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Design and Development of Interactive Learning Media to Increase Student Learning Interest

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Abstract
This study aims to design interactive learning media for improving students' learning interest in computer systems material. The research employs Research and Development (R&D) methodology with the ADDIE development model, encompassing Analysis, Design, Development, Implementation, and Evaluation stages. Seventh-grade students at MTs Ar-Rahmah, Tasikmalaya City, participated as research subjects. Subject matter and media experts validated the interactive learning media, yielding validation results of 100% and 96% respectively, both categorized as "very feasible." Student learning interest effectiveness was measured through questionnaires administered before and after media implementation. Results demonstrated a significant increase in student learning interest following interactive media usage, with an average N-Gain score of 0.70, classified within the high category. The findings indicate that visual displays, animations, and interactive features successfully engaged students and enhanced their participation during learning activities. Statistical analysis confirms the media's capability to address monotonous teaching methods and abstract material challenges. The interactive learning media developed proves both feasible and effective for improving student learning interest in computer systems material, offering a practical solution for educators seeking innovative teaching approaches.

Keywords: Interactive Learning Media; Students' Learning Interest; Research and Development; ADDIE.

Abstrak
Penelitian ini bertujuan merancang media pembelajaran interaktif untuk meningkatkan minat belajar siswa pada materi sistem komputer. Metode yang digunakan adalah Research and Development (R&D) dengan model pengembangan ADDIE, mencakup tahap Analysis, Design, Development, Implementation, dan Evaluation. Subjek penelitian adalah siswa kelas VII MTs Ar-Rahmah Kota Tasikmalaya. Media pembelajaran interaktif divalidasi oleh ahli materi dan ahli media dengan hasil validasi ahli materi 100% dan ahli media 96%, keduanya termasuk kategori "sangat layak". Efektivitas minat belajar siswa diukur melalui angket yang diberikan sebelum dan sesudah penggunaan media. Hasil penelitian menunjukkan peningkatan minat belajar siswa setelah menggunakan media pembelajaran interaktif dengan rata-rata N-Gain sebesar 0,70 yang termasuk kategori tinggi. Temuan menunjukkan bahwa tampilan visual, animasi, dan fitur interaktif berhasil meningkatkan keterlibatan dan partisipasi siswa selama pembelajaran. Analisis statistik mengkonfirmasi kemampuan media dalam mengatasi metode pengajaran monoton dan tantangan materi abstrak. Media pembelajaran interaktif yang dikembangkan dinyatakan layak dan efektif dalam meningkatkan minat belajar siswa pada materi sistem komputer, menawarkan solusi praktis bagi pendidik yang mencari pendekatan pengajaran inovatif.

Kata Kunci: Media Pembelajaran Interaktif; Minat Belajar Siswa; Research and Development; ADDIE.

1. Introduction

The effectiveness of a learning process is determined by the way the material is delivered and the capability of the students to receive and understand it. In the current digital era, education does not only depend on conventional learning but requires innovative approaches through interactive and interesting learning media. However, in practice, there is still low student interest in learning, especially in abstract computer systems material, which results in low activity and understanding. Computer systems material requires more concrete approaches and clear visualization so that students can understand complex technical concepts. Limited learning media makes it difficult for students to imagine and understand the components of computer systems and how they work. The abstract nature of computer systems topics such as hardware architecture, data processing mechanisms, and system operations creates a great challenge for students who find it hard to relate theoretical concepts to real-world applications. If students cannot see how different parts of a computer system fit together, they will most likely resort to memorization instead of understanding which leads to poor retention and an inability to apply knowledge in real-life situations. Learning interest is one of the key factors in achieving success in education because it greatly affects student involvement and activity during the learning process. If students have genuine interest, they will show greater curiosity and motivation to explore the subject matter more deeply (Sinaga 2024). Students with high learning interest usually have more persistence when facing difficult materials, actively seek additional information beyond what is presented in class, and interact more with their friends during collaborative learning activities.

Interviews with teachers at MTs Ar-Rahmah, Tasikmalaya City, revealed that instruction in computer systems is still conducted using lecture methods and textbook media, resulting in monotonous and uninspiring lessons. Such learning conditions are conducive to the rapid loss of student interest and attention during class sessions. Teachers also indicated that students show little enthusiasm for following lessons and tend to be passive when asked to participate in classroom discussions. This situation indicates an urgent need for varied learning media that can attract student attention and encourage active participation in learning activities. Observations made in the classroom revealed that students often looked bored during lessons and were frequently seen engaging in off-task activities such as chatting with friends or daydreaming. When teachers asked questions about the material, only a few students raised their hands to answer; most remained silent or gave very brief and superficial responses. There were no practical activities or visual demonstrations, so students had no chance to engage with the material in any meaningful way. Furthermore, assessments showed that most students could not apply concepts of computer systems to solve problems or analyze situations, indicating that their understanding was only superficial. Teachers expressed frustration over their limited options for making the content more accessible and engaging, noting they had neither time nor resources to create more advanced teaching materials themselves.

One way to solve these problems is to create interactive learning media with visual and interactive elements to enhance student interest and activity. Interactive learning media will bring students from passive information receivers to active participants in learning through the available features such as animations, simulations, interactive quizzes, and other multimedia. Unlike textbooks or static slideshows where students have no control, interactive media allows them to learn at their own pace by going back over difficult material as needed and getting instant feedback on their understanding. The visual and auditory features in the interactive media can help students build mental models of the abstract concepts presented so that they are easier to understand and remember. Moreover, game-like features often found in interactive media appeal to students' natural fun of challenges and achievements making learning more an engaging activity rather than a boring chore. Canva is an application that teachers can use to create interesting learning media with a simple interface (Kharissidqi 2022). It has many templates, design elements, and interactivity features that enable teachers to make interesting learning media without requiring advanced graphic design skills. Teachers can use text, images, videos, audio, and interactive buttons in order to provide multi-sensory experiences for learning. The drag-and-drop system interface makes it easy even for those who don't have much technical skill while being cloud-based allows sharing and updating material easily. Canva also has collaboration features so multiple teachers can work together in developing learning resources forming professional learning communities.

The previous study conducted by Ginting *et al*. (2025) revealed that the Canva-based interactive learning media significantly increased students' interest with an N-Gain value of 0.644 which is categorized as moderate. This finding laid a solid groundwork for the present study since developing Canva-based interactive learning media could be potentially very powerful in boosting the interest of students toward

computer systems material at MTs Ar-Rahmah Tasikmalaya City. Based on this research, this study will develop instructional media interactivity specifically for computer systems subject content characterized by seventh-grade school learners. The proposed design will feature visual representation of hardware components inside a computer system unit case followed by animated narration explaining how these parts function together plus some interactive exercises enabling students to drag-and-drop virtual parts into designated slots inside a simulated unit case plus assessment providing instant feedback on whether they did it correctly or not. This study tries to provide practical solutions that teachers can apply directly such as improving student engagement and learning achievement in education about computer systems by identifying specific problems faced at MTs Ar-Rahmah plus optimizing Canva's capability.

2. Methodology

This research was conducted at MTs Ar-Rahmah, Tasikmalaya City, employing the Research and Development (R&D) method. According to Sugiyono in Oktrapioka (2023), Research and Development (R&D) represents a method or process for developing existing products to become more effective and aligned with user needs. The method works by identifying existing problems, then designing and developing products as optimal solutions. The study utilized the ADDIE development model consisting of five main stages: Analysis, Design, Development, Implementation, and Evaluation.

In the Analysis stage, researchers examined learning needs by analyzing curriculum, material, student characteristics, and obstacles in the learning process. Data were collected through observations, interviews, and questionnaires to gain comprehensive understanding of the current situation. The Design stage involved arranging materials and creating storyboards. Storyboards were developed to outline the initial framework for learning media development, encompassing interface design, material presentation sequences, visual-audio placement, and navigation systems. Storyboard designs were aligned with analysis results to ensure the developed media could attract student interest. During the Development stage, researchers created interactive learning media based on analysis and design results, followed by validation to determine media feasibility before student trials. Interactive learning media feasibility was assessed by two validators: a subject matter expert who teaches Informatics at MTs Ar-Rahmah, Tasikmalaya City, evaluating content quality, objectives, and instructional aspects; and a media expert who teaches Visual Communication Design at SMK Negeri 1, Tasikmalaya City, assessing integration, balance, typography, color schemes, language, imagery, and interactivity.

The Implementation stage involved deploying the validated media in classroom settings. Trials were conducted with seventh-grade students at MTs Ar-Rahmah, Tasikmalaya City, over two learning sessions, each lasting 2 x 40 minutes, to observe how effectively the media functioned and engaged student learning interest through learning interest questionnaires. In the Evaluation stage, researchers assessed the success level of the developed product—the interactive learning media. Researchers analyzed validation results and examined whether the product successfully enhanced student learning interest in the material. To assess the feasibility level of interactive learning media for computer systems material, evaluation was conducted through instruments containing statements related to media development. Assessment employed a Likert scale ranging from 1 to 5, with detailed rating categories presented in Table 1.

Table 1. Likert Scale Score Criteria

Score	Criteria
5	Very Good
4	Good
3	Fairly Good
2	Poor
1	Not Good

Validation test data obtained from experts were analyzed using the following percentage formula:

$$\text{Percentage} = \frac{\text{Score obtained}}{\text{Maximum score}} \times 100\%$$

Percentage results from interactive learning media data analysis using Canva were converted into feasibility categories according to ranges listed in the feasibility classification table below:

Table 2. Feasibility Categories

Percentage	Feasibility Category
81% - 100%	Very Feasible
61% - 80%	Feasible
41% - 60%	Fairly Feasible
21% - 40%	Less Feasible
0% - 20%	Not Feasible

The table displays feasibility criteria intervals. Developed products are declared suitable for use when achievement levels reach >60%. Therefore, interactive learning media are considered feasible for implementation in learning processes. Data obtained from student learning interest questionnaires were analyzed using learning interest measurements calculated with the formula:

$$\langle g \rangle = \frac{(\%\text{post} - \%\text{pre})}{(100\% - \%\text{pre})}$$

Where:
$\langle g \rangle$ = normalized average gain
%post = score after treatment
%pre = score before treatment

From the above calculations, gain value classification criteria can be determined:

Table 3. Gain Value Categories

Gain Value (g)	Category
(g) < 0.30	Low
0.30 ≤ (g) < 0.70	Moderate
0.70 ≤ (g) ≤ 1.00	High

3. Results and Discussion

3.1 Results

This research was motivated by insufficient media usage in the learning process for computer systems material, resulting in low student learning interest. Therefore, learning media development was undertaken, designed and presented attractively by combining text, images, audio, animations, and interactive features. The developed media underwent feasibility testing through subject matter expert and media expert validation, along with student learning interest questionnaire results. Data were analyzed using quantitative descriptive techniques by converting assessment scores into percentages and determining student learning interest improvement.

3.1.1 Learning Media Development Results

Subject matter validation was conducted by an Informatics teacher at MTs Ar-Rahmah, Tasikmalaya City. Assessment covered several aspects including curriculum alignment, content accuracy, objectives, and instruction. The validation results are presented in Table 4.

Table 4. Subject Matter Expert Validation Results

No	Assessment Indicator	Item Number	Score Obtained
1	Content quality and objectives	1–7	35
2	Instruction	8–12	25
	Maximum total		60
	Score obtained		60
	Result		100%
	Criteria		Very Feasible

Source: Data processed by researcher.

Based on the assessment results, a score of 100% was obtained. When converted into the feasibility category

table, the media falls into the "Very Feasible" category. The validator provided comments and suggestions to add question items in the game feature, indicating that the media met feasibility criteria for student use.

3.1.2 Media Expert Validation Results

Media expert validation was performed by a Visual Communication Design teacher at SMK Negeri 1, Tasikmalaya City. Assessment of the Canva-based multimedia interactive learning media focused on display and interactivity aspects, serving as benchmarks to determine media suitability for learning activities. The validation results are presented in Table 5.

Table 5. Media Expert Validation Results

No	Assessment Indicator	Item Number	Score Obtained
1	Integration	1–2	10
2	Balance	3–4	10
3	Statement	5	4
4	Typography	6–8	15
5	Color	9–12	18
6	Language	13–14	10
7	Images	15–16	10
8	Interactivity	17–19	15
	Maximum total		95
	Score obtained		92
	Result		96%
	Criteria		Very Feasible

Source: Data processed by researcher

Based on the assessment results, a score of 96% was obtained. When converted into the feasibility category table, the media falls into the "Very Feasible" category. Therefore, this learning media was declared suitable for use in the learning process.

3.1.3 Student Learning Interest Questionnaire Results

Implementation involved 23 students who accessed the media independently through their respective devices. The purpose was to determine the effectiveness of interactive learning media in enhancing student learning interest in computer systems material. Data collection utilized a questionnaire containing 20 statements covering aspects of enjoyment, involvement, attention, and interest. Student learning interest questionnaires were administered before and after media usage. The results are presented in Table 6.

Table 6. Student Learning Interest Questionnaire Results

No	Indicator	Pre-test	Post-test	N-Gain	Category
1	Enjoyment	299	500	0.73	Moderate
2	Involvement	356	584	0.68	High
3	Attention	248	388	0.66	Moderate
4	Interest	290	496	0.72	High
	Total	1,193	1,968	0.70	High

Source: Data processed by researcher

Results demonstrated that interactive learning media implementation for computer systems material successfully increased student learning interest. N-Gain calculations showed a percentage of 70.45% with effective criteria and an average N-Gain value of 0.70, classified in the high category. The improvement was influenced by visual displays, animations, 3D features, and interactive elements that made students more interested and actively involved in learning. Analysis across all indicators—enjoyment (N-Gain 0.73), involvement (N-Gain 0.68), attention (N-Gain 0.66), and interest (N-Gain 0.72)—revealed consistent increases, with total N-Gain reaching 0.70 in the high category.

4. Conclusion

Based on research conducted at MTs Ar-Rahmah, Tasikmalaya City, involving seventh-grade students

regarding interactive learning media development for computer systems material, several conclusions can be drawn. This study represents interactive learning media development using the ADDIE development model encompassing analysis, design, development, implementation, and evaluation stages. The learning media development was designed to enhance student learning interest in computer systems material. Feasibility of the Canva-based multimedia interactive learning media for computer systems material was obtained through assessments from subject matter experts and media experts. Subject matter expert validation covered 12 statement items, achieving a score of 60 out of a maximum 60 points, resulting in a 100% feasibility percentage categorized as "Very Feasible." Media expert validation results encompassed 19 statement items, obtaining a score of 92 out of a maximum 95 points, showing a 96% percentage also categorized as "Very Feasible." Interactive learning media usage for computer systems material demonstrably increased student learning interest. N-Gain calculations revealed a 70.45% percentage with effective criteria and an average N-Gain value of 0.70, classified in the high category. These findings confirm that the developed media successfully addressed the initial problem of low student interest by providing an engaging, visually appealing, and interactive learning experience that transformed abstract computer systems concepts into accessible and understandable content.

Research limitations include the restricted number of research subjects and brief implementation duration. Future research should expand subject populations and extend media application timeframes to obtain more comprehensive data regarding long-term effectiveness and broader applicability across different student populations and educational settings. Additionally, further studies could explore the integration of more advanced interactive features, examine the media's impact on actual learning achievement beyond interest levels, and investigate how different student learning styles respond to various interactive elements within the media. Expanding validation to include more experts from diverse educational backgrounds would also strengthen the reliability of feasibility assessments and provide deeper insights into potential improvements for subsequent media development iterations.

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