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Development of Interactive Learning Media Based on *Genially* in Informatics Subjects to Improve Digital Literacy of SMPN 4 Madapangga Students

Ifrianingsih*, Syarifudin, Nur Fitrianiingsih

Information Technology Education, STKIP Taman Siswa Bima, Bima 84171, Indonesia

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* Corresponding author:

E-mail: Ifrianingsih97@gmail.com

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ABSTRACT

The rapid development of digital technology demands innovation in the learning process to make it more interactive and relevant to 21st-century educational needs. However, Informatics learning at SMPN 4 Madapangga is still dominated by conventional and static media, resulting in low student engagement and digital literacy skills. Based on these conditions, this study aims to develop interactive learning media based on Genially in the Informatics subject for eighth-grade students to improve their digital literacy. The research employed the Research and Development (R&D) method using the ADDIE model, which includes the stages of Analysis, Design, Development, Implementation, and Evaluation. The validation results showed that the media obtained feasibility scores of 83%, 89%, and 95% from two media experts and one material expert, respectively, categorized as very feasible. The practicality test involving 20 students yielded a score of 93.88% (very practical), while the digital literacy assessment reached 94.76% (very good). The effectiveness test using the N-Gain calculation produced an average score of 0.56 (moderate category), indicating that the media is quite effective in improving learning outcomes. Therefore, Genially-based learning media are declared feasible, practical, and effective for enhancing students' digital literacy and supporting the implementation of the student-centered and technology-integrated Merdeka Curriculum.

1. Introduction

In today's digital era, advances in information technology have brought major changes in various aspects of life, including in the world of education. The use of technology in the learning process is no longer just an option, but an urgent need to create a teaching and learning process that is more effective, interesting, and relevant to the development of the times (Lestari, 2024). This is also in line with the national education policy which emphasizes the importance of improving students' digital literacy competencies to be able to adapt to the dynamics of the

21st century. Digital literacy is not only limited to the ability to operate technology, but also includes critical, creative, and collaborative thinking skills in utilizing digital information wisely. The digital literacy is the ability to understand and use information in various formats sourced from digital media. This view is in line with the opinion Suharjono & Fatimah (2022) which emphasizes that digital literacy does not only include technical skills in using digital devices, but also includes critical thinking skills, media use ethics, and understanding of information security. Meanwhile, Putri & Santosa (2021) adding that strengthening digital literacy in schools can be done through the use of interactive learning media that is able to foster collaboration, creativity, and critical thinking of students. However, various studies show that the digital literacy ability of students in Indonesia is still relatively low. Based on a national survey conducted by the Ministry of Communication and Information Technology with the Katadata Insight Center in 2023, Indonesia's digital literacy index is at 3.65 out of a scale of 5, which is categorized as "moderate". Meanwhile, research Setiyarini et al., (2025) revealed that more than 60% of junior high school students still have difficulty in distinguishing valid information on the internet and have not been able to use digital platforms productively for learning activities.

This condition indicates the need to strengthen digital literacy through learning that is integrated with technology. One of the factors causing low digital literacy of students is the limited interactive learning media that is in accordance with the characteristics of the digital generation. The use of conventional media dominated by texts and lectures tends to make students passive and less interested in participating in the learning process, especially in the subject of Informatics which should be the main means to hone 21st century digital skills (Hasanah & Lutfi, 2023). As an alternative solution, the use of learning media based on interactive digital platforms such as Genially assessed potential to increase student engagement. Genially is a web-based platform that allows teachers to develop interactive learning media with the integration of multimedia elements (text, images, audio, video, and hyperlinks). Genially-based media is believed to strengthen students' attention, increase interest in learning, and facilitate a pleasant learning experience (Fatma & Ichsan, 2022).

Based on initial observations at SMPN 4 Madapangga, especially in grade VIII, it is known that the learning media used in Informatics subjects is still static and has not made the most of interactive digital technology. Although devices such as LCD projectors are already in use, the learning approach is still one-way with teachers as the information center. Students are not used to exploring digital learning resources independently, as can be seen from the low participation in technology-based activities and the tendency to be passive during learning. Some students also exhibit less focused behavior, such as talking to themselves, going in and out of class, or just taking notes from slides without understanding the material in depth.

In addition, the transition from the 2013 Curriculum to the Independent Curriculum requires teachers to be more creative in developing digital teaching materials that are relevant to a competency-based and student-centered learning approach. The results of an interview with an Informatics teacher on February 19, 2025, showed

that schools still face limitations in the provision of digital learning media that support the implementation of the Independent Curriculum. The lack of media variety and the absence of interactive platforms cause low student engagement and the learning process is less than optimal. To overcome these conditions, technology-based learning media innovations are needed that are able to facilitate students' active involvement and improve their digital literacy skills. The use of Genially as an interactive media is considered relevant because it allows the presentation of Informatics materials in a visual, dynamic, and participatory manner. Through interactive features such as quizzes, animations, and external links, students can actively and responsibly engage in the learning process and develop digital skills.

The results of interviews with teachers show that the Genially application has never been used in learning at SMPN 4 Madapangga. Based on this, the development of Genially-based interactive learning media is a potential solution to improve the effectiveness and quality of Informatics learning. This media not only serves as a presentation tool, but also as a means of exploration and collaboration that is able to foster students' interests, critical thinking skills, and digital literacy skills. Thus, this research was carried out to develop Genially-based interactive learning media in Informatics subjects at SMPN 4 Madapangga with the aim of improving students' digital literacy. Through the development of this media, it is hoped that the learning process will be more interesting, interactive, and in line with the demands of the Independent Curriculum and the needs of digital competencies in the 21st century.

2. Methodology

This research uses the Research and Development (R&D) method with the ADDIE (Analysis, Design, Development, Implementation, Evaluation) development model proposed by (Branch, 2018). This method was chosen because it was considered the most appropriate for producing learning products and testing their effectiveness (Sugiyono, 2019; Widiyari, 2022). The product developed is in the form of interactive learning media based on Genially based on the Social Impact of Informatics material for grade VIII students of SMPN 4 Madapangga in the context of the Independent Curriculum. The stages of development include: (1) Analysis, which is analyzing the learning needs, curriculum, and characteristics of students; (2) Design, i.e. designing a Genially based media framework including content structure, visual display, and interactive navigation; (3) Development, namely realizing media according to design and validating by material experts and media experts; (4) Implementation, namely testing the product to grade VIII students to assess the practicality and effectiveness of the media; and (5) Evaluation, which is making final improvements based on the results of validation, observation, and user response. The research subjects consisted of 23 grade VIII students of SMPN 4 Madapangga, one Informatics teacher, and two validators (material experts and media experts). The testing process was carried out in several phases, including individual, small group, and limited field trials, to evaluate the feasibility and effectiveness of the developed media.

The data collection techniques in this study include observation, interviews, questionnaires, and tests (pretest–posttest). Observations and interviews were used for needs analysis, questionnaires to assess the validity and practicality of media, and tests to measure the effectiveness of media in improving students' digital literacy. The research instrument consists of material and media expert validation sheets, student response questionnaires, and pretest questions that have been validated before use. Data analysis was carried out in a quantitative descriptive manner, including a validity test using a 5-point Likert scale, a practicality test based on the average score of the questionnaire (Sukardi, 2008), and an effectiveness test using the N-Gain formula (Arikunto, 2010) with the category of very effective to ineffective. Through this procedure, this research produces a Genially based interactive learning media that is valid, practical, and effective in improving students' digital literacy in Informatics subjects.

3. Results and Discussion

This research aims to develop Genially-based interactive learning media in the Informatics class VIII subject of SMPN 4 Madapangga. The development process is carried out with the ADDIE model. The final product is in the form of interactive media containing "Social Impact of Informatics" material which is equipped with multimedia features, animations, interactive links, and quizzes. The testing stage is carried out through validation by experts, practicality tests by students, and effectiveness tests through pretest-posttest tests. The research results indicate that media developed is very feasible, very practical, and quite effective in improving students' digital literacy skills. In general, the use of Genially provides a more engaging, interactive, and appropriate learning experiences aligned with the principles of 21st-century education.

Developed Media Display

Genially-based *interactive learning media* was developed by paying attention to the aspect of appearance and ease of navigation. The main media page features material titles, start buttons, and navigation icons to different pieces of content such as theory, exercises, and interactive quizzes. The initial display of the media can be seen in Figure 1, while the main menu display showing the navigation structure and content of the media is shown in Figure 2.



Figure 1. Initial Views

Figure 1 shows the initial appearance of Genially-based interactive learning media developed for Informatics subjects. On this page, there are interesting visual elements such as illustrations of students carrying books and trophies, symbolizing the spirit of learning and achievement. The background features a natural landscape with houses, green fields, and windmills that reflect the concept of technological advancement and a dynamic digital environment. In the middle there is the heading "Informatics Subjects" with the "Start" button as the main navigation to start learning. This display is designed with a combination of bright colors and a simple layout to be easy to understand and attract students' attention from the beginning of media use. Overall, this initial appearance serves as a visual introduction that is able to arouse students' motivation and curiosity before entering the learning material.



Figure 2. Menu View

Figure 2 shows the main menu page of Genially-based interactive learning media for Informatics subjects. In this view, users are presented with several main navigation options, namely Materials, Summary, Evaluation, Video, and Games. Each button has a different color for easy identification and enhances visual appeal. The illustration of the student's character on the right side gives the impression of being friendly and fun, creating an interactive and non-rigid learning atmosphere. The green background with natural scenery is still maintained to be consistent with the theme of the starting page, highlighting a fresh and educational feel. The menu design is made simple yet functional, allowing students to choose the learning sections according to their needs with ease. Overall, the menu display plays an important role as a navigation hub in the media, directing students to access various learning components in an independent and structured manner.

Validation Results of Media Experts and Subject Matter Experts

Validation was carried out by two media experts and one material expert to assess the feasibility of the content, appearance, and technical aspects of the learning media. The results of the assessment show that the media meets the high feasibility criteria as shown in Table 1.

Table 1. Members of the Media and Members of the Media

Validator	Aspects Assessed	Percentage	Category
Media Expert (Validator I)	Presentation, Content, Design, User	83%	Highly Worth It

Media Expert (Validator II)	Presentation,Content, Design,User	89%	Highly Worth It
Material Expert (Validator I)	Format,Content,Language	95%	Highly Worth It

Based on the validation results presented in Table 1, it is known that the assessment of learning media was carried out by two media experts and one material expert. The validation results from media experts (validator I) obtained a percentage of 83% with a very feasible category, which shows that in terms of presentation, content, design, and use, the media has met the eligibility criteria well. Meanwhile, the media expert (validator II) gave a score of 89%, also included in the very feasible category, indicating that the media is considered interesting, easy to use, and in accordance with learning needs. The validation results from the material expert (validator I) showed the highest score, which was 95%, with a very feasible category, which means that the material in the media is in accordance with a good format, content, and language and is relevant to the curriculum. Overall, the validation results show that learning media is considered very feasible to be used in the learning process without the need for major revisions.

Media Practicality Results

The practicality of the media was assessed through a student response questionnaire after using Genially media in learning. The students' responses show that the media is easy to use and engaging. Details of the students' response scores to the practicality of the media are shown in Figure 3 below.

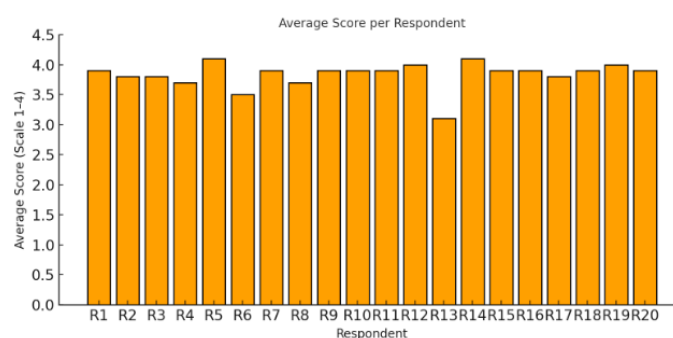


Figure 3. Media Practicality Questionnaire

Based on Figure 3. Media Practicality Questionnaire, it can be seen that the assessment results of 20 respondents showed an average overall score of 67.4 with a percentage of 93.88%, which is included in the very practical category. This score was obtained from the results of the assessment of 10 statements which included aspects of ease of use, clarity of appearance, attractiveness, and the usefulness of media in supporting the learning process. In general, respondents scored high on almost all indicators, with the average per respondent being in the range of 3.1 to 4.0. This shows that learning media is considered easy to use, interesting, and helps students understand the material better. Thus, the media developed has proven to have an excellent level of practicality, making it suitable for use in classroom learning activities without the need for significant revisions.

Results of Improving Digital Literacy

After the use of media, students were given a questionnaire to measure their digital literacy skills. The aspects measured include the ability to understand, search, and utilize digital information appropriately. The measurement results are shown in Figure 4.

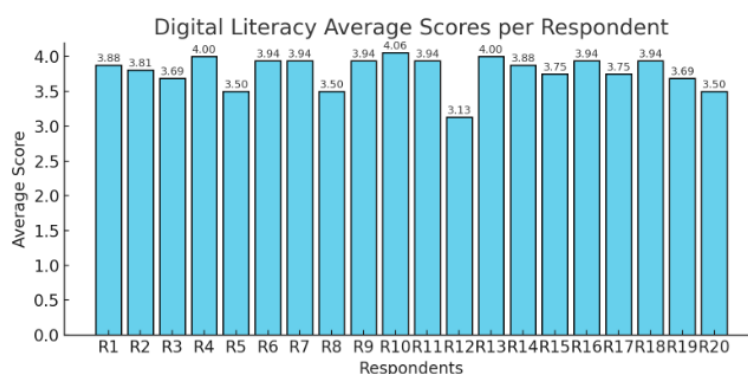


Figure 4. Digital Literacy

Based on Figure 4. Digital Literacy, the results of the analysis showed that the total score obtained from 20 respondents was 1213 with an average score of 75.84 and a percentage of 94.76%, which was included in the very good category. This value illustrates that the use of learning media has a positive effect on improving students' digital literacy skills. Most respondents gave high scores on each statement, with the average individual score being in the range of 3.13 to 4.06. This shows that the media developed is able to help students access, understand, and utilize digital information effectively. In addition, aspects of critical thinking skills, wise use of technology, and digital security were also rated well by respondents. Thus, it can be concluded that the learning media used is very effective in improving students' digital literacy, so it is feasible to apply it in the technology-based learning process.

Media Effectiveness Results (N-Gain Test)

The effectiveness of the media was tested through the results of the pretest and posttest to see the improvement of students' digital literacy skills. The N-Gain calculation was carried out on 20 respondents and the results can be seen in Table 3 below.

Table 3. Pretest and Posttest

Respondents	Pretest	Posttest	N-gain results
R1	70	90	0,66
R2	60	80	0,5
R3	70	90	0,66
R4	70	90	0,66
R5	60	80	0,5
R6	60	80	0,5
R7	70	90	0,66
R8	70	100	1
R9	70	80	0,33
R10	60	80	0,5

R11	60	80	0,5
R12	70	80	0,33
R13	70	90	0,66
R14	70	80	0,33
R15	60	80	0,5
R16	70	90	0,66
R17	70	90	0,66
R18	80	100	1
R19	70	90	0,66
R20	70	90	0,66
Average 0.56			
Minimum 0.33			
Maximum 1.00			

Based on Table 3. Pretest and Posttest, the results of the analysis show an increase in students' abilities after using the developed learning media. The average N-Gain value of 0.56 is in the medium category, which means that learning media is quite effective in improving student learning outcomes. The highest N-Gain score of 1.00 was obtained by respondents R8 and R18, indicating a maximum improvement from pretest to posttest, while the lowest score of 0.33 indicated a still low improvement in some students. Overall, these results indicate that after the application of learning media, there is a significant improvement in students' understanding of concepts and skills. Thus, the learning media developed can be categorized as effective in improving student learning outcomes.

Discussion

The research results indicate that development of Genially-based interactive learning media has succeeded in meeting the criteria of feasibility, practicality, and effectiveness in supporting Informatics learning and improving students' digital literacy. The media, which was developed with the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model, is able to facilitate an interesting, interactive, and appropriate learning process that meets the needs of students in the digital era. Based on the validation results of two media experts and one material expert, learning media obtained an average feasibility percentage of 89% which is included in the very feasible category.

This shows that the appearance, content, and technical aspects of the media have met the standards of learning media development. These results are in line with the findings (Nugroho et al., 2024; Ramadhani et al., 2022) which states that the use of Genially is effective in improving the visual quality and interactivity of learning media because it is able to combine multimedia elements such as text, animation, and hyperlinks. In addition, Genially's advantages in providing a user-friendly interface also support increased students' focus and interest in the material (Pujiati et al., 2024; Suhartono & Pratiwi, 2023). Thus, this high feasibility is a strong basis that the developed media can be used as an innovative Informatics learning tool and in accordance with the demands of the Independent Curriculum.

The practicality aspect was assessed through a student response questionnaire with an average score of 93.88%, including the very practical category. These results

show that students consider the media to be easy to use, attractive appearance, and helpful in understanding the material "Social Impact of Informatics". According to (Saputra & Ningsih, 2021), digital learning media that have simple navigation and interactive design tend to increase student motivation and participation during learning. Additionally, the use of Genially encourages students to be more active in exploring the material as they not only receive information, but also interact directly through quizzes, videos, and animation features. This reinforces the findings (Rahmawati & Fathurrohman, 2022; Rohmah & Usriyah, 2024) which states that students' active involvement in interactive media has a significant impact on learning retention and mastery of concepts.

The improvement of students' digital literacy skills after using Genially media showed significant results, with an average score of 94.76% (excellent category). This improvement includes aspects of the ability to search, evaluate, and utilize digital information wisely. These results are in line with research (Fitriyani et al., 2023) who found that the application of interactive digital media can improve digital literacy because it provides an exploration-based learning experience and collaboration. In addition, Genially-based learning fosters 21st century skills such as critical and creative thinking, according to the findings (Wijayanti & Suryanti, 2022) which states that students who engage in interactive multimedia-based learning show a significant increase in digital literacy skills compared to conventional methods. This shows that the media developed not only improves the understanding of Informatics content, but also forms digital competencies that are relevant to today's needs.

The results of the N-Gain test showed an average value of 0.56 which was included in the medium category, indicating that the learning media developed was quite effective in improving student learning outcomes. The highest N-Gain value of 1.00 indicates that some students experience maximum improvement after using the media. These results are consistent with research (Wulandari et al., 2023) who reported that the use of Genially in science learning was able to improve student learning outcomes to the medium-high category because students were more involved in exploratory activities. These findings prove that the integration of Genially in Informatics learning can help students understand the concept of "Social Impact of Informatics" contextually and visually, so that learning outcomes are significantly improved compared to traditional lecture methods.

The Merdeka Curriculum emphasizes the importance of student-centered, project-based, and encouraging the development of digital literacy competencies. The use of Genially is in line with these principles because it allows students to learn actively, creatively, and collaboratively. As stated by (Prasetyo & Wahyudi, 2020; Yudianto et al., 2025), learning that integrates digital technology interactively is able to form the character of independent learners who are ready to face the challenges of the information age. Thus, the application of Genially based media makes a real contribution to the school's efforts in implementing the Independent Curriculum, especially in improving digital literacy and Informatics learning outcomes.

4. Conclusion

This research aims to develop Genially-based interactive learning media in the subject of Informatics grade VIII SMPN 4 Madapangga in order to improve students' digital literacy skills. The development process using the ADDIE model has succeeded in producing learning media products that are feasible, practical, and effective in supporting learning activities. This media integrates visual, audio, and interactive components that encourage students to be active, creative, and able to explore the material independently. The research results showed that the Genially based media developed received positive assessments from experts and students. Experts assessed that the content and design of the media were in accordance with the curriculum and met the eligibility criteria, while students rated this media as attractive, easy to use, and helpful in understanding the material "Social Impact of Informatics".

The use of this media has also been proven to foster curiosity, critical thinking, and collaborative skills that are in line with 21st century learning competencies. Overall, this research was declared successful in achieving the goals that had been designed. The learning media developed is able to improve students' ability to access, evaluate, and utilize digital information wisely, while supporting the implementation of the Independent Curriculum which is oriented towards technology-based and student-centered learning. Further research is suggested to test the application of this media to other subjects or different levels of education, as well as to develop adaptive features in Genially to adapt to diverse learning styles and student needs. The research results confirm that technology-based learning media that is designed interactively and contextually is able to improve the quality and relevance of learning in the digital era.

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