clearer viewing, reducing background elements, removing underlining and highlighting in the text and replacing them with standard text, enlarging the font size, and organizing the layout of images and text more neatly.

The media feasibility assessment conducted by the media expert resulted in a percentage score of 90%, indicating that, from the media aspect, the historical e-booklet had successfully attracted students' interest in reading, and the sentences used were easy to understand, which made it easier for students to understand the presented material. From the presentation aspect, the historical e-booklet media displayed a graphic with attractive colors, images, and videos that were easy to view, thus helping students visualize the material, and a readable font size. As a result, students found it easier to understand the content because the material was organized with accompanying images to clarify the content and used communicative and easy-to-understand language (Wulandari, 2023). From the usability aspect, the media was easy to use and addressed limitations of space and time, allowing it to be accessed anytime and anywhere. The media expert also suggested including the author's and academic supervisor's names on the cover page. These suggestions were implemented to enhance the quality of the media. The revised version of the media is presented in **Table 6**.

Table 6. Media Revision Results

No.	Revision Results	
	Before	After
1.	The name of the author and supervisor should be added to the cover.	The cover display was revised to include the names of the author and the academic supervisor.



2. Use 1-2 types of fonts.

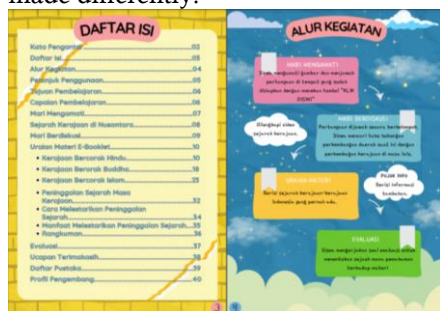


- The font was changed to the *Quicksand* type font.

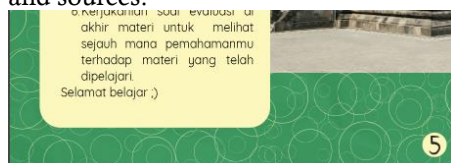


3. The background color was standardized or could be distinguished per material if made differently.

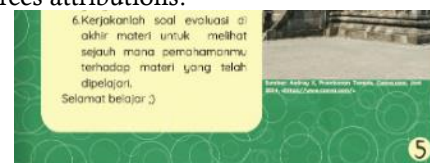
- The *background* color was standarized to green.



4. The images were provided with captions and sources.



- The images were provided with captions and sources attributions.



5. The images were enlarged or made into pop-up images.



- The images were made enlargeable by converting them into pop-up format.



6. The background elements were kept simple and not overly crowded.



- The background elements were reduced to create a cleaner and more focused layout.



7. The underlined and highlighted text was removed and written in a standard format.

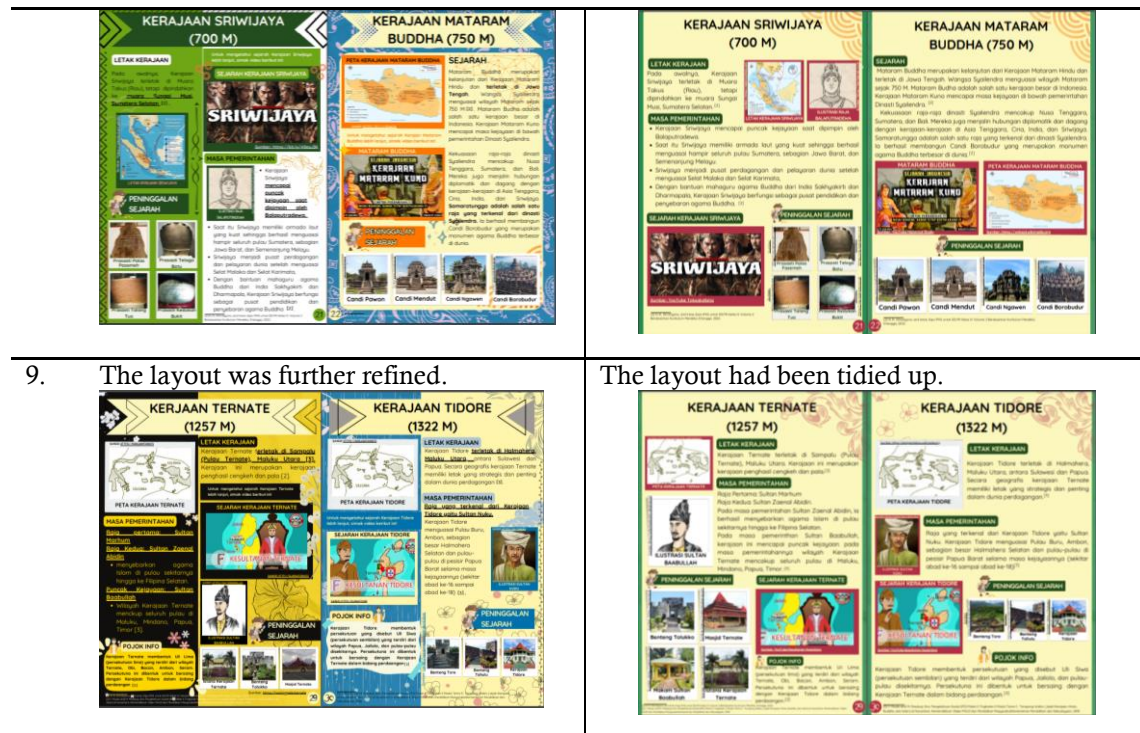


- The underlined and highlighted text was revised and formatted in a standard style.



8. The font size was increased.

- The font size was increased to 15.7.



9. The layout was further refined.

The layout had been tidied up.

After revisions, the enhanced learning media were evaluated through a small-group trial involving six fifth-grade students from the same elementary school. Participants were selected by a *purposive sampling* technique, comprising two students with high academic performance, two with average performance, and two with lower performance levels. The students used the historical e-booklet learning media during the lesson. After using the media, they completed a response questionnaire to evaluate the feasibility of the learning media before its trial in a larger group. The questionnaire results demonstrated a highly positive response, with an overall feasibility rating of 80.5%. These findings indicated that the historical e-booklet was highly appropriate for instructional use, with content that aligned effectively with the established learning goals. Students reported that the language used in the e-booklet was easily understandable and complemented by illustrations that successfully captured their attention and supported their comprehension of the material (Wulandari, 2023). Additionally, they noted that the historical e-booklet was easy to use, durable, practical, and adaptable for various learning contexts (Arsyad, 2019). The results of the small group trial indicated that no further improvements were necessary, and the historical e-booklet media were ready for use in the large group trial.

Furthermore, a large group trial was conducted involving 23 students. This trial aimed to measure the effectiveness of the historical e-booklet learning media in improving students' learning outcomes and learning interests. Before using this media, students completed a *pretest* and an initial interest questionnaire. After that, the learning process was conducted with historical e-booklet media. After completion, students answered the *posttest* and completed a final interest questionnaire. The *pretest-post test* results, before and after

interest, were tested for normality. Normality tests were conducted to guide decision-making and determine the appropriate data analysis techniques. The normality testing was carried out using the *Shapiro-Wilk* test with the criterion that the data were normally distributed if the significance value exceeded 0.050. Conversely, the data were considered not normally distributed if the significance value was less than 0.050. The results of the normality testing are presented in **Table 7**.

Table 7. Normality Test Results for Pretest-Posttest and Before-After Interest Scores

		Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Pretest Outcomes	Learning	.186	23	.038	.933	23	.126
Posttest Outcomes	Learning	.119	23	.200	.979	23	.889
Interest Before-After		.145	23	.200*	.949	23	.281
		.163	23	.118	.931	23	.116

The results of the normality tests conducted using the SPSS version 21 application showed that the significance value for the *pretest* was $0.126 > 0.050$, and for the *posttest*, it was $0.889 > 0.050$, so the *pretest-posttest* data was normally distributed. Meanwhile, the normality test for the initial interest scores obtained a significance value of $0.281 > 0.050$ and a significance value of the final interest of $0.116 > 0.050$, so it could be concluded that all data were normally distributed, allowing for the use of parametric statistical analysis in the final data analysis.

The next step was the homogeneity test, a requirement test used to determine whether the distribution of data groups in the study was equal by comparing their variances. This test was conducted to ensure that the data obtained by the researcher were homogeneous. The decision-making criteria for the homogeneity test were that the data were not homogeneous if the significance value (sig.) < 0.050 . However, the data were considered homogeneous if the significance value (sig.) > 0.050 . The homogeneity test results for *pretest-posttest* data showed a significance value of 0.092, where $0.092 > 0.050$, indicating that the *pretest-posttest* data were homogeneous. While testing the homogeneity of the before and after learning interest, the data obtained a sig value of $0.734 > 0.050$, so that the before and after interest data were also homogeneous. Based on these results, it was concluded that all data originated from the same population. Since the data were normally distributed and homogeneous, the subsequent step was to conduct data analysis using parametric statistics through a *paired sample t-test*.

The effectiveness of using historical e-booklet learning media on the topic of the Indonesian ancient kingdoms was determined by the differences in the mean scores between the *pretest* and *posttest*, as well as between the before and after interest levels. The decision-making criterion was as follows: if the significance value (2-tailed) < 0.05 indicated a difference in *pretest-posttest* results and before-after interest. However, if the significance value (2-tailed) > 0.05 indicates no difference in the *pretest-post test* results and before-after interest. The results of the *paired sample t-test* are presented in **Table 8**.

Table 8. T-test Results

		Paired Samples Test					t	df	Sig. (2-tailed)
		Paired Differences							
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest - Posttest	-34.69565	14.43618	3.01015	-40.93832	-28.45298	-11.526	22	.000
Pair 1	Interst Before-After	-12.348	2.080	.434	-13.247	-11.448	-28.465	22	.000

The *paired sample t-test* analysis on *pretest* and *posttest* results showed a significant difference in learning outcomes, with a significant value (2-tailed) of $0.000 < 0.05$. This indicated a significant difference between the *pretest* and *posttest* scores after using the historical e-booklet learning media, where the *posttest* scores were notably higher than the *pretest* scores. The results of testing the before-after interest questionnaire showed a significance value (2-tailed) of $0.000 < 0.05$, demonstrating a significant difference in students' interest before and after using the historical e-booklet media. This finding was supported by observations that students appeared more enthusiastic during lessons, showing greater excitement and engagement in responding to teachers' questions after using teaching media that could be seen and read, so it could be concluded that students' learning interest increased after using the media compared to before its implementation. Students with high interest tended to focus consistently on activities and experienced enjoyment while engaging in them (Slameto, 2013). Based on these results, the use of the historical e-booklet learning media effectively improved both students' learning outcomes and learning interest in the topic of Indonesian ancient kingdoms.

To determine the extent of the increase in students' average learning outcomes and learning interest, an n-gain analysis was conducted using SPSS version 21. The n-gain value was based on the following criteria: if the means $0.70 \leq n \leq 1.00$ (high), $0.30 \leq n < 0.70$ (moderate), $0.00 \leq n < 0.30$ (low) (Oktavia et al., 2019). From the *pretest-posttest* results, the mean score value was 0.6149 with moderate criteria, indicating a substantial improvement in *posttest* scores after using the media. The n-gain analysis of learning interest obtained an average score of 0.7924 with high criteria, suggesting a significant increase in students' interest following the use of the historical e-booklet. This was supported by the calculation showing that the final interest questionnaire scores were higher than the initial scores. The improvements in learning outcomes and learning interest were attributed to the high level of student engagement during lessons using the historical e-booklet, which featured appealing visualizations, videos, and vibrant colors. Thus, the historical e-booklet learning media effectively improved students' learning outcomes and interest in the material of the Indonesian ancient kingdoms. This conclusion was further supported by the teacher and student response questionnaire results, which achieved a very positive category as shown in **Table 9**.

Table 9. Teacher and Student Response Questionnaire Results

Aspect	Teacher Response (88,75%)	Student Response (84.5%)
Material	The material depth aligned with students' intellectual development.	The material was easily understood due to the use of everyday language.
Language	The media is easy to understand because it uses familiar and straightforward vocabulary.	Easy to understand language because it uses everyday language.
Legibility	The addition of illustrative images aids student visualization.	The images and text are clear and easy to read. The learning videos are easy to play.
Presentation	The media is presented with good color composition and easy-to-read writing.	The presentation of e-booklets, which was rich in images, videos, and colors, created an attractive appearance favored by the students.
Utilization	Media is easy to use on various devices. Media is also durable, easy to carry anywhere, and can be used more than once.	The media is easy to use across multiple devices.

The table above shows that which was rich in images, videos, and colors, created an attractive appearance favored by the students, as they tended to be more interested in reading materials with shorter text and more visual elements such as images and videos, where images can increase interest, help imagination, and ultimately support improved memory performance (Hanifah et al., 2020). Based on the results obtained from both the student and teacher questionnaires, it was concluded that the historical e-booklet learning media effectively increased students' learning interest and learning outcomes on the topic of Indonesian ancient kingdoms.

Discussion

This research aimed to develop historical e-booklet learning media to improve the learning interest and outcomes in fourth-grade students on the material of the Indonesian ancient kingdoms. This was conducted based on the results of interviews with a fourth-grade teacher about the learning media used, which mainly consisted of textbooks and worksheets (LKS) containing extensive reading materials and few illustrations and was considered less effective in enhancing students' interest and learning outcomes. E-booklet with concise, structured, and easily understandable content, combined with attractive color displays and illustrative images, was expected to enhance students' understanding of concepts in a more meaningful way within their cognitive structures and to make students more active and enthusiastic in participating in the learning process (Hanifah et al., 2020; Rehusisma et al., 2017).

Based on observations regarding material that was difficult for students to understand, the content on the Indonesian ancient kingdoms tended to be predominantly in the form of text, with a lack of attractive, colorful images, which made students less interested in reading and studying it. To overcome this, effective media that included

images, videos, or interactive learning software was needed to better visualize the concept of the material (Suhelayanti et al., 2023). After reviewing the material, the learning media began to be developed. The historical e-booklet media was developed with the help of the Canva application. Canva was a web-based platform that provided a variety of attractive design templates as well as various features and facilities that supported the creation of media (Pelangi, 2020). After the media was compiled into a PDF format, learning videos were added using Flip PDF Professional and converted into an electronic format. Flip PDF Professional converted booklets into an electronic format with an interactive display like a real book, and presents interesting images that could be enlarged to increase clarity (Seruni et al., 2019).

The second objective, after the design of the historical e-booklet learning media was completed, then a media feasibility assessment was carried out by a material expert and a media expert using validation instruments developed based on the reference book. The results of the assessment conducted by the material expert were to assess the content feasibility components of the historical e-booklet learning media. The aspects that need to be assessed are listed in **Table 10**.

Table 10. The Result of the Material Aspects Assessment

Aspect	Score
Material	27
Language	19
Material presentation	11
Readability	17
Total (percentage)	74 (74%)
Category	Qualified

The qualified category means that the material in the historical e-booklet was explicit, detailed, and aligned with the learning outcomes and goals (Arsyad, 2019; Yumelda, 2022). In addition, the historical e-booklet was structured practically and simply, with content adapted to the developmental level of the students (Ramli, 2012). Adding interesting pictures and sentences that are easy to understand could make it easier for students to understand the material presented (Wulandari, 2023). The information in the e-booklet was written concisely to more effectively convey the material, thereby enhancing students' learning interest (Damanik, 2021; Hoiroh & Isnawati, 2020; Nurdiansayah, 2019). The media feasibility assessment was conducted to evaluate the presentation feasibility components of the historical e-booklet learning media. The instrument assessed three aspects, which are shown in **Table 11** below.

Table 11. The Result of the Media Aspects Assessment

Aspect	Score
Media	26
Presentation	26
Usability	29
Total (percentage)	81 (90%)

Category	Very Qualified
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The historical e-booklet was considered very qualified because it met several indicators, such as media being designed per learning goals, appropriately supporting factual, conceptual, principled, or generalized content, and being durable, practical, and easy to carry everywhere, as well as suitable for use across various target groups while meeting technical quality standards (Arsyad, 2019). With the addition of colors, images, videos, and the use of simple sentences, and through the development of students, the historical e-booklets could help students develop a learning interest in the material (Nurdiansayah, 2019; Ramli, 2012).

Based on the material and media expert assessment results, the historical e-booklet learning media was categorized as very qualified for use as a learning medium on the topic of Indonesian ancient kingdoms. Very qualified here indicated that the historical e-booklet fulfilled the main characteristics of e-booklet content: clear, coherent, engaging, and easily understandable integration (Klarisya et al., 2019). In addition, the developed learning media featured an attractive appearance under the technical quality standards of media development, where appealing visuals and clear audio quality could enhance students' attention and understanding of the material presented (Yessi, 2021).

The e-booklet learning media served as a tool for teachers to convey and clarify abstract material, making it more concrete so that students could more easily understand the concepts being taught and increasing the attractiveness of the learning process (Hikmah et al., 2022). The historical e-booklet was also easy to use by both teachers and students and was durable, practical, and flexible to use in small groups, large groups, or individually (Arsyad, 2019). This demonstrated the media's capability to be applied in various learning contexts and adapted to the individual needs of students (Syukur et al., 2024).

Based on the feasibility assessment results and the supporting theories regarding the development of learning media for students, the feasibility criteria for learning media referred to Arsyad's (2019) theory, which stated that the selection of media should align with the intended learning goals, support content consisting of facts, concepts, and generalizations, and be durable, practical, and flexible. Furthermore, the media should be usable for all student groups and meet technical quality standards. The historical e-booklet learning media fulfilled these feasibility criteria, as evaluated by the material and media experts. Each component in the assessment instrument received positive responses, indicating that the historical e-booklet was highly feasible for use in the learning process.

The third objective of this study was to determine the effectiveness of historical e-booklets in increasing students' learning interest and learning outcomes on the material of the Indonesian ancient kingdoms. The product effectiveness assessment was used to measure how influential the use of learning media developed on students' learning interests and learning outcomes. In this study, the researcher used a *one-group pretest-posttest design* by administering *pretest* questions and initial interest questionnaires to students and then delivering the material using historical e-booklet learning media. Afterward, a *posttest* and a final interest questionnaire were given to observe differences in students' learning outcomes and interests. Then, the values were tested using the *paired sample t-test* and *n-gain* test to

determine whether there were significant differences in means and how substantial the differences were after the use of the historical e-booklet learning media.

Based on the results of the t-test of initial interest, the significance value (2-tailed) was $0.000 < 0.05$ with a means score of 0.7924, which has high criteria, which means that the use of historical e-booklet learning media significantly increased students learning interest as evidenced by higher interest questionnaire scores after the use of the media compared to before. Students said they felt happy and active in asking and answering questions during the learning process. They were directly involved by actively responding to the given material and showed enthusiasm by engaging with the videos and images embedded in the media.

The use of easily understandable language in the historical e-booklet allowed students to quickly grasp important information or material, while using colors and retrieving, attractive illustrations helped prevent boredom, thereby enhancing students interest in reading and maintaining focus on the presented information (Amalia et al., 2020; Paramita et al., 2018). Students with a high learning interest tended to experience joy, attention, engagement, curiosity, satisfaction, and active participation during the learning process (Slameto, 2013). High learning interest was one of the indicators of academic achievement, as students with greater learning interest were generally more active in the learning process, had a deeper understanding of the material, and achieved better academic performance (Asmara et al., 2023).

The *paired sample t-test* on the *pretest* and *posttest* results showed a significant difference in learning outcomes, with a significance value (2-tailed) of $0.000 < 0.05$ with a means score of 0.6149 with moderate criteria. This indicated that the *posttest* score after using the media was higher than the *pretest* score. Before using the media, 50% of the students answered incorrectly on questions related to the relics of the kingdoms, influential figures of the kingdom era, and related events. However, after using the historical e-booklet media and retaking the *posttest*, 35% of the 50% of students who answered incorrectly could answer those questions correctly and precisely. This was because, in the discussion, the learning media was equipped with images of the kingdom relics and figures, and important events were clearly shown with bold coloring so that students could distinguish and know these events more clearly. This aligned with the opinion that students preferred to use interesting learning media accompanied by pictures with minimal text (Erawati, 2021).

Additionally, including photos and videos in the e-booklets was also considered interesting for students because it could broaden their horizons and help students understand historical material that was abstract and related to past events (Rahmawati et al., 2021). The appropriate media utilization could help deliver lesson material more clearly, thereby accelerating the achievement of learning objectives with maximum results (Kosim et al., 2024). Thus, the historical e-booklet learning media could be applied to improve student learning outcomes, which aligned with the research by (Pujiasih et al., 2021), which found that e-booklet media could enhance students' learning outcomes.

The description above shows that using historical e-booklet learning media improved student learning outcomes. The effectiveness of learning could be seen from students'

involvement in the learning process, students' responses, and the level of mastery of student material, which could be observed from the improvement in their learning outcomes (Violla & Fernandes, 2021). In addition, the effectiveness of historical e-booklet media could also be reviewed based on the results of students' responses after learning with historical e-booklet media. The student response questionnaire consisted of 18 questions, with an average of students giving a positive response, which means that students agreed that in terms of content, the language used was simple and easy to understand, the use of attractive color compositions appealed to students, and the inclusion of images and videos helped enhance students' attention. The total score for student responses to the media was 84.5%, which fell into the highly effective category (Irwanto, 2020), which means that the use of historical e-booklet media helped achieve the learning goals and proved that students were engaged with the e-booklet learning media.

Conclusion

The development of historical e-booklet media as learning media on the material of the Indonesia ancient kingdoms had been developed using the *Research and Development* (R & D) method with the *Four-D* development model. Based on the expert evaluations, the historical e-booklet learning media was declared very qualified with an average percentage of 82%, meaning that both in terms of material, language, presentation, and usage, as well as the appearance of the media in terms of graphics, colors, images, text, and videos, it aligned with the developmental needs of students, learning goals and was easy to use by anyone and any time. The historical e-booklet learning media was declared effective in increasing learning interest. This was indicated by the measurement of the *paired sample t-test* on learning interest and learning outcomes, which obtained a significance value (2-tailed) of $0.000 < 0.05$, which shows that there was a difference in scores between the before and after interest questionnaires, where the final interest questionnaire gets a greater average than the initial interest questionnaire. Besides that, the *posttest* results also improved compared to the *pretest* after using the historical e-booklet learning media. Students exhibited greater enthusiasm, involvement, and participation in lessons, attracted by the e-booklet's straightforward language, vibrant illustrations, and engaging content, which enhanced their comprehension of historical topics and was reflected in higher *posttest* scores and more favorable questionnaire responses, indicating increased learning interest and improved academic performance after using the media.

The n-gain test showed that the final interest questionnaire scores were higher than the initial interest questionnaire scores, with an improvement score of 0.7924, which indicated a high level of improvement, meaning that students learning interest significantly increased after using the media, as the final interest questionnaire scores were higher than the initial interest scores. The historical e-booklet media was also proven effective in improving students' learning outcomes based on the increase in *pretest* and *posttest* scores with an n-gain score of 0.6149 with moderate criteria, meaning that the *posttest* scores increased significantly after using the media. After using the historical e-booklet, students

showed improved posttest performance, as many who previously struggled on questions related to the relics of the kingdoms, influential figures of the kingdom era, and related events were able to answer questions correctly due to the media's clear visuals, bold coloring, and engaging images that enhanced their understanding of Indonesian ancient kingdoms. In addition, the calculation results of the students and teacher questionnaire responses were also very positive, which means that this media could help achieve learning goals. Therefore, the historical e-booklet learning media was qualified to be used in teaching and effectively enhance the learning interest and outcomes of fourth-grade students on the topic of Indonesian ancient kingdoms.

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