Dinamika Pendidikan

Enhancing Student Learning Outcome in Social Studies: An ePub-Based Approach to Creative Economy Topics

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History Article

Keywords

Abstract

This study aims to: develop EPUB-based teaching materials for social studies subjects, assess the feasibility of EPUB-based teaching materials for social sciences and creative economy topics, and evaluate the improvement in student learning outcomes after using the EPUB materials. The research employs a research and development (R&D) methodology, comprising five phases: analysis, design, development, implementation, and evaluation. The quality of the developed media was validated through expert judgment, while its effectiveness was evaluated through classroom application. The research subjects were students from two junior high schools. The implementation phase involved experimental and control groups at each school. Data were collected through student questionnaires to assess the practicality and effectiveness of the EPUB-based teaching materials. The results indicated that the media received high-quality ratings in terms of content, design, and programming, as evaluated by experts. Furthermore, both students and teachers considered the media to be highly practical and well-suited to meet the needs of students. An independent sample t-test conducted showed statistically significant differences in learning outcomes. The results indicate that students who used the EPUB-based media outperformed those who did not. In conclusion, the EPUB-based teaching materials are of high quality, practical, and effective, making them suitable for classroom implementation to enhance student learning outcomes.

How to Cite

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INTRODUCTION

Education continuously evolves in response to dynamic transformations across various dimensions of life (Khandelwal, R. et al., 2024; Demattos Guimarães, Maehle, & Bonet, 2024). These changes and improvements in education encompass multiple components, including educational implementers in the field (such as teacher competence and the quality of teaching staff), the overall quality of education, curriculum tools, educational facilities and infrastructure, as well as the quality of educational management. This also involves the adoption of more innovative learning methods and strategies (Subri, Ahmad, & Khafidz, 2012; Maryunani & Mirzanti, 2015; Demattos Guimarães et al., 2024).

The learning process represents the core function of education and is most effective when supported by adequate resources and tools (Chen & Chang, 2024). One of the essential resources in this context is teaching materials, which serve as a medium for teachers to deliver instructional content to students (Váradi et al., 2024). In the digital age, electronic teaching materials can be accessed through devices such as smartphones, which are widely used in Indonesia (Veselá & Klimová, 2015; Korsunova et al., 2022). Among smartphone platforms, Android stands out for its flexibility and compatibility with a wide range of applications, both from official app stores and third-party sources.

Initial interviews conducted with students at SMP 25 Padang revealed that all students possess Android-based smartphones. These devices, however, are predominantly used for entertainment purposes, such as accessing social media or playing online games. This highlights a missed opportunity, as smartphones have the potential to significantly enhance learning when utilized appropriately. Consequently, developing Android-based teaching materials presents a promising strategy for integrating mobile technology into students' academic routines, promoting a more meaningful and productive use of digital tools.

The development of teaching materials is a critical aspect of modern education, functioning as a structured process to identify, design, and evaluate effective instructional content and pedagogical strategies (Dumitrescu, Nanu, & Căprioară, 2014; Sanjakdar & Premier, 2023). The quality of teaching materials must align with curriculum goals while addressing the learning needs and contextual realities of students. This process considers various dimensions, including the number of learners, the availability of resources, and the dynamic nature of content delivery. Central to this development is the principle of flexibility, which emphasizes the capacity of instructional materials to adapt to new information or content not initially covered in the subject at the time of implementation (Taha, Tej, & Sirkova, 2015; Alsayel, de Jong, & Fransen, 2022). This flexibility is vital in responding to rapid changes in knowledge, technology, and student needs.

Field observations conducted at two junior high schools (SMP 25 Padang and SMP 40 Padang) during the January–June 2024 semester have revealed several pressing issues that underscore the need for improved instructional resources. The primary concern is the limited availability of teaching materials. Existing materials are predominantly textbooks, which, although essential, are often outdated and lack contextual depth—particularly regarding local content, such as the economic potential of regions like West Sumatra. Such contextual knowledge is crucial when teaching topics like the creative economy. Additionally, relying solely on static printed books limits students' opportunities to connect learning to real-world examples, making the content less engaging and relevant. These limitations contribute to students' disinterest and low participation in classroom activities.

Furthermore, many students demonstrate a passive learning attitude, largely due to their lack of motivation and access to stimulating resources. They rarely engage in activities that require critical thinking, such as asking questions or formulating arguments, which are essential components of active learning. Instead, they tend to receive information without interaction, reducing the effectiveness of the learning process. Addressing this issue requires the development of teaching materials that not only provide contextual and locally relevant content but also stimulate curiosity, creativity, and motivation. By introducing engaging and adaptive resources—such as interactive, Android-based teaching materials—educators can better support student learning both in and outside the classroom. This approach is expected to enhance learning outcomes and promote deeper, more meaningful student engagement.

Learning media function as critical tools that support instructional delivery by conveying objectives, messages, and educational content in a manner that captures learners' attention and facilitates understanding. When utilized effectively, these media can activate students' cognitive, emotional, and psychomotor domains, thereby enhancing their motivation, curiosity, and learning outcomes (Longoria et al., 2021; Viganò, Eng-

land, & Comunian, 2023). Among the various types of learning media, teaching materials play a central role. However, conventional paper-based teaching materials often fail to meet the demands of today's digital-native students.

The integration of engaging learning media has emerged as a strategic solution to stimulate students' interest and participation in the learning process (Bragelien & Voldsund, 2023). The research acknowledges several previous studies that explored the use of EPUB-based educational materials. For instance, Audia, M. (2019) and Hasbiyati et al. (2016) both conducted research and development on e-books with EPUB extensions for subjects such as Islamic jurisprudence (Fiqh) and science (IPA), respectively. Both found that the e-books were deemed suitable by experts, students, and teachers.

Similarly, Meliana, W (2020) developed an e-module in EPUB format for trigonometry and concluded that it was a viable self-study tool for students. Another study by Faishal Aji Zulmi et al. (2020) focused on an EPUB-based student worksheet for developing critical thinking skills in physics, concluding that it was a valid and effective tool. These studies collectively demonstrate the effectiveness and validity of EPUB-based learning materials across various subjects and educational levels, serving as a foundational basis for the current research.

In contrast to prior studies, this research lies in its specific focus and application. While previous studies have explored EPUB-based learning materials for subjects like science and mathematics, this research develops an EPUB-based teaching material for Social Studies in the context of the creative economy, specifically drawing on the regional potential of Padang City. This localized approach provides a rich, relevant, and culturally specific learning context that was absent in prior research. The choice of the EPUB format is distinctive not only because of its lightweight nature and cross-platform compatibility, but also due to its capacity to integrate interactive multimedia elements, such as videos, images, quizzes, and mind maps, thereby creating a more engaging and contextually relevant learning experience for digital-native students. By conducting a comparative experiment with a control group, the research provides a robust and empirical validation of the EPUB's effectiveness, proving its significant contribution to improving student learning outcomes in a unique and under-researched subject area.

In response to these educational challenges, this study proposes the development of teaching materials using the EPUB (Electronic Publication) format. EPUB offers several pedagogical advantages, including a dynamic and visually appealing page layout, automatic text reflow that adjusts font and paragraph alignment to various screen sizes, and the ability to embed multimedia such as audio, images, and video. These features not only enhance the aesthetic appeal of the content but also contribute to a more immersive and flexible learning experience. Additionally, EPUB files are relatively lightweight and compatible with various devices, making them ideal for both online and offline access. The adoption of EPUB-based materials thus represents a promising innovation for enhancing digital learning in classrooms.

METHODS

This study was conducted at two junior high schools, namely SMP Negeri 25 and SMP Negeri 40 in Padang, West Sumatra Province, Indonesia. The participants of this study were ninth-grade students (Grade IX) enrolled at SMP Negeri 25 Padang and SMP Negeri 40 Padang. The selection of SMPN 25 Padang and SMPN 40 Padang as the research sites was based on several academic and practical considerations. Both schools provided a homogeneous student population, which is essential for maintaining the validity and reliability of experimental research. The schools were also equipped with adequate facilities and technological infrastructure, such as computer laboratories and internet access, which were crucial for the integration and testing of EPUB-based teaching materials. Furthermore, the willingness of teachers and students to participate actively in the research process contributed to the suitability of these schools as field trial locations.

This study employs a Research and Development (R&D) approach, which is a systematic method used to design, develop, and evaluate educational products to ensure their quality, effectiveness, and applicability (Habash, 2024). R&D is not only focused on creating new products but also on refining existing ones to better meet user needs. It involves a continuous cycle of development and testing, aiming to produce innovations that are both practical and evidence-based (Abuselidze et al., 2022).

The development framework utilized in this research is the ADDIE model, which stands for Analysis, Design, Development, Implementation, and Evaluation. The ADDIE model offers a comprehensive and iterative approach to instructional design, widely utilized in educational pro-

duct development. Its structured phases allow for systematic planning, creation, and refinement of learning materials, ensuring alignment with instructional goals and learner needs.

The research strategy in this study followed the ADDIE model, encompassing five systematic stages—Analysis, Design, Development, Implementation, and Evaluation to ensure the development of effective EPUB-based teaching materials for social studies. In the Analysis phase, curriculum reviews and interviews with teachers and students identified key learning gaps, such as outdated resources and low engagement, forming the foundation for material design. The Design phase involved structuring the EPUB layout, learning objectives, glossary, mind maps, multimedia components, and interactive quizzes to align content with curriculum standards and enhance learner engagement.

During the Development phase, the product was created and refined through expert validation from subject matter, media, and IT specialists to ensure content accuracy, technical quality, and pedagogical relevance. The Implementation phase tested the practicality of the EPUB materials in classroom settings using experimental and control groups. Finally, the Evaluation phase assessed effectiveness through statistical analysis. Overall, each phase of the ADDIE model contributed to a data-driven, iterative development process that produced a valid, practical, and effective digital learning medium, enhancing student achievement in social studies.

In this study, several research instruments were utilized to support the development, validation, and evaluation of EPUB-based teaching materials for social studies subjects. First, interview guidelines were used to gather qualitative data from social studies teachers and students. The researchers employed an unstructured interview approach, allowing participants to express their experiences and perspectives freely without being limited by predetermined questions. The interviews involved one Social Studies (IPS) teacher who taught ninth-grade students and a group of student representatives from four ninth-grade classes, with three students selected from each class. These interviews helped identify existing problems in learning activities, such as limited learning resources, low student motivation, and a lack of contextual teaching materials—particularly regarding local economic potential. The findings from this stage informed the design and content of the teaching materials, providing a comprehensive foundation for developing the EPUB.
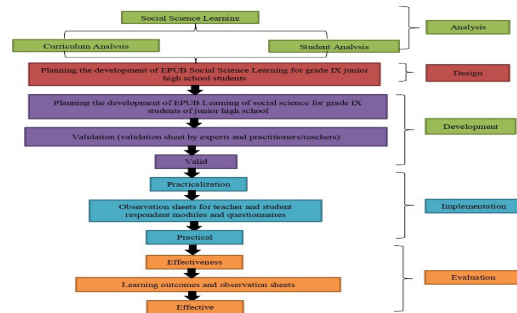
Figure 1. ADDIE Model

To assess the validity of the developed product, three types of expert validation sheets were employed: material expert, media expert, and IT expert validation instruments. These sheets were used to evaluate various aspects of the product. Material experts focused on content relevance, curriculum alignment, and pedagogical clarity. Media experts assessed the visual and structural design of the EPUB files, including navigation, layout, and user experience. IT experts evaluated the technical performance, compatibility, and multimedia integration of the teaching materials across different devices.

Following implementation in two junior high schools (SMPN 25 and SMPN 40 Padang), practicality questionnaires were administered to both students and teachers. These questionnaires used a Likert scale to measure the ease of use, engagement, accessibility, and overall user satisfaction. Additionally, an achievement test was used to measure the effectiveness of the EPUB-based teaching materials in improving student learning outcomes. This comprehensive set of instruments ensured that the teaching materials were not only valid and practical but also effective in enhancing the quality of learning in the classroom.

The data analysis in this study employed a combination of qualitative and quantitative approaches to assess the validity, practicality, and effectiveness of the EPUB-based teaching materials. Quantitative data, collected using a Likert scale and provided by expert validators (material, media, and IT experts), were analyzed descriptively. The scores were interpreted according to set criteria to determine the validity level of the product. Feedback from experts was also used for revision and improvement. Practicality data collected from students and teachers through questionnaires were similarly analyzed descriptively to evaluate ease of use, clarity, and relevance. To measure the effectiveness, student learning outcomes from experimental and control groups were analyzed using statistical analysis through

an independent sample t-test.

RESULTS AND DISCUSSION

Analysis Phase

The analysis phase represents the initial step in developing EPUB-based teaching materials within the ADDIE model framework. This phase consists of two main components: curriculum analysis and learner analysis. Each component was examined to ensure alignment between the developed materials and the students' needs.

First, Curriculum Analysis. At the beginning of this phase, the researcher reviewed the current curriculum by analyzing the 2020 School Quality Report (Raport Mutu) of two junior high schools. The analysis focused on four aspects of the National Education Standards: Graduate Competency Standards, Content Standards, Process Standards, and Assessment Standards. Quality Report Card Achievement Category. National education standards in Indonesia set a score of 6.67-7 as the benchmark for meeting the standard. The school currently implements the 2013 Curriculum (K-13) for Grade 9 students.

According to the report, none of the four standards met the maximum threshold set by the Directorate General of Primary and Secondary Education. The scores were as follows: Graduate Competency Standards (6.1), Content Standards (5.71), Process Standards (5.75), and Assessment Standards (6.09), all of which fell below the standard. Graduate Competency Standards (6.1). Most teachers successfully integrated attitude competencies into learning activities. However, some found the assessment procedures burdensome and confusing. Learning loads and time allocation were also issues for some students, and not all teachers adopted methods suited to students' talents and learning styles. Content Standards (5.71): teachers faced challenges in preparing instructional plans and lacked a comprehensive understanding of attitude, knowledge, and skill competencies.

The limited dissemination of instructional format changes, including the simplified one-page lesson plan, contributed to this issue. Process Standards (5.75): teachers have yet to fully implement principles such as "everyone is a teacher and a learner" and "everywhere is a classroom." There was also limited utilization of diverse learning resources and media to support learning effectiveness. Assessment Standards (6.09): Some teachers had incomplete assessment instruments due to a limited understanding of the assessment system, which, under K-13, includes cognitive, affective, and psychomotor aspects. Distance learning posed further challenges in implementing this comprehensive assessment.

Based on these findings, the need for integrated digital teaching materials in EPUB format is evident. Such materials can support student-centered learning and provide structured content, assignments, and assessments that students can access independently, at any time, and from anywhere. Additionally, EPUB-based materials enable teachers to monitor student engagement and performance through digital records.

Second, Students' Analysis. Understanding the characteristics of students is essential in the initial planning of instructional materials. Observations and interviews with students were conducted to gather data on student backgrounds, experiences, learning achievements, and motivation. a) Background and experience: the target group consisted of Grade IX students aged 13–16 years. Adolescents at this stage are cognitively capable of analyzing information and prioritizing key ideas. Based on school data, 98% of students own smartphones and are accustomed to using technology in their daily lives. Additionally, the school has a computer lab with internet access, which supports digital learning. b) Learning activities and achievement: Several learning challenges were identified, including unengaging and poorly organized teaching materials, which led to low student participation and understanding. Learning was primarily teacher-centered, leaving students passive and less likely to express opinions or interact with the material. This contributed to low academic achievement.

Finally, the analysis stage revealed that the existing teaching materials were not yet aligned with students' learning needs, particularly in terms of relevance to real-life economic contexts, interactivity, and clarity of concepts. The needs analysis identified that students required more engaging and contextual learning resources that could foster critical thinking and active participation. Additionally, the analysis of curriculum content and learning objectives indicated the need to integrate digital-based and sustainability-oriented materials to support modern learning approaches. These findings provided the foundation for designing the EPUB.

Design

Based on the findings from the analysis stage, the design phase focused on developing innovative, contextually relevant, and student-centered teaching materials that integrate digital elements. The designed product took the form of

an EPUB-based module, containing self-produced videos created by the researchers to explain key concepts related to the creative economy, thereby enhancing students' understanding through visual and contextual representation. Furthermore, the materials incorporated examples of local MSMEs (Micro, Small, and Medium Enterprises) from Padang City and other regions in West Sumatra as contextual illustrations and discussion topics. It enables students to connect theoretical knowledge with real-world economic practices in their local environment.

The development of EPUB for social learning follows a structured sequence of content presentation. It begins with the Opening Page (a), which serves as the main entry point, displaying navigational menus or buttons that direct users to other sections of the material. This is followed by the Glossary and Table of Contents Pages (b), which appear on pages 1 and 2 and contain a list of key terms and a structured overview of the content covered in Grade IX during the semester. The Introduction Page (c) provides context and background information to help students understand the purpose and relevance of the material. Pages 5 and 6 present the Learning Material Identity (d), which includes details such as the subject, class/semester, time allocation, title of the material, and a description of the expected learning outcomes.

This page also outlines the Basic Competencies (KD) and Indicators, serving as a reference for planning and implementing learning activities that are responsive to the students' characteristics, potential, needs, and environment. Finally, pages 7 and 8 feature a Mind Map (e) and teaching material, which visually organizes key ideas to help students gain a clearer and more meaningful understanding of the subject matter. In this design, the teaching materials consist of narrative explanations, images, and instructional videos. The student worksheet page and assessment (f) are designed as an assignment to enhance students' understanding of the material and to assess their skills.

This page is made to be as practical as possible, featuring a clickable quiz menu that students can easily access. The quiz is designed in an objective format to evaluate students' comprehension of the content they have studied. As illustrated in the image below, this page includes questions designed to measure students' mastery of a specific basic competency (KD) presented in one module. The practice questions are structured in an objective format consisting of approximately 10 items, each with an assigned score weight.

The purpose of this practice activity is not only to assess students' learning outcomes but also to evaluate the effectiveness of the developed EPUB teaching material. The design process is illustrated in the Figure 2.

Development

The product developed in this study is a teaching material presented as an EPUB (Electronic Publication) for the Social Studies subject in junior high school. The content focuses on the topic of developing a creative economy based on Local Potential to Improve Community Welfare. The following is a visual display of the EPub teaching material that we have developed. All products developed up to this stage will first undergo validation by experts in relevant fields before being tested on students. The experts involved in evaluating the feasibility of the media include subject matter experts, IT specialists, and instructional media experts.

The validation process of the EPUB-based teaching material involved three categories of experts selected based on their academic and professional relevance to the product being developed. Content validation was conducted by Jean Elikal Marna, S.Pd., M.Pd. E, and Efni Cerya, M.Pd., both lecturers in the Economics Education Study Program at Universitas Negeri Padang, who ensured the accuracy, clarity, and curriculum alignment of the economic content. Media validation was carried out by Dr. Dessi Susanti, S.Pd., M.Pd., and Dr. Friyatmi, S.Pd., M.Pd., experts in instructional design and digital learning media, to evaluate the visual layout, interactivity, and user appeal of the EPUB material. Meanwhile, IT validation was performed by Dr. Elfizon, S.Pd., M.Pd . T, a lecturer in Electrical Engineering, and Alfarsidan, M.Kom, an ICT teacher at SMPN 25 Padang, who assessed the technical functionality, navigation, and compatibility of the digital format. The inclusion of these experts ensured a comprehensive validation covering content accuracy, pedagogical appropriateness, and technological feasibility, thereby strengthening the reliability and quality of the developed teaching material.

Based on the expert review, the experts offered several recommendations for revising the EPUB teaching material.

The revisions suggested by the subject material expert validator included corrections related to the accuracy and completeness of the content presented in the teaching materials. The expert reviewed whether the material aligned with the curriculum and adequately covered the necessa-
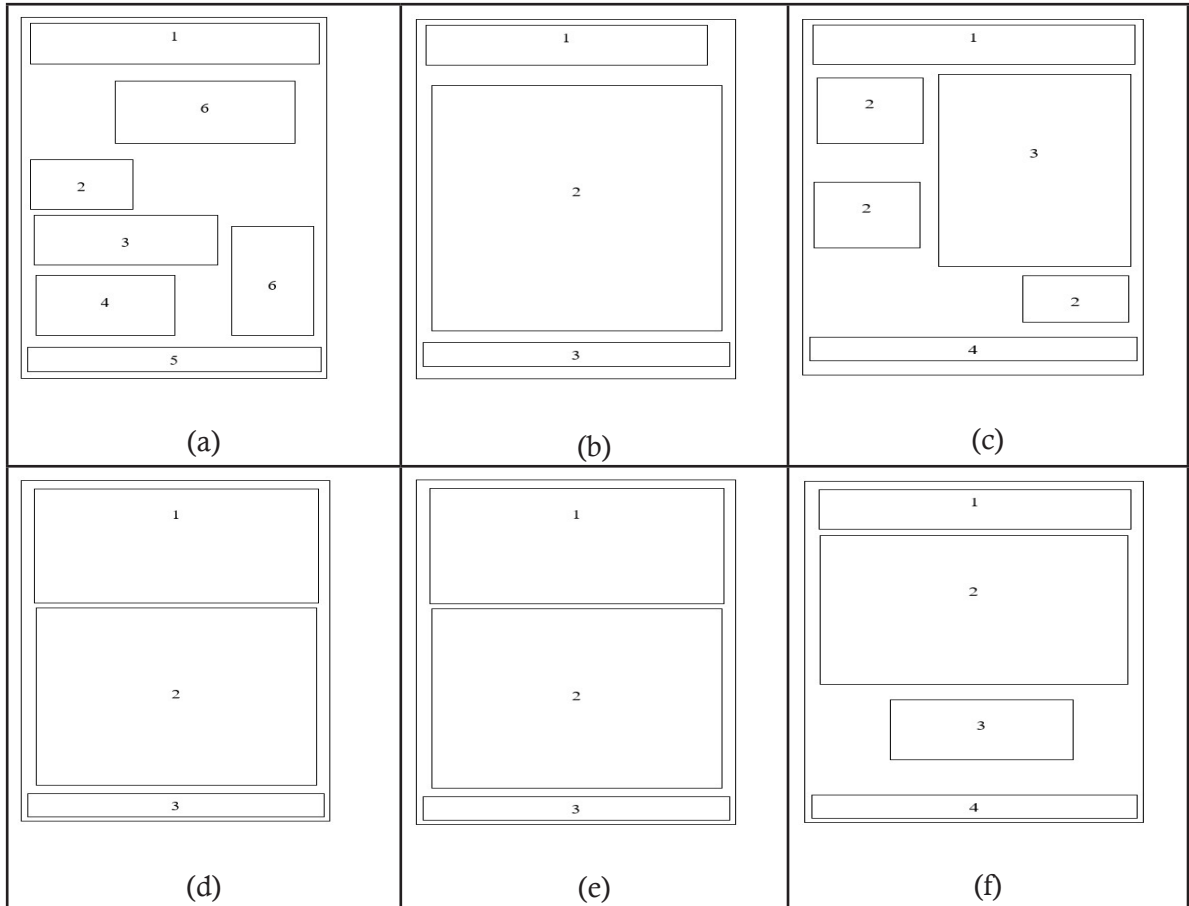
Figure 2. The Design of EPUB

Figure 3. Opening Page: Cover, Glossary and Table of Contents

Figure 4. Learning Material Page

Table 1. Validation Results by the Subject Matter Expert Validator

No	Aspects	Expert 1		Expert 2	
		T1	T2	T1	T2
1	Contents	30	43	44	47
2	Language	16	22	21	23
	Total Score Obtained	46	65	65	70
	Average Score	61,3%	86,6%	86,6%	93,3%
	Criteria	Feasible	Highly Feasible	Highly Feasible	Highly Feasible

Source: Data Processed (2025)

Table 2. Validation Results by Media Expert Validators

No	Aspects	Expert 1		Expert 2	
		T1	T2	T1	T2
1	Materials	23	26	36	29
2	Program Display	30	36	46	42
	Total Score Obtained	53	62	82	71
	Average Score	58,8%	68,8%	91,1%	90%
	Criteria	Feasible	Feasible	Highly Feasible	Highly Feasible

Source: Data Processed (2025)

Table 3. Validation Results by IT Expert Validators

| No	Aspects	Expert 1		Expert 2	
		V1	V2	V1	V2
1	Utility	20	21	32	29
2	Users	18	20	27	26
	Total Score Obtained	38	41	59	55
	Average Score	58,4%	63,1%	90,7%	84,6%
	Criteria	Feasible	Feasible	Highly Feasible	Highly Feasible

Source: Data Processed (2025)

ry concepts. Additionally, corrections were made to the language and punctuation, including the proper use of periods and commas. These were addressed by adjusting the spelling according to standard language rules and ensuring that sentences were properly punctuated (see revisions a and b).

The media expert highlighted that the colors used in the Mind Map were not contrasting enough—particularly the use of red, which made the text difficult to read. This was revised by changing the color to orange for better visibility, adding a title, and organizing the content into a column layout per page (c). The overall color scheme was also adjusted to enhance visual comfort, and the font size was increased to improve readability. Specifically, the concept map background was changed to gray and the text enlarged (d). According to the IT expert, the EPUB learning materials required more engaging and creative content to stimulate students' creative thinking. In response, creative elements such as interactive quizzes that students can complete directly were added (e). Additionally, the quiz layout was revised for improved visual appearance, and errors in question phrasing were corrected. The quiz questions were rewritten using clear and structured SPOK (Subject-Predicate-Object-Adverb) sentences with well-defined objectives (f).

Implementation

The implementation stage is carried out after the development of the teaching materials has been completed. Teaching materials that have been developed and approved by expert validators are used in the classroom in accordance with the intended objectives. Implementation refers to the phase in which the EPUB-based Social Studies teaching materials are applied in the actual learning process. This stage involves testing the
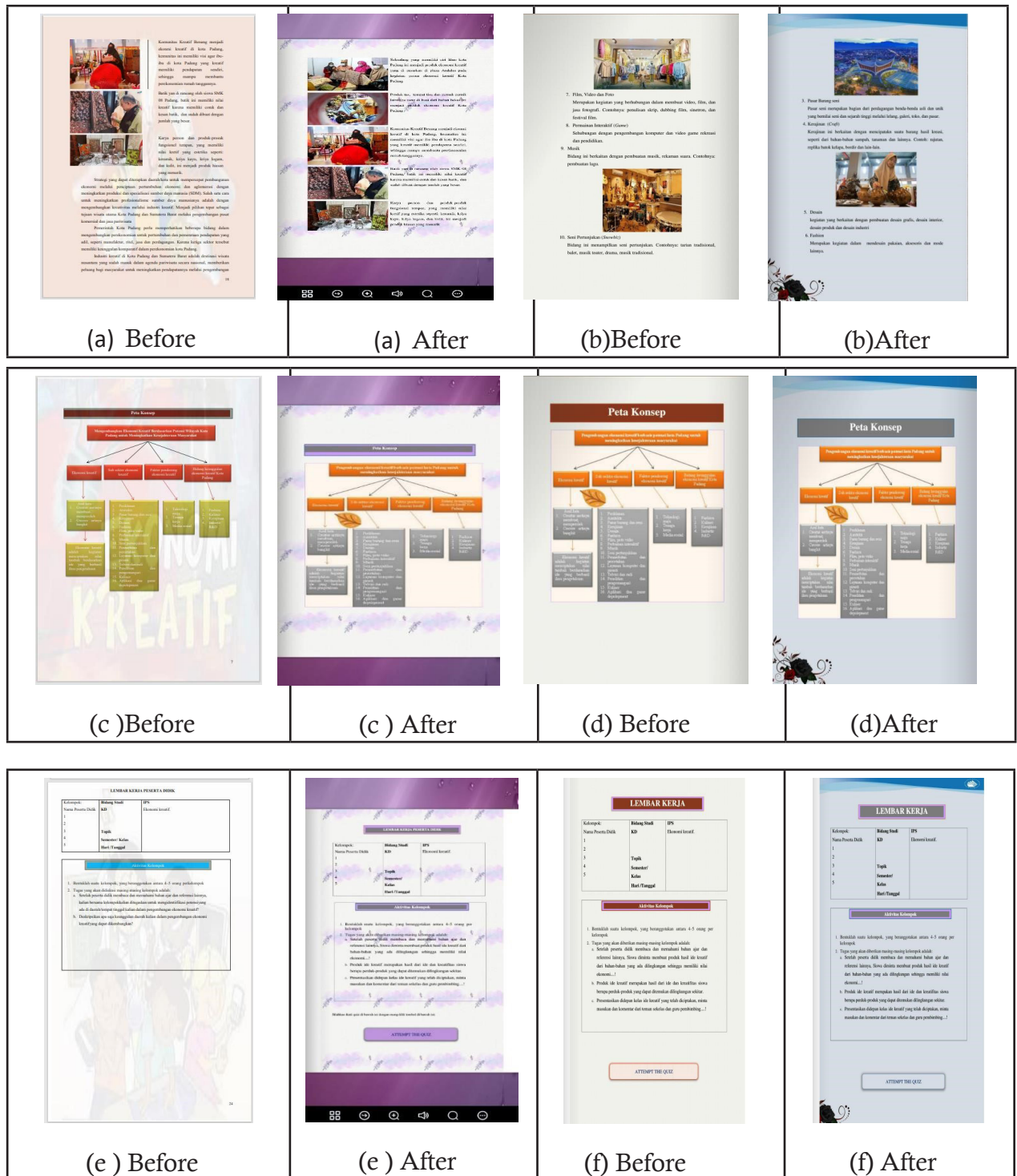
Figure 5. EPUB Revision

EPUB directly through classroom instruction. The implementation is conducted in two phases: the first phase involves a practicality test by the teacher, and the second phase involves a practicality test by the students.

Table 4. Practicality Test Results by Teachers

Teacher	Practicality Score
Teacher 1	88,33
Teacher 2	90,00
Mean	89,17%

Source: Data Processed (2025)

Table 5. Practicality Test Results by Students

Class of Students	Amount of Students	Practicality Score
Class 1	30	85,86
Class 2	30	90,33
Mean		89,095%

Source: Data Processed (2025)

Table 4 shows that the average practicality score based on the questionnaire is 89.17%. This score indicates that the developed product is highly practical and suitable for use in the learning process. Changes in teaching tools naturally lead to shifts in teaching methods. The transition from printed textbooks to EPUB-based materials makes instructional methods more efficient and practical, as materials can be accessed easily using a smartphone by scanning a QR code or barcode. Based on Table 5, the result from the first class shows a practicality score of 85,86. And the second class field test yielded a practicality score of 90,33. These results indicate that teachers and students find this ePUB teaching material practical to use.

Evaluation

The evaluation phase marked the final stage of the development model and was conducted through experimental testing in two different schools: SMPN 25 Padang and SMPN 40 Padang. Both schools included an experimental class that utilized EPUB-based teaching materials and a control class that received conventional instruction. The effectiveness of the EPUB was evaluated by comparing students' scores before and after the intervention. Notably, students in the experimental class were able to complete reading the materials and answering quizzes within just 15 minutes. During this process, students exhibited high levels of engagement, frequently asked questions, and expressed increased motivation and curiosity about the subject matter. This suggests that the use of EPUB not only improved learning efficiency but also enhanced student interest and participation in the classroom.

As presented in Table 6, the average score of students at SMPN 25 Padang indicates that the pre-treatment score in the experimental class was 54.24, which increased significantly to 93.33 following the implementation of the EPUB-based teaching materials. In contrast, the control class exhibited no meaningful change, with an average score of 66.00 before the intervention and 65.67 afterward. A similar trend was observed at SMPN 40 Padang, where the experimental class improved from 67.45 to 89.67, while the control class remained relatively unchanged, with scores of 67.25 before and 66.00 after the intervention. These findings suggest that the use of EPUB-based instructional materials had a positive impact on student learning outcomes.

Statistical analysis also confirmed the effectiveness of the EPUB-based teaching materials. At SMPN 25 Padang, the average score in the experimental class increased from 54.24 to 93.33, while the control class showed virtually no change (66.00 to 65.67). Similarly, at SMPN 40 Padang, the experimental class improved from 67.45 to 89.67, while the control group remained nearly the same (67.25 to 66.00). The results of independent sample t-tests for both schools revealed significant differences in student scores between the experimental and control groups, with p-values of $0.000 \leq 0.05$, indicating statistical significance. These findings demonstrate that the use of EPUB-based teaching materials was highly effective in enhancing student learning outcomes and can be considered a practical and impactful alternative to traditional instructional methods.

This research and development study aimed to create EPUB-based teaching materials for Grade IX in the social studies subject and assess their validity, practicality, and effectiveness in supporting the learning process. The development was driven by the limitations of existing materials, which were often too simple, lacked local contextual examples—particularly regarding the local potential of West Sumatra Province—and were not systematically structured. As

Table 6. Student Score at Control Class and Experimental Class

School	Class	Treatment	Student Scores	
			Before	After
SMPN 25 Padang	Experimental Class	EPUB	54.24	93.33
	Control Class	Conventional Teaching Material	66.00	65.67
SMPN 40 Padang	Experimental Class	EPUB	67.45	89.67
	Control Class	Conventional Teaching Material	67.25	66.00

Source: Data Processed (2025)

Table 7. Independent Samples t-test at SMPN 25 Padang

		Independent Samples Test							
		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Say.	t	df	Sig. (2tailed)	Mean Differ-ence	Std. Error Differ-ence	95% Confidence Interval of the Difference	
									Lower	Upper
Learn-ing out-comes	Equal variances assumed	17.556	.000	9.894	58	.000	27.667	2.796	22.069	33.264
	Equal variances not as-sumed			9.894	41.609	.000	27.667	2.796	22.022	33.312

Table 8. Independent Samples t-test at SMPN 40 Padang

		Independent Samples Test							
		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Say.	t	df	Sig. (2tailed)	Mean Differ-ence	Std. Error Differ-ence	95% Confidence Interval of the Difference	
									Lower	Upper
Learn-ing out-comes	Equal variances assumed	9.162	.004	8.854	58	.000	23.667	2.673	18.316	29.018
	Equal variances not as-sumed			8.854	48.083	.000	23.667	2.673	18.292	29.041

Source: Data Processed (2025)

a result, students demonstrated low engagement and understanding. The EPUB developed in this study was structured based on core and basic competencies for the even semester of Grade IX in junior high school, and included learning modules that integrated multimedia elements, learning instructions, glossaries, and evaluation components. Zhylkybay et al. (2014) emphasized that learning media play a vital role in facilitating the transfer of information, increasing motivation, and promoting active participation among students.

Validation by subject matter experts, media experts, and IT experts confirmed that the EPUB was highly feasible for use in the classroom. The validity assessment was conducted in two stages, focusing on content relevance and construct alignment. Improvements based on expert feedback, such as correcting spelling and punctuation, increasing text readability, enhancing contrast, and integrating interactive features, resulted in significant increases in validation scores—from around 58% in the initial review to over 90% in the final validation.

According to Yusuf (2005), the key to high construct validity lies in the precision and appropriateness of the material's design. Likewise, Munir (2009) notes that clear text structure enhances communication in educational media. Practicality testing conducted in two junior high schools—SMPN 25 Padang and SMPN 40 Padang—demonstrated positive outcomes. Students in the experimental classes, who used the EPUB, achieved significantly higher scores than those in

the control classes. Furthermore, they reported increased motivation, a better understanding of the material, and a greater ability to interact with content through quizzes and multimedia features.

The effectiveness of the EPUB was supported by statistical analysis using independent sample t-tests, which revealed significant differences in learning outcomes between students who used EPUB and those who did not. This supports the conclusion that EPUB is an effective learning tool for Social Studies in Grade IX. Yong, Chemmangattuvalappil, and Foo (2024) define effectiveness as a product's ability to achieve its intended learning outcomes, whereas Fedotova and Latun (2015) emphasize that digital modules, such as EPUB, foster student-centered learning.

The integration of multimedia, interactive quizzes, and local examples made the learning experience more meaningful and relevant (El-Aasar, Shafik, & Abou-Bakr, 2024). Consistent with the findings of Fernandes, Willison, and Boyle (2024) and Tomaselli and Tomaselli (2022), EPUB modules were found to enhance student engagement compared to traditional materials. However, some limitations remain, such as school restrictions on smartphone use, the need for internet access, and technical challenges in maintaining consistent formatting. Despite these challenges, EPUB has proven to be a valid, practical, and effective alternative to traditional textbooks (Wolla, 2017).

CONCLUSION

Based on this study of the development of EPUB-based teaching materials for the Social Studies subject in junior high school, several important conclusions can be drawn. First, the development of these teaching materials has been proven to meet the criteria of validity, practicality, and effectiveness. The ePUB format, as a digital learning medium, offers an alternative to traditional printed textbooks and has shown strong potential in improving learning outcomes in Social Studies. Its integration of multimedia elements, such as images, videos, interactive quizzes, and midterm maps, makes the learning experience more dynamic and student-centered.

Second, the EPUB-based teaching materials had been validated by the experts. Subject experts, media experts, and IT experts evaluated the product, and after a series of revisions, agreed that the content was accurate, the presentation was clear, and the media features functioned properly. The EPUB was found to be easy to use, accessible via smartphones, and adaptable to various student learning styles. Students responded positively to the design and format, which allowed for flexible learning—both in class and at home—through QR code access and offline availability.

Third, the effectiveness of the EPUB-based teaching materials was demonstrated through experimental testing using an independent sample t-test. The analysis revealed a statistically significant difference in learning outcomes between the control group (who used conventional learning methods) and the experimental group (who used the EPUB). Students in the experimental group showed substantial improvement in their post-test scores, indicating that the use of EPUB not only facilitated understanding of the material but also promoted deeper engagement with the subject.

As an implication, the results of this study suggest that the development of EPUB-based teaching materials can be one effective way to enhance student learning outcomes in Social Studies, particularly in the context of the creative economy. Practically, this model can be implemented by teachers as an alternative to using more static textbooks. Teachers can use EPUB to enrich the learning process by integrating multimedia, such as videos, images, and interactive quizzes, which are easily accessible via mobile devices. Schools and education departments can also adopt these digital teaching materials to support digital transformation in the educational environment while simultaneously improving students' digital literacy.

Nevertheless, this study still has several limitations. First, the implementation was carried out in only two schools in Padang City, so generalizing the results to a broader context is still limited. Second, the effectiveness of the media is highly dependent on the availability of digital devices and students' ability to use technology. Third, factors such as internet connectivity and school policies that restrict the use of mobile phones also pose potential obstacles to implementing EPUB in the classroom. In addition, this study has not explored in depth the affective and social aspects of using digital media, such as long-term changes in learning behavior or student collaboration through online platforms.

Further research can be directed at several areas. First, we tested the effectiveness of EPUB across different educational levels and subjects to examine the consistency of the results. Second, future research can integrate learning analytics approaches to track students' interactions with digital content in real time, thereby measuring engagement levels and learning patterns more ob-

jectively. Finally, research can expand the study of the social and pedagogical impacts of EPUB-based digital learning transformation on teachers and the overall education ecosystem.

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