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Development of Interactive Learning Media Based on Genially for Informatics Subject in Grade X of Vocational High School

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Abstract

This study developed interactive Genially-based learning media for Grade X vocational Informatics focusing on network hardware. The development followed an R&D approach structured with the ADDIE model: Analysis, Design, Development, Implementation, and Evaluation. During the analysis stage, teacher-centered delivery and low student autonomy were identified as barriers to engagement. The design phase produced a storyboard specifying navigation flow, visual layout, and embedded quiz checkpoints. The media was then built in Genially and reviewed by a subject expert and a media expert. Validation used a 5-point Likert instrument covering accuracy, curriculum alignment, clarity, usability, visual layout, responsiveness, and interaction. The subject expert awarded a score equivalent to 100%, and the media expert 90%, both classified as very feasible under the predefined criteria. Implementation involved 20 students in the Computer and Network Engineering track at SMK Islam Tenjonagara, who accessed the material individually and completed a response questionnaire. Aggregate student feedback reached 83.8%, categorized as very good, indicating positive perceptions of clarity, ease of navigation, and usefulness for self-paced review. The findings support adoption of the Genially-based media as a supplementary resource for Grade X network hardware instruction in vocational settings and justify further refinement toward learning gain measurement.

Keywords: Interactive Learning Media; Genially; Informatics; ADDIE; Vocational Education.

Abstrak

Penelitian ini mengembangkan media pembelajaran interaktif berbasis Genially untuk mata pelajaran Informatika kelas X SMK dengan fokus pada perangkat jaringan komputer. Pengembangan mengikuti pendekatan R&D menggunakan model ADDIE: Analysis, Design, Development, Implementation, dan Evaluation. Tahap analisis menunjukkan pola pembelajaran berpusat pada guru dan rendahnya kemandirian belajar peserta didik. Pada tahap perancangan disusun storyboard yang memuat alur navigasi, tata letak visual, dan kuis tertanam. Media kemudian dibangun di Genially dan divalidasi oleh ahli materi serta ahli media menggunakan instrumen skala Likert 5 poin yang mencakup ketepatan, keselarasan kurikulum, kejelasan, kemudahan penggunaan, tampilan, respons teknis, dan interaktivitas. Ahli materi memberikan skor 100% dan ahli media 90% (keduanya kategori sangat layak). Implementasi melibatkan 20 peserta didik kelas X Teknik Komputer dan Jaringan di SMK Islam Tenjonagara. Mereka mengakses media secara mandiri dan mengisi angket respon. Persentase respon peserta didik mencapai 83,8% (kategori sangat baik) yang menunjukkan apresiasi terhadap kejelasan, navigasi yang mudah, dan dukungan belajar mandiri. Hasil tersebut mendukung pemanfaatan media berbasis Genially sebagai sumber pendamping dalam pembelajaran perangkat jaringan kelas X di lingkungan vokasional serta membuka peluang kajian lanjutan terkait pengukuran peningkatan hasil belajar.

Kata Kunci: Media Pembelajaran Interaktif; Genially; Informatika; ADDIE; Pendidikan Vokasional.

1. Introduction

The educational landscape has undergone profound transformation due to technological advancement, fundamentally altering pedagogical approaches across disciplines. Digital innovations have reconfigured traditional classroom dynamics, expanded resource accessibility, and fostered novel pathways for student self-regulation. Educational technology transcends mere ornamental function; when strategically implemented, it maintains student engagement, diversifies instructional delivery, and cultivates learner agency. The deliberate integration of digital tools represents a particularly valuable strategy for addressing the specialized learning requirements of vocational education students, whose educational trajectories demand both theoretical knowledge and practical application. Hamalik seminal work (1986) established that purposeful media integration generates multifaceted educational benefits: heightened interest, enhanced motivational states, increased behavioral engagement, and favorable psychological outcomes. Contemporary educational theorists have expanded this understanding, with Yanto (2019) conceptualizing interactive learning platforms as bidirectional communication channels that facilitate meaningful exchange between instructors and students. Further research by Syabri (2020) demonstrates that versatile, carefully selected media simultaneously strengthen motivational factors and catalyze participatory learning behaviors. Within this theoretical framework, the Genially platform emerges as a particularly promising educational resource. This digital workspace enables educators to construct interactive educational environments incorporating multilayered visual elements, interconnected navigational pathways, formative assessment opportunities through embedded questioning, and non-linear progression options. These architectural features promote differentiated learning experiences and support autonomous knowledge acquisition—critical capabilities for vocational education contexts.

At SMK Islam Tenjonagara, instructional practices within Informatics coursework remain predominantly traditional, characterized by teacher-centered lecture formats and limited textbook accessibility. Students experience restricted direct engagement with foundational content, typically confined to passive reception, abbreviated documentation, and minimal independent reinforcement. These pedagogical limitations diminish intellectual curiosity, constrain participatory learning, and restrict opportunities for self-directed mastery of essential computer network hardware concepts, including interface card functionality, switch operations, cable specifications, and peripheral device integration. Recent empirical investigations provide preliminary support for Genially-based instructional approaches. Rindawati *et al*. (2023) documented favorable outcomes regarding instructional suitability, while Septianingsih *et al*. (2023) reported similar positive findings regarding implementation feasibility. These initial research outcomes suggest significant potential for expanded application within vocational education settings. The current investigation builds upon this emerging evidence base with dual research objectives: first, to develop and refine interactive Genially-based instructional materials specifically addressing computer network hardware components for tenth-grade vocational Informatics instruction; and second, to conduct rigorous feasibility assessment through expert validation protocols and systematic analysis of student response data.

The educational significance of this research extends beyond immediate instructional application. By addressing fundamental limitations in current pedagogical practice, the developed materials aim to establish supplementary learning resources that simultaneously cultivate independent study practices and enhance sustained cognitive engagement throughout the instructional sequence. This approach recognizes the distinctive requirements of vocational education, where theoretical understanding must seamlessly translate to practical application and where student autonomy represents a critical professional competency. Furthermore, the investigation addresses significant gaps in existing educational technology research by examining the specific application of interactive media within specialized vocational contexts. While considerable research has explored technology integration in general academic settings, fewer studies have investigated the unique considerations relevant to technical education environments. The current study therefore contributes valuable insights regarding the adaptation of digital learning platforms to meet the specialized requirements of vocational curricula, particularly within computer networking instruction.

2. Methodology

This research took place at SMK Islam Tenjonagara using Research and Development (R&D) methodology. R&D serves as a research approach for creating specific products and testing their effectiveness. The ADDIE

model guided the development process through five phases: Analysis, Design, Development, Implementation, and Evaluation. This model was selected for its systematic approach to crafting and building learning media.
The ADDIE model phases unfolded as follows:

1) Analysis
   The researcher examined learning requirements based on the current curriculum and observations of actual conditions at SMK Islam Tenjonagara. This phase included identifying subject matter for development and student characteristics.
2) Design
   The researcher organized learning materials for integration into interactive media. Content was structured according to learning outcomes. A storyboard was created as an initial layout plan, including navigation paths and interactive features to be built using the Genially platform.
3) Development
   Learning media was constructed using Genially, followed by validation testing of the developed product with subject matter and media experts. Expert validation results and suggestions helped improve the product quality.
4) Implementation
   The process involved 20 tenth-grade Computer and Network Engineering (TKJ) students at SMK Islam Tenjonagara. Students used the developed media and then provided feedback through questionnaires to gauge their response to the interactive learning media.
5) Evaluation
   The researcher analyzed validation results from experts and student feedback about the media. Data analysis followed descriptive quantitative techniques by converting assessment scores into percentages and categorizing them into suitability levels.

The study utilized assessment instrument sheets given to subject matter and media experts to evaluate the suitability of Genially-based interactive learning media for Informatics courses. These instruments contained statements related to media development. Assessment used a Likert scale ranging from 1 to 5, with rating categories detailed in Table 1.

Table 1. Likert Scale Score Criteria

Score	Criterion
5	Very Good
4	Good
3	Fair
2	Poor
1	Very Poor

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

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

The resulting percentage was then converted into a learning media suitability category according to the range listed in the following classification table.

Table 2. Suitability Categories

Percentage	Suitability Category
81% - 100%	Very Suitable
61% - 80%	Suitable
41% - 60%	Moderately Suitable
21% - 40%	Less Suitable
0% - 20%	Not Suitable

The developed interactive learning media was deemed suitable when classified as "suitable" or "very suitable." Data collected from student questionnaires was analyzed using mean value calculations with the formula:

$$\bar{X} = \frac{\sum x}{n}$$

Where:
$\bar{X}$ = Mean value
∑x = Total sum of respondent answer values
N = Number of respondents

After obtaining the mean value, scores were converted to percentages using the formula:

$$Percentage = \frac{\text{Obtained Score}}{\text{Maximum Score}} x\ 100\%$$

The percentage calculation results were then matched with criteria tables to assess student response levels toward the developed learning media.

Table 3. Student Response Level Criteria

Percentage	Criterion
81% - 100%	Very Good
61% - 80%	Good
41% - 60%	Fair
21% - 40%	Poor
0% - 20%	Very Poor

3. Results and Discussion

3.1 Results

This research was motivated by the continued use of conventional teaching methods in 10th-grade Informatics courses at vocational schools (SMK), where teachers primarily relied on lectures and textbooks with limited student access. This situation prevented students from independently accessing materials, reduced active participation, and created difficulties in understanding the subject matter. To address these issues, Genially-based interactive learning media was developed specifically for computer network component materials. After completing the development process, suitability testing was conducted through validation by subject matter and media experts, along with questionnaires distributed to students to gather feedback on the developed media. The collected data was analyzed using percentage formulas and classified into suitability categories.

3.1.1 Subject Matter Expert Validation Results

Subject matter validation was conducted by an expert teacher from the Computer and Network Engineering department at SMK Islam Tenjonagara. The assessment covered material alignment with curriculum, content accuracy, and quality of material presentation in the learning media. The validation results are shown in the following table.

Table 4. Subject Matter Expert Validation Results

No.	Assessment Indicator	Item Numbers	Score Obtained
1.	Material alignment with curriculum	1 – 6	30
2.	Content accuracy	7 – 10	20
3.	Material presentation quality	11 – 15	25
Maximum total			75
Score obtained			75
Result			100%
Criterion			Very Suitable

Source: Data processed by researcher.

Based on the assessment results, a score of 100% was obtained, falling into the "Very Suitable" category. The validator provided no additional comments or suggestions as all components in the media were deemed appropriate and required no revision. This indicates that the media met the suitability criteria for student use.

3.1.2 Media Expert Validation Results

Media validation was performed by a Computer and Network Engineering teacher at SMK Islam

Tenjonagara. The assessment focused on three main aspects: technical performance, display design, and interactivity level of the developed media. The validation results are presented in the following table.

Table 5. Media Expert Validation Results

No.	Assessment Indicator	Item Numbers	Score Obtained
1.	Technical performance	1 – 3	13
2.	Design and display	4 – 7	18
3.	Interactivity	8 – 10	14
Maximum total			50
Score obtained			45
Result			90%
Criterion			Very Suitable

Source: Data processed by researcher

Based on the assessment results, a score of 90% was obtained, falling into the "Very Suitable" category. This percentage indicates that the media met the suitability criteria according to established indicators.

3.1.3 Student Response Results

Twenty students were asked to independently access the media through their own devices. The purpose of this activity was to determine student responses to the use of the media in learning. The student response questionnaire covered aspects of ease of use, material comprehension, and user satisfaction. The results from the student response questionnaire are presented in the following table.

Table 6. Student Response Results

No.	Assessment Indicator	Item Numbers	Score Obtained
1.	Ease of Use	1 – 2	164
2.	Material Comprehension	3 – 6	334
3.	User Satisfaction	7 – 10	340
Total Items			838
Maximum Total			1,000
Average			83.8
Criterion			Very Good

Source: Data processed by researcher.

Based on the analysis results, a total score of 838 out of a maximum score of 1,000 was obtained, with an average percentage of 83.8%. This value falls into the "Very Good" category. These results indicate that students responded positively to the use of Genially-based interactive learning media.

3.2 Discussion

The development of Genially-based interactive learning media for computer network components shows promising results across all evaluation dimensions. The subject matter expert's perfect score (100%) confirms the media's strong alignment with curriculum requirements and content accuracy. This suggests the developed materials effectively represent the knowledge students need to acquire according to educational standards. The media expert's high rating (90%) validates the technical quality, visual design, and interactive features of the platform. While not perfect, this score indicates that the media functions well technically and provides an engaging visual experience for students. The slight reduction from a perfect score may point to minor areas for future refinement in the interface or technical functionality. Most significantly, the student response data (83.8%) demonstrates that the target users found the media both useful and appealing. The positive feedback across ease of use, material comprehension, and satisfaction categories suggests that the interactive approach successfully addresses the initial problems identified in conventional teaching methods. Students appear to appreciate having independent access to materials presented in an engaging format. These combined results validate the effectiveness of using Genially as a platform for creating interactive learning media in vocational education settings. The high ratings across all three evaluation perspectives (content expert, media expert, and end users) provide strong evidence that this approach can successfully replace or supplement traditional teaching methods that rely heavily on lectures and limited-access textbooks. Future development could focus on refining any technical aspects that prevented a perfect media expert score and potentially expanding the interactive elements that students found most beneficial for their learning process.

4. Conclusion

Based on the research conducted at SMK Islam Tenjonagara with 10th-grade students majoring in Computer and Network Engineering (TKJ), regarding the development of Genially-based interactive learning media for computer network component materials, the following conclusions can be drawn:

1) This research involved the development of Genially-based interactive learning media for computer network component materials, using the ADDIE development model, which includes the phases of analysis, design, development, implementation, and evaluation. In the analysis phase, information was gathered regarding the curriculum, needs, and student characteristics. Analysis results showed that students were interested in learning with attractive and easily understood visual elements. The design phase produced materials and a storyboard, which were then developed into interactive learning media. The developed media was validated by subject matter and media experts. In the implementation phase, testing was conducted with 20 10th-grade TKJ students to determine the extent of their response to the developed media. Finally, in the evaluation phase, the researcher analyzed all validation results and student responses to assess the developed learning media.
2) The suitability of Genially-based interactive learning media for computer network component materials was determined through assessments from subject matter and media experts. Validation by the subject matter expert yielded 100% with a "very suitable" criterion. Meanwhile, validation by the media expert received a percentage of 90% with a "very suitable" criterion. Student responses were obtained through media testing in the 10th-grade TKJ class at SMK Islam Tenjonagara involving 20 students. Based on questionnaire results, students provided a "very good" response with a percentage of 83.8%. It can be concluded that the Interactive Learning Media is suitable for use in 10th-grade Informatics learning for TKJ at SMK Islam Tenjonagara.

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