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GEN-SMART DIGITAL MEDIA: AN ADDIE-BASED DEVELOPMENT TO IMPROVE LEARNING MOTIVATION IN SOCIAL STUDIES

Achmad Dhohirrobbi[1a*], Luthfiya Fathi Pusposari[2b]

[1,2] Program Study Social Science Education, Faculty Tarbiya and Teachers Training, UIN Maulana Malik Ibrahim Malang, Jl. Gajayana, Diyono, Lowokwaru, Malang City, East Java, 65144, Indonesia

[a] 220102110092@student.uin-malang.ac.id
[b] luthfiya@pips.uin-malang.ac.id

(*) Corresponding Author
220102110092@student.uin-malang.ac.id

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ABSTRACT
This study develops and evaluates the feasibility and effectiveness of the Gen-Smart digital learning media in enhancing learning motivation among lower secondary Social Studies students. The research adopts a Research and Development (R&D) approach utilizing the ADDIE framework, consisting of analysis, design, development, implementation, and evaluation stages. Gen-Smart was designed using Canva AI, Google Sites, and Website2APK Builder Pro to ensure multi-platform access. Feasibility was evaluated through expert validation and student practicality surveys, while effectiveness was measured using pre-test and post-test scores analyzed with normalized gain (N-Gain). The results indicate a high feasibility level, with validation scores of 92% from the material expert and 89% from the media expert. Student practicality responses reached 83%, categorized as "very practical." The effectiveness analysis demonstrates a significant increase in learning motivation from a mean score of 40.17 (67%) to 53.87 (90%), with an N-gain value of 0.70 (high category). These findings indicate that Gen-Smart is a feasible and effective digital learning media for improving motivation in Social Studies learning and is recommended for wider instructional implementation.

INTRODUCTION

The development of digital learning media in the context of the 4.0 Industrial Revolution has generated a significant impact, particularly within educational settings. Through a robust development process, digital learning media can be developed into a product offering substantial benefits (Abdulrahaman et al., 2020; Loglo & Zawacki-Richter, 2023). One such advantage is the capacity to support teachers while assisting students in retaining, comprehending, applying, analyzing, evaluating, and creating content based on the subject matter (Jauza & Albina, 2025; Jumraeni et al., 2025; Karomah et al., 2024; Wardani et al., 2024). Due to its interactive, flexible, and user-

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friendly presentation, digital learning media fosters student motivation (Charline et al., 2023; Puspitarini & Hanif, 2019). Consequently, the development of digital media has become essential in the teaching and learning process, ensuring that instructional objectives are achieved effectively and efficiently.

Despite the evolving integration of digital media, subjects such as social studies are frequently taught using traditional methods (Grant et al., 2025). Instruction in this subject typically emphasizes concept memorization and passive material transmission, often failing to incorporate meaningful learning activities (Sariyatun et al., 2021). As a direct result, students often experience boredom, a decline in motivation, and reduced engagement during instruction (Musyarrofi & Firmantika, 2022). This situation underscores the critical need for instructional innovation in social studies to align with current technological advancements and meet the learning needs of students in the digital era.

A key strategy proposed to address this gap is the integration of digital learning media into social studies instruction. The primary objective is to modernize the teaching and learning process, making it engaging and interactive for students to counter passivity. This perspective is supported by reviews of learning media development studies (Nuhiyah et al., 2022; Romualdi & Sudrajat, 2024). These studies suggest that digital media serves as a creative educational tool capable of fostering student motivation, enhancing engagement, and improving learning outcomes. Therefore, the development of technology-based social studies learning media is highly pertinent in contemporary educational contexts.

A number of studies reveal that the use of digital media enhances student interest and enthusiasm for social studies learning. Lestari et al. (2025) discovered that PowerPoint-based Flip Book Education was able to significantly increase students' interest in learning, while Pamungkas et al. (2021) demonstrated that interactive Wordwall increased students' enthusiasm and engagement in class. Rasyid and Islamia (2021) confirm that utilizing video as an audiovisual medium positively impacts learning enthusiasm. Suteja et al. (2024) and Dewi et al. (2023) reinforce these findings, explaining that Canva and TikTok-based media facilitate more creative and engaging social studies instruction.

Based on interviews with Social Studies teachers, the use of technology-based learning media in the development and effectiveness studies conducted at MTsN 7 Malang remains limited, as it is primarily utilized only for evaluation activities. This point is strengthened by observation results, which reflect a deficiency in the comprehensive use of digital media in social studies classes. Specific issues noted include: (1) disorganized learning resources, potentially leading to student misconceptions; (2) media that align with the CP, TP, and ATP but present challenges in accommodating kinesthetic learning styles; (3) teachers' infrequent utilization of digital platforms for independent media creation; and (4) high student proficiency and enthusiasm for digital media, despite some distractions from non-instructional applications during class.

The development process for this study utilized Canva AI, Google Sites, and Website 2 APK Builder Pro v5.0. Canva AI served as the AI-based visual design platform to create aesthetically engaging design elements, including infographics, illustrations, and media interface displays (Anggrini et al., 2025). Google Sites functioned as the publication platform for digitally integrated, structured, and readily accessible educational content (Ristanti et al., 2025). Meanwhile, Website 2 APK Builder Pro v5.0 facilitated the conversion of the pre-existing website into an Android-based application, enabling convenient access to materials without reliance on a default browser (Darumba et al., 2025). It is anticipated that the integration of these platforms will yield a highly interactive and flexible digital learning product.

However, despite the growing body of research exploring digital media in education, empirical studies focusing on the integration of AI-assisted media and mobile-based platforms in Social Studies learning remain limited, particularly within secondary education in Southeast Asia. Therefore, this study fills an important gap by developing and empirically validating a mobile-accessible digital learning media designed specifically to strengthen learning motivation in Social Studies.

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The developed product is named Gen-Smart, an acronym derived from *Geografi Ekonomi Nasional* (National Economic Geography). The 'Smart' component denotes easy, engaging, and enjoyable learning. Gen-Smart is a social studies learning innovation focused on evaluation media development, but it includes features that facilitate broader learning and foster student motivation. Thus, the purpose of this study is to analyze the feasibility and effectiveness of the Gen-Smart media in enhancing social studies learning motivation at MTsN 7 Malang.

METHOD

This study employed a Research and Development (R&D) design following the ADDIE framework and adopted a one-group pre-test post-test quasi-experimental design to measure effectiveness. The study was conducted at MTsN 7 Malang over a period of two months in 2025. The development model adhered to the ADDIE framework, which includes five main stages: Analysis, Design, Development, Implementation, and Evaluation (Branch, 2009). The sequential procedure of the development activity is depicted in Figure 1.

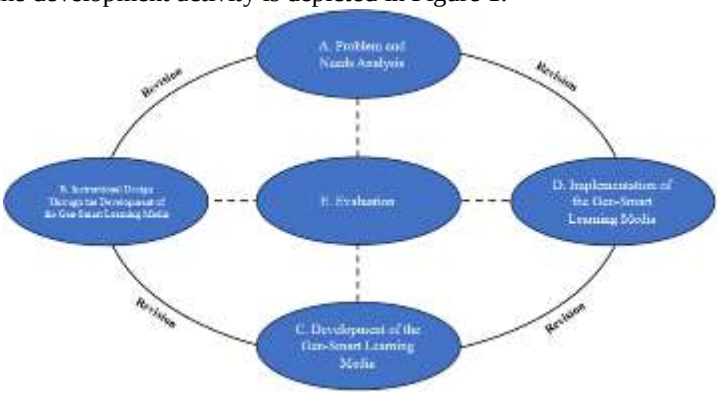

Figure 1. ADDIE Development Model Chart

The following is a description of the stages:

a. the analysis stage was conducted to identify instructional needs that could be addressed as solutions to the challenges observed in social studies learning at MTsN 7 Malang;
b. during the design (planning) stage, researchers initiated the conceptualization of the Gen-Smart learning materials, determining the format and aesthetic appearance. This stage involved developing educational resources and media design strategies to support learning objectives;
c. the development stage encompassed the creation of the Gen-Smart learning media based on the prepared design. Expert judgment was administered at this stage to validate the quality of the media and materials. Validation was performed by two experts: a material expert who assessed the learning contents, and a media expert who evaluated the appearance and technical aspects;
d. the implementation stage was carried out in social studies learning at MTsN 7 Malang. A trial involving student participants was conducted to determine the effectiveness and efficiency of the developed media. The researchers administered pretest and posttest instruments to measure students' learning motivation following the utilization of the Gen-Smart learning media; and
e. the evaluation stage aims to determine whether the developed media has achieved the intended objectives or still requires improvement. The evaluation process included reviewing all completed stages, discussing the results of revisions made by material and media experts during the development stage, and assessing the effectiveness of the media based on the level of motivation and students' responses to the learning media.

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Students from Grade VIII, specifically class I, at MTsN 7 Malang, served as the research subjects. Class VIII-I was selected based on its optimal instructional schedule and the high level of teacher support available for the study's implementation. Two expert validators affiliated with the Social Studies Education study program participated, serving as the material expert and the media expert.

The researchers employed a questionnaire technique during the data collection stage to obtain validation data from the material expert, the media expert, and student responses. Table 1, 2, 3, and 4 below present the instrument grid utilized in the study.

Table 1. Expert Validation Instrument Grid

No	Assessment Aspects	Item Number	Number of Items
1	Substance	1, 2, 3, 4, 5, 6	6
2	Construction	7, 8, 9, 10, 11	5
3	Language Use	12, 13, 14, 15, 16	5
	Total		**16**

Source: (Ministry of Education and Culture of the Republic of Indonesia, 2013)

Table 2. Media Expert Validation Instrument Grid

No	Assessment Aspects	Item Number	Number of Items
1	Maintanaible (Media can be managed easily)	1, 2, 3	3
2	Usable (Media is easy to use and to operate)	4, 5, 6	3
3	Compatible (Media can be installed and run on various hardware and software)	7, 8, 9	3
4	Reusable (Media can be reused to be developed as learning media)	10, 11, 12	3
	Total		**12**

Source: (Wahono, 2006)

Table 3. Student Learning Motivation Instrument Grid

No	Assessment Aspects	Item Number	Number of Items
1	Student interest and attention in learning	1, 2, 3	3
2	Student enthusiasm for doing the assignments	4, 5, 6	3
3	Responsibility in doing the assignments	7, 8, 9	3
4	Responses to stimuli provided by the teacher	10, 11, 12	3
5	A sense of fulfillment and satisfaction from completing the assignment given by the teacher	13,14,15	3
	Total		**15**

Source: (Sudjana, 1995)

A Likert scale was then used to analyze the data obtained from the experts, and the results were as follows (Krosnick, 1991; Sugiyono, 2019):

Table 4. Likert Scale

Score	Options
1	Strongly Disagree
2	Disagree
3	Agree
4	Strongly Agree

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The assessment of media and material validation was conducted to determine the media's feasibility for utilization in the instructional process. The validation data obtained were subsequently analyzed using percentage scores to categorize the media based on established feasibility criteria (Ratumanan, 2003).

Table 5. Validity Criteria

Percentage (%)	Criteria
76–100	Highly Valid
51–75	Valid
26–50	Moderately Valid
0–25	Not Valid

The practicality of the learning media was measured through student responses, addressing aspects such as appearance, content, language, and usability (A. M. Dewi et al., 2022). The practicality assessment data were collected using a student response questionnaire post-implementation. The questionnaire results were then quantified and interpreted using the learning media usefulness degree criteria, as shown in **Table 6.**

Tabel 6. Practicality Criteria

Score	Criteria
76% < x ≤ 100%	Very Practical
51% < x ≤ 75 %	Practical
26% < x ≤ 50 %	Less Practical
0% < x ≤ 25 %	Not Practical

Data analysis was conducted by calculating the average N-Gain score obtained from the pretest and posttest questionnaire to gauge students' learning motivation level concerning the use of Gen-Smart. The N-Gain analysis was performed using IBM SPSS Statistics 25. The average N-Gain value was then interpreted using the criteria provided in **Table 7** (Meltzer, 2002):

Table 7. N-Gain Interpretation

Score	Criteria
$\langle g \rangle \geq 0.7$	High
$0.3 \leq \langle g \rangle < 0.7$	Medium
$\langle g \rangle < 0.3$	Low

RESULT AND DISCUSSION

The stages of the ADDIE development model Analyse, Design, Develop, Implement, and Evaluate are used to describe the process of developing Gen-Smart learning media. The following is a description of each stage based on the data and results obtained:

1. ANALYZE

The analysis stage in the ADDIE model contains 6 components (Branch, 2009). The flow of the stage is illustrated in the following figure.

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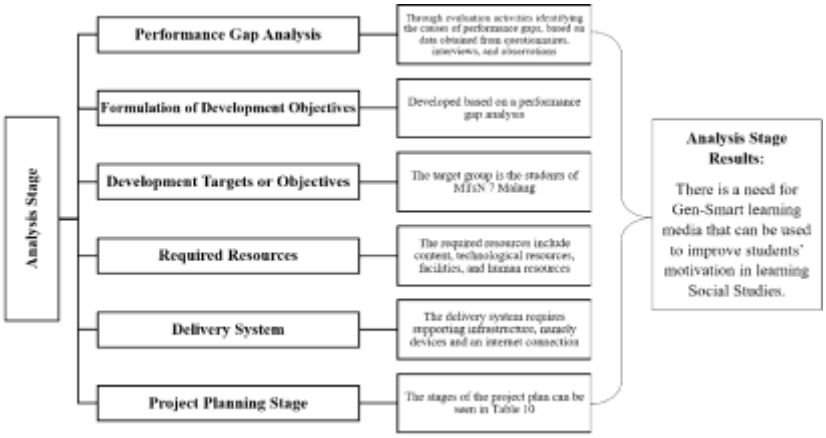

Figure 2. Analysis Stage Chart

The components covered in the analysis stage can be described as follows:

1.1 Instructional deficiencies validation

Issues related to social studies instructional performance were identified through a needs analysis conducted during the odd semester of the 2025/2026 academic year. The needs analysis was conducted through observation, questionnaires, and interviews with both teachers and students. The results revealed several key factors contributing to the observed instructional deficiencies:

1) limited digital media integration, evidenced by teachers' infrequent utilization of platforms beyond basic functionality, often resulting in instruction based on unsystematic online materials that may cause student confusion;
2) deficiencies in school facilities, where the absence of reliable Wi-Fi connectivity (despite the provision of loudspeakers and LCDs) forces teachers to frequently rely on personal hotspots or borrowed equipment;
3) student characteristics showing a preference for kinesthetic learning styles, thereby necessitating more engaging and interactive instructional models, such as educational games;
4) minimal teacher involvement in media development, with most teachers creating and utilizing digital learning media independently;
5) students exhibiting high motivation and readiness for digital learning, expressing enthusiasm and the belief that interactive media enhances their comprehension of social studies materials; and
6) a desire from students for learning media that is not only engaging but also contextually relevant to real life, fostering greater relatability and comprehension of social studies content.

1.2 Performance assessment

The needs analysis will be mapped as shown in the following table:

Table 8. Perfomance Assessment

Actual Performance	Desired Performance	Primary Cause
Despite the adoption of digital media, teachers unsystematically source instructional materials from the internet.	The digital media integrated through the Gen-Smart platform is utilized to deliver content strategically, aligning directly with the established learning objectives.	Formal guidelines for utilizing platform-based learning materials are infrequent, and teachers are still developing digital content creation skills.

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Actual Performance	Desired Performance	Primary Cause
Although digital learning tools such as sound systems and LCDs are available, the school's internet network remains inadequate.	To facilitate the successful adoption of digital learning, educational facilities must be provisioned with a reliable internet network.	The absence of a school Wi-Fi connectivity and limited digital devices in the classroom.
Instruction aligns with CP and TP, but teachers experience difficulties accommodating kinesthetically active students	Instructional delivery must be adapted to student characteristics through the strategic utilization of interactive media, such as educational games.	The current learning models lack diversity and fail to adequately accommodate the learning characteristics of kinesthetic students.
Teachers primarily develop learning media independently.	Collaboration is essential among teachers for the sharing and development of Gen-Smart-based digital media.	The absence of formal forums or platforms hinders collaborative teacher engagement in digital media creation.
Despite student enthusiasm for digital media, instructional content currently lacks contextual relevance to their daily lives.	Student learning necessitates the use of digital media that is engaging, contextual, and relevant to real-life applications.	The current learning media is generic, lacking sufficient contextual depth.

Source: Interview results and needs analysis instruments (2025)

The analysis revealed a gap between the current state of social studies learning and desired expectations. Although digital media is utilized, its integration remains suboptimal due to unsystematically sourced materials and substandard infrastructure, specifically unreliable Wi-Fi connectivity. Despite high student motivation, there is a clear necessity for instructional media that is more interactive and contextually relevant. Therefore, the development of the Gen-Smart media focuses on bridging this instructional gap through targeted digital learning to capitalize on existing student motivation.

1.3 Learning media development objectives

Based on the needs analysis findings, accessible learning materials suitable for the classroom environment are required to enhance student engagement. The Gen-Smart media is specifically designed to foster an interactive, contextual, and engaging learning experience. This innovation aims to enhance digital learning, thereby increasing student enthusiasm—the overarching objective of the Gen-Smart media development.

1.4 Targets or development objectives

The development target is students of MTsN 7 Malang enrolled in the social studies course during the odd semester of the 2025/2026 academic year.

1.5 Required resources

The resources used to develop this model were:

1) Content Materials: The instructional content was derived from the Grade VIII Social Studies Independent Curriculum (odd semester), specifically aligning with the established Learning Outcomes (CP), Learning Objectives (TP), and Learning Objective Flow (ATP). The content, focusing on the diversity in community economic activities, is structured using text, images, videos, and interactive quizzes to ensure contextual relevance and student engagement;
2) Technological Resources: Media development requires a computing device (laptop/computer) utilizing specific applications such as Canva AI, Google Sites, and Website 2 APK Builder Pro v5.0. Additionally, a stable internet connection is essential for media uploading and access;
3) Learning Support Facilities: These facilities include classrooms equipped with LCD projectors and loudspeakers. Access requirements include a functional internet network (both school Wi-Fi and teachers'

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personal hotspots), as well as student devices (e.g., tablets or laptops) to ensure independent media access; and

4) Human Resources: Media development involved the researchers as primary developers; a material expert and a media expert to validate the content/material and technical/design aspects, respectively; and MTsN 7 Malang students, who served as test users to determine the effectiveness of the Gen-Smart learning media.

1.6 Delivery system

The delivery system comprises the devices and facilities essential for implementing digital learning, including: LCD projectors for material display; sound systems to enhance instructional audio clarity; personal computing devices (cell phones, tablets, and laptops) utilized by students and teachers to access the media; internet access facilities providing the necessary connectivity to operate the Gen-Smart media; and classrooms offering adequate lighting and layouts that fully support technology-based learning activities.

1.7 Development project plan

The trial of the Gen-Smart learning media was conducted at MTsN 7 Malang, involving class VIII-I students as research subjects during the odd semester of the 2025/2026 academic year. The elements involved in the media development process are presented in the following table.

Table 9. Development Project Plan Components

Component	Description
Personnel Involved	1. Researchers – the designers, developers of the Gen-Smart media, and data collectors during the trial process 2. A Material Expert – responsible for validating the content and implementing the trial within the classroom setting. 3. A Media Expert – responsible for evaluating the media's technical aspects, aesthetic design, and overall interactivity 4. Class VIII-I MTsN 7 Malang students – the subjects and/or end-users for the media trial
Significant Constraints	1. Limited internet connectivity within classrooms, impeding the performance of certain digital activities 2. Students' initial adaptation to new media, requiring additional guidance from teachers and researchers
Implementation Schedule	1. The needs assessment activity was scheduled to commence in October 2025. 2. The media trial was conducted involving MTs students during the odd semester of the 2025/2026 academic year.

2. DESIGN

The Gen-Smart learning media was designed to support instruction regarding the diversity in community economic activities, encompassing three main topics: (1) geographical processes affecting economic activities, (2) utilization of the surrounding environment to meet economic needs, and (3) inter-island trade processes.

The media design incorporated various features essential for supporting the learning process, including material presentations, video displays, and learning quizzes. Furthermore, a flowchart and storyboard were developed as initial frameworks to guide the researchers in designing the media's structural flow and appearance. This aligns with the findings of Kholisoh et al, (2025), who stated that product creation is significantly facilitated when preceded by the preparation of a flowchart and storyboard. The process of creating the learning media is illustrated in Figure 3.

The flowchart structure developed during this stage served as the preliminary design for the learning media, strengthen by an in-depth and comprehensive analysis (Jazuli et al., 2023). The design was tailored to the characteristics of the instructional material and its relevance to CP, TP, and ATP within the curriculum. This

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framework was also intended to meet the central development objective—improving students' conceptual understanding. A storyboard was also prepared to guide the researchers in the creation process of the Gen-Smart media. The storyboard details the design and explanation of each section's display, encompassing the opening, main page, menu, learning objectives, material, videos, reflections, reviews, quizzes, assignments, tutorials, and developer information. The feasibility of the subsequent development stage is significantly influenced by the media design established in the design stage (Dromey, 2003). Following the design analysis, the development stage commenced by realizing the product design according to the prototype, incorporating advice and input from the supervisor.

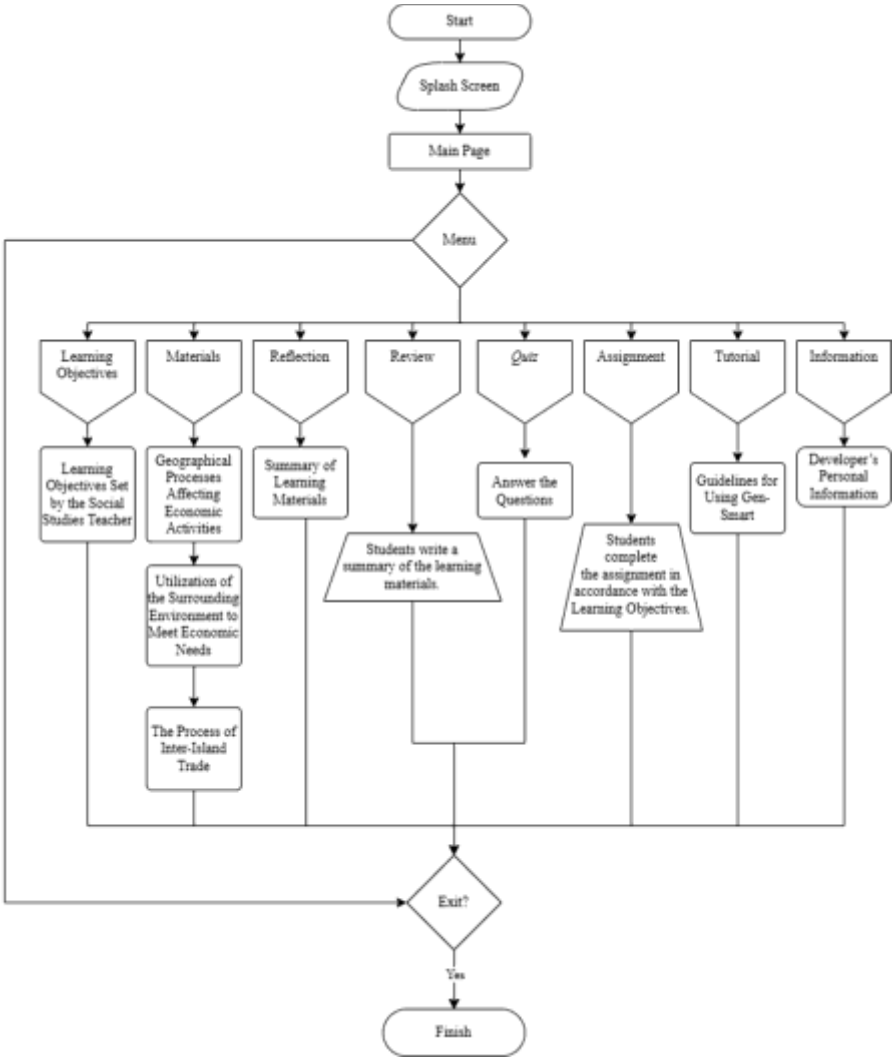

Figure 3. Flowchart and Storyboard of Gen-Smart

3. DEVELOP

During the development stage, researchers created the educational materials on the variety of community economic activities using Google Sites, Website 2 APK Builder Pro v5.0, and the Canva AI platform. The final product is available in HTML5 format, supporting Android, Windows, and Apple operating systems, in addition to an APK

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format specifically for Android devices. The displays of the developed learning media on various devices are exemplified below:

Figure 4. Home Display on MAC OS

Figure 5. Menu Display on Windows OS

Figure 6. Display of Material on the Chrome Browser on Android OS

Figure 7. Information Display on the Safari Browser on iPhone OS

Figure 8. Display of Material on APK file

Figure 9. Display of Material on a Tablet

The display structure of the Gen-Smart learning media comprises a main menu containing eight features: Learning Objectives, Materials, Reflections, Reviews, Quizzes, Assignments, Tutorials, and Information. The Learning Objectives section presents the instructional goals for the students. The Material feature provides content covering geographical processes related to economic activities, the utilization of the surrounding environment to meet economic needs, and the process of inter-island trade. The Reflection feature provides a summary of the instructional material, whereas the Review feature facilitates students in synthesizing their own summary of the content covered. Furthermore, the Quiz feature serves as a means of practicing assessment, and the Assignments feature facilitates students in completing assignment aligned with the learning objectives. The Tutorial section provides guidelines for utilizing the Gen-Smart application, while the Information feature presents the developers' profile. The media is also

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equipped with navigation buttons that include 'Home' to return to the main menu and 'Exit' to close the application. The Gen-Smart product is accessible via the APK version at https://bit.ly/GenSmartApp and the web version at https://bit.ly/WebGenSmart.

Following product creation, the material was reviewed for feasibility by experts in both media and material. The validation process yielded several notes and suggestions for improvement from both expert panels. The material expert highlighted several typographical errors and recommended clarifications, particularly within the section discussing community economic activities concerning geographical and astronomical conditions. Furthermore, the media expert suggested simplifying the menu display and recommended that the Tutorial and Information features be combined and structurally reorganized for enhanced usability.

The validation results showed that the material expert gave an assessment of 92%, and the media expert gave 89%, classifying both ratings as 'Highly Valid'. These findings indicate that the Gen-Smart learning media meet the necessary requirements and are deemed suitable for utilization as an instructional resource. Details of the Gen-Smart learning media validation assessment results are presented in **Table 11**.

Table 10. Results of Material and Media Validation

Validation	Average Percentage	Criteria
Material Expert	92%	Highly Valid
Media Expert	89%	Highly Valid

To assess student learning motivation, the researcher developed an instrument utilized for both the pretest and posttest. Table 11 displays the average validation outcomes for the student learning motivation instrument, as assessed by the material expert validator.

Table 11. Learning Motivation Questionnaire Validation Results

Validation	Average Percentage	Criteria
Pretest	85%	Highly Valid
Posttest	89%	Highly Valid

Based on the assessment results and validity criteria, the student learning motivation instrument is classified as highly appropriate for utilization.

4. IMPLEMENT

The implementation stage involved 30 students from class VIII-I MTsN 7 Malang and spanned three meetings, which encompassed a pretest, material delivery, and a posttest. The first meeting commenced with the administration of a pretest to ascertain students' initial motivation for social studies learning activities. During the second meeting, which focused on instruction utilizing the Gen-Smart digital media, students actively engaged with interactive features such as materials, videos, practice questions, and reflections. Subsequently, the third meeting was dedicated to administering a posttest to measure the increase in learning motivation and completing a practicality questionnaire evaluating the Gen-Smart learning materials' appearance, content, language, and usability.

The practicality questionnaire results indicated that 83% of students rated the Gen-Smart learning media as 'Very Practical', signifying strong student acceptance. This finding aligns with those of Ningrum et al., (2021) study, demonstrating that Android-based social studies learning media was highly feasible and practical (88.2% feasibility) and effective in improving student learning outcomes. Furthermore, Kristanti and Sujana (2022) also confirmed the implementation feasibility of interactive media based on contextual learning, citing validation results above 90%. These results are further reinforced by Ayustira et al, (2023), whose developed Android-based media achieved a feasibility percentage of 91% (classified as highly feasible). Further support is demonstrated by Kholisoh et al, (2024)

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and Rohmani et al. (2024), who found that educational game-based media (Wordwall and Web-Based Training, respectively) were both highly feasible and effective in improving student learning quality and outcomes.

5. EVALUATE

The evaluation stage aims to assess the impact of the Gen-Smart learning media on students' motivation levels. At this stage, motivation scores obtained before and after the utilization of the Gen-Smart media were compared using a pretest-posttest design. Thirty students from class VIII (I) MTsN 7 Malang served as the test subjects. The pretest was administered prior to students' exposure to the Gen-Smart media, while the posttest was conducted following the instructional activities utilizing the media. The questionnaire consisted of 15 statements rated on a 4-point Likert scale. The comparative results of the pretest and posttest scores are presented in the following table:

Table 12. Average Scores and Percentage of Pretest and Posttest

Results	Average	Percentage (%)
Pretest	40,17	67%
Posttest	53,87	90%

Based on the data analysis, the pretest scores indicated an average of 40.17 (67%), with scores ranging from 35.00 to 45.00. This pretest score suggests that prior to the intervention with the Gen-Smart learning media, students' learning motivation level was classified in the 'Adequate' category and required further enhancement. Following the Gen-Smart intervention, the posttest scores increased significantly, yielding an average of 53.87 (90%), with the range spanning from 49.00 to 59.00. This achievement demonstrates that the utilization of the Gen-Smart media has a positive effect on student learning motivation.

The subsequent analysis involved calculating the Normalized Gain (N-Gain) score to quantify the magnitude of the increase in student learning motivation following the Gen-Smart intervention.

Table 13. N-Gain Calculation Results

Results	N	Minimum	Maximum	Mean	Std. Deviation
N-Gain	30	0.54	0.93	0.7003	0.10155
N-Gain Percentage	30	54.17	93.33	70.0348	10.15475
Valid N (listwise)	30				

Based on the N-Gain calculation results presented in **Table 14**, the average Normalized Gain (N-Gain) value was 0.70. This value falls within the 'High' category, which indicates that the learning media utilized is effective in enhancing student learning outcomes. The N-Gain value distribution, ranging from 0.54 to 0.93, combined with the narrow standard deviation, suggests that the majority of students experienced a consistent level of improvement.

Collectively, these findings confirm that the utilization of the Gen-Smart learning media has a positive impact on enhancing students' conceptual understanding. These results align with the findings of Lail et al. (2022), demonstrating that interactive multimedia can significantly increase motivation and learning outcomes in social studies. Similar findings were reported by Kartini and Sriyanto (2023), confirming that learning media is effective in increasing student motivation and learning outcomes (with a significance value of 0.000). Research by Nurdin et al. (2023) further reinforces that the selection of appropriate media, specifically tailored to student characteristics, can optimize social studies learning outcomes. Additionally, Wahyudi et al. (2023) reported that the use of Kahoot significantly enhances student engagement, resulting in high N-gain results. Recent research by Winarsi et al. (2025) also indicates that multimedia can gradually improve learning activities and outcomes across two cycles of classroom action research, thereby confirming its suitability as a supportive medium for social studies instruction. Based on these results and prior studies, it is concluded that the use of appropriate and innovative learning media not only increases

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student motivation but also fosters optimal engagement and conceptual understanding in social studies learning. Therefore, the utilization of interactive digital media represents a relevant and effective alternative for implementation in classroom instruction.

The effectiveness of Gen-Smart in improving student learning outcomes is supported by various modern learning theories. This media aligns with the ARCS motivation model, as its interactive elements and personalization features enhance students' attention, relevance, confidence, and satisfaction (Keller, 2010). Its multimedia design is also consistent with Mayer (2009) Multimedia Theory, which states that the integration of verbal and visual information facilitates more efficient cognitive processing and reduces cognitive load, as reflected in the high N-gain scores. Gen-Smart further aligns with the principles of TPACK, as the technology employed is well-integrated with pedagogical strategies and content needs, thereby improving the quality of instruction (Koehler et al., 2013). Overall, these findings indicate that Gen-Smart is an effective learning medium that meets the demands of contemporary education.

The study encountered several limitations that should be acknowledged when interpreting the conclusions. The sample size was restricted to one class comprising 30 students, which consequently limits the generalizability of the findings. Therefore, the effectiveness of the Gen-Smart media remains untested across more diverse learning populations. Limited digital infrastructure within the school presented practical challenges to media implementation integrity, primarily due to unstable Wi-Fi connectivity. The scope of measurement focused exclusively on motivation, neglecting the assessment of cognitive learning outcomes. This omission provides an incomplete picture of the media's overall instructional effectiveness.

Future research should involve a broader sample (multiple classes or schools) to ensure that the results obtained are more representative. Enhancement of internet network facilities is recommended to ensure the optimal and reliable functionality of all media features during instruction. Assessing the media's impact on cognitive learning outcomes is essential to complement the existing analysis of Gen-Smart's effectiveness. Developing additional features, such as interactive simulations or gamification, should be explored as alternatives to further enhance the student learning experience. Longitudinal research designs are important to ensure that changes in motivation and learning outcomes can be observed continuously.

CONCLUSION

The Gen-Smart digital learning media, developed through the ADDIE model, has proven to be valid and effective for Social Studies instruction, as evidenced by expert validation results that meet quality standards, positive student responses indicating ease of use, and increased engagement and learning motivation during instruction. This effectiveness aligns with modern learning theories such as Keller's ARCS model, which emphasizes enhanced attention and learning satisfaction; Mayer's Multimedia Theory, which supports cognitive processing through the integration of visual and verbal information; and constructivism, which facilitates active knowledge construction through interactive media features. Theoretically, these findings reinforce the importance of digital media design that is interactive, personalized, and multimodal, while practically indicating the need for continuous development based on TPACK so that the integration of technology, pedagogy, and content can promote more meaningful and relevant learning in the digital era.

Despite these strengths, the study's limited sample size, inadequate school internet infrastructure, and narrow analytical focus on learning motivation restrict the broader generalizability of the findings. Therefore, further research should involve larger and more diverse samples, evaluate cognitive learning outcomes, and explore richer feature development to sustain long-term learning support. For scalability, Gen-Smart needs to be tested across various grade levels and schools to examine its adaptability, while policy initiatives should prioritize investment in ICT infrastructure and the integration of digital learning media into school development programs. Collectively, these

recommendations highlight the potential of Gen-Smart to be scaled and institutionalized as part of broader educational innovation efforts.

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