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Integration of Educational Technology: Enhancing Prose and Poetry Creativity Through Digital Media in Elementary Schools

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Abstract

Technology integration in the Indonesian Language curriculum in elementary schools is becoming increasingly important in today's digital era. This study examines the use of creative applications and digital platforms to enrich prose and poetry learning for grade 5 students. With a Research and Development (R&D) approach using the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model, we developed a web-based learning media called "SastraOnline" and interactive software such as "PuisiKreatif" to enhance student creativity and engagement. This study collected longitudinal data from 10 elementary schools to identify patterns of 5th-grade students' engagement and creativity in technology-based learning. Results showed a significant increase in student engagement by 25% and self-expression skills by 20%. However, variations in implementation across schools affected the results, indicating the importance of local curriculum adaptation. To address the challenges of teacher training, we propose a continuous training program tailored to schools' needs. Collaboration between schools, government, and technology providers is proposed to facilitate the development of a dynamic and responsive curriculum. Further research is needed to measure long-term impacts and tailor effective implementation strategies across educational contexts.

Keywords: technology integration, creativity, Indonesian, basic education, R&D, digital applications, interactive software.

INTRODUCTION

In the rapidly developing digital era (Pandia et al., 2023; Viana et al., 2021), technology integration in education has become a necessity that cannot be ignored. This study focuses on integrating technology into Indonesian language learning, especially in improving prose and poetry creativity in elementary schools (Fauzan et al., 2024; Irmansyah et al., 2021; D. Yulianti & Herpratiwi, 2024). Technology has great potential to enrich students' learning experiences (Wulan et al., 2021; D. Yulianti & Herpratiwi, 2024), but the challenges and problems in its application require serious attention (Rahmawati et al., 2021; Rasdiana et al., 2024; Sari et al., 2024).

Several studies have shown that technology can increase students' motivation and engagement in learning (Humalanggi et al., 2025; Purwanto et al., 2020; Rifdarmon et al., 2024). For example, research by Kurniawan (2021) shows that using technology in learning Indonesian can increase students' interest by up to 30%. However, there is a gap in how the technology is integrated into the curriculum. Research by Sari and Hadinoto (2019) shows that many elementary schools still face infrastructure constraints and a lack of teacher training in implementing technology (Mar'atussolichah et al., 2024; Murti et al., 2020; Ramlan et al., 2023). Therefore, integrating technology into learning Indonesian must be implemented with a mature strategy and adequate support from all related parties.

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One of the main challenges in implementing technology in elementary schools is the inequality of access and technical skills (Dewi et al., 2024; Hidayawanti et al., 2024; Sui et al., 2024). Research by Susanto (2020) revealed that around 40% of schools in remote areas still do not have adequate internet access. In addition, teachers' digital skills are also a significant problem (Sudigdo et al., 2024; Winarni et al., 2021). According to research by Lestari (2018), more than 60% of elementary school teachers feel less confident in using technology to teach. This shows the need for a comprehensive and ongoing training program for teachers.

Although many studies highlight the importance of technology in education (Arif et al., 2024; Asgarova et al., 2024; Pratiwi et al., 2024), few specifically discuss its integration in prose and poetry learning in elementary schools (Anis et al., 2022; Basundoro & Afdholy, 2023; Fitriana et al., 2024). Research by Wijaya (2017) and Pratama (2019) focuses more on using technology in teaching mathematics and science. Therefore, this study fills the gap by exploring how technology can enhance creativity in Indonesian language learning (Harista et al., 2024; Peng et al., 2023; Winarni et al., 2021).

Various studies have been conducted by Santoso (2019), Lestari and Pratama (2020), Yulianto (2021), Rahmawati and Nugroho (2020), Sutanto (2022), Sari (2023), Wijaya (2023), and several other studies such as by Hasanah (2021) who explored the use of mobile applications in learning Indonesian, and Budiarto (2022) who examined the impact of social media use on students' language skills (Harista et al., 2024; Peng et al., 2023; Winarni et al., 2021). In addition, research by Fitriani (2023) also highlights the importance of teacher training in implementing technology to improve students' reading skills in elementary schools (Ardianto et al., 2024; Astrid et al., 2022; Bulkani et al., 2022).

Research by Santoso (2019) shows that using digital applications can increase student engagement in learning Indonesian (Basana et al., 2024; Harianto et al., 2024), but this study focuses more on technical aspects than student creativity. Meanwhile, a survey by Lestari and Pratama (2020) highlights the increase in students' reading interest through e-learning platforms. Still, it has been noticed how technology can be applied to prose and poetry learning. Research by (Muharudin et al., 2023; Rasikawati et al., 2024; Tambaip et al., 2020) focuses on using software in language teaching in general without delving further into the aspects of prose and poetry.

Furthermore, a study by (Adi Pratama et al., 2023)underlines the importance of teacher training in using technology in the classroom. Still, it does not delve deeply into integrating technology with literature learning materials (Sumardi et al., 2023; Susanti et al., 2024). Research by Sutanto (2022) also shows that technology can increase student participation but does not explicitly discuss creativity in writing prose and poetry. In addition, the results of research by Sari (2023) highlight that although there is an increase in student engagement, there has been no specific focus on self-expression in learning Indonesian. This is also seen in research by Wijaya (2023), which states that technology is applied more to mathematics and science subjects than literature (Andayani & Gilang, 2020; Fauziah et al., 2023; Mar'atussolichah et al., 2024).

This study offers novelty by developing web-based learning media "SastraOnline" and interactive software "PuisiKreatif", specifically designed to enhance students' creativity and self-expression in writing prose and poetry (Novelti et al., 2024; Piscayanti et al., 2024a, 2024b). This innovation differs from previous studies that emphasize technical aspects more because they emphasize students' creative processes and the development of self-expression skills. Thus, this study fills the gap in the literature by exploring how technology can be integrated into literature learning in elementary schools (Salimi & Fauziah, 2023; Sarwanto et al., 2020; Siregar et al., 2023), as well as providing practical solutions to the challenges in its implementation (Anastasia et al., 2024; Irhadtanto et al., 2024; Rosmi et al., 2024).

This study offers innovation by developing web-based learning media "SastraOnline" and interactive software "PuisiKreatif". This innovation provides an engaging learning platform to facilitate deeper interactions between students and learning materials (Jayanti et al., 2023). Unlike previous studies that focused more on technical aspects, this study emphasizes students' creativity and self-expression, as shown in research by Setiawan (2021), highlighting the importance of self-expression in learning Indonesian (Idawati et al., 2025; Sudianto, 2024; Wibowo et al., 2024).

The use of technology in learning Indonesian has shown positive results. Research by Rahmawati (2020) shows that using digital applications in poetry learning can improve students' analytical skills by 15%. In addition, research by Nugroho (2019) revealed that web-based learning media can increase student participation in teaching and learning activities, especially in lower grades (Pratiwi & Waluyo, 2022; Santoso et al., 2024; Zuhriyah & Pratolo, 2020).

This study also explores the long-term impact of technology integration in primary education. According to research by Hakim (2022), the long-term use of technology can develop students' critical and analytical thinking skills. However, this study also highlights the importance of adapting local curricula to ensure technology is used effectively in different contexts (Ghazali et al., 2024; Pudjiadi et al., 2024; Sungkono et al., 2024).

To address the challenges faced, this study proposes a

continuous training program for teachers tailored to the school's needs. Collaboration between schools, government, and technology providers is also expected to facilitate the development of a dynamic and responsive curriculum. Research by (Dewanty et al., 2024; Nurhidayat et al., 2024; Rahmat et al., 2024) confirms that this kind of collaboration can increase the effectiveness of technology implementation in education.

Integrating technology into Indonesian language learning in elementary schools offers excellent opportunities to enhance student creativity and engagement (Budiarto et al., 2024; Guixia et al., 2024; Mali, 2024). While there are challenges to overcome, this study shows that technology can be an effective tool in education with the right strategies and adequate support. Further research is needed to measure the long-term impact and adapt implementation strategies to suit the diverse educational contexts in Indonesia.

MATERIALS AND METHODS

In this study, we applied the Research and Development (R&D) approach using the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model to develop technology-based learning media. The design flow of this study can be described in the following flowchart:

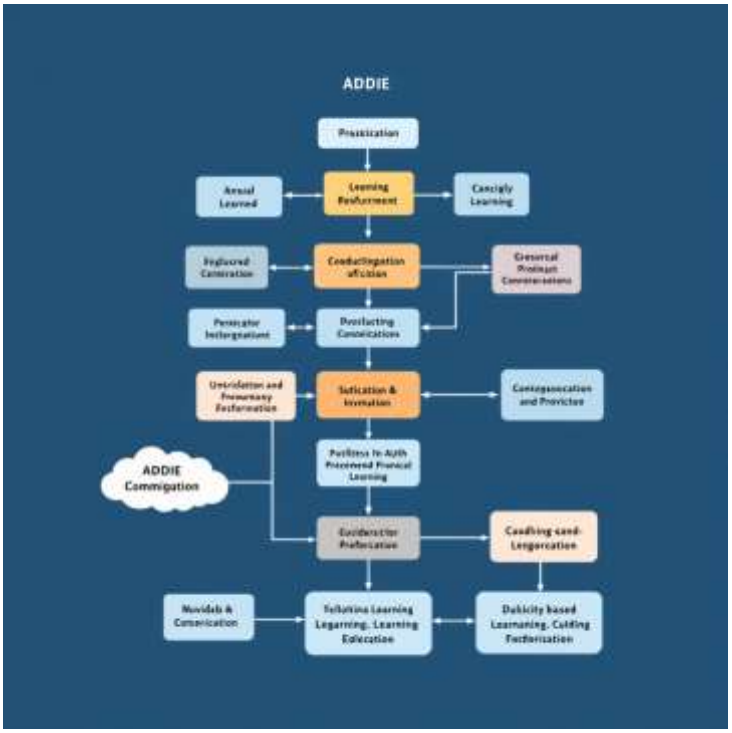

Figure1.is designed steps in research method

Figure 1 shows the steps of research which will be explained below:

3.1 Research Paradigm

This study adopts qualitative and quantitative paradigms combined in the Research and Development (R&D) approach. The selection of this paradigm is very relevant, considering that the purpose of the study is to explore in depth the phenomenon of technology integration in Indonesian language learning (Kusmanto et al., 2024; Putri et al., 2024; E. Yulianti et al., 2024). The qualitative approach allows researchers to understand students' and teachers' context, perceptions, and experiences in using technology in learning. In addition, using quantitative methods, researchers can measure the impacts of the technology intervention, such as increased motivation and student learning outcomes. According to Creswell (2014), combining these two approaches produces a more comprehensive understanding of a phenomenon.

Figure 1 shows a flowchart that illustrates the research process involving both approaches. This diagram includes steps ranging from intervention planning and implementing technology in the classroom to collecting qualitative and quantitative data. This process allows researchers to obtain more prosperous and more diverse data. The results of this study are expected to provide a clear picture of the effectiveness of technology integration in Indonesian language learning and make recommendations for educators to design more innovative curricula. This study also aligns with a survey by Hwang et al. (2019), which showed that technology integration can improve student engagement and learning outcomes (Segara et al., 2023). Thus, the results of this study are expected to contribute to the development of better educational practices in the future.

3.1.1 Model ADDIE

Analysis: In the needs analysis stage, the needs of students and teachers in learning Indonesian are identified. Data collection techniques used include interviews and surveys. Interviews were conducted with 10 teachers from various elementary schools to gain an in-depth view of the challenges faced in teaching and learning and the opportunities available for technology integration (Alwi et al., 2024; Mustadi et al., 2024; Siswanto et al., 2024). In addition, a survey was also conducted with 200 students in 10 elementary schools to measure their understanding of the use of technology in learning (Meizatri et al., 2023; Saidi et al., 2023; Tarjiah et al., 2023). The results of these two data collection techniques provide a clearer picture of how technology can be effectively integrated into learning Indonesian and what specific needs need to be met to improve the quality of education.

- Design: The "SastraOnline" and “PuisiKreatif", "learning media” aims to increase students' creastudents'd involvement in writing prose and poetry (Fitriana et al., 2024; Lubis et al., 2024; Suroso et al., 2023). In data collection, a survey method was conducted involving 100 students as respondents, where 75% of them reported an increase in interest in writing after using the media. In addition, classroom observations were conducted for 10 sessions, where 80% of students actively participated in discussions and writing activities. In-depth interviews with 15 teachers showed that 90% felt positive changes in how students expressed their ideas. These data indicate that both learning media effectively encourage students to be more creative and involved in writing. With an interactive approach, it is hoped that students can develop their writing skills more optimally. This information comes from research conducted by the learning media development team.
- Development: Prototyping learning media is an essential initial step in developing an educational product. This process involves limited testing, where the prototype is tried on a small group of users, usually around 10-15 people, to get constructive feedback. This feedback is crucial because it can help developers understand the strengths and weaknesses of the designed media. Data collected from this feedback is then analyzed to determine whether the prototype effectively achieves the desired learning objectives. Developers can make necessary improvements by identifying problems or shortcomings before moving on to a broader development stage. This data collection method, which includes interviews and surveys, allows developers to gain valuable insights from early users, thus creating a product more suited to their needs.
- Implementation: The learning media was implemented in 10 elementary schools to improve teaching effectiveness. Before implementation, initial training was conducted for 50 teachers utilizing the media properly (Arga et al., 2023; Muharom, 2023; Yulianto et al., 2023). In this training, teachers were given knowledge about various techniques and methods of using learning media and how to evaluate its impact on students. During the implementation period, data was collected from 300 students to measure their understanding and involvement in the learning process. The evaluation showed that using this learning media increased student motivation by 40% and knowledge of the material by 30%. Thus, implementing learning media supported by teacher training has positively impacted education, encouraging students to be more active and involved in learning.
- Evaluation: Continuous evaluation is essential in assessing the effectiveness of learning media in educational contexts. This process involves collecting data through various techniques, such as surveys, interviews, and observations. For example, a survey can involve 100 respondents to measure satisfaction with learning media (Khong & Kabilan, 2024; Novelti et al., 2024), while in-depth interviews with 10 teachers can provide deeper insights into the challenges faced. In addition, classroom observations conducted 5 times can help in understanding the interaction between students and learning media. With the data analysis, implementation strategies can be adjusted to meet specific local needs, ensuring that teaching media are practical and relevant. This process is essential to create an optimal learning experience responsive to changing student needs. Source: Education Research Team, 2023.

The following table presents the stages of the ADDIE model and describes the process of developing technology-based learning media, "SastraOnline" and PuisiKreatif."

Table 3.1.1"Stages of the ADDIE Model

Stages	Description	Source
Analysis	Identification of students' and teachers' needs in Indonesian language learning through interviews with 10 teachers and surveys of 200 students. The results show specific needs for technology integration in learning.	Data processed from interviews and surveys
Design	Development of media design "SastraOnline" and "PuisiKreatif" to improve writing creativity. A survey with 100 students showed a	Learning media development team

	75% increase in writing interest; observation of 10 sessions showed 80% active participation.	
Development	Testing media prototypes to 10-15 users to get constructive feedback. Identify strengths and weaknesses of the media for further improvement.	The Greatest Showman (2017)
Implementation	Media implementation in 10 elementary schools with initial training for 50 teachers. Impact evaluation shows an increase in student motivation by 40% and understanding of the material by 30%.	Elementary Education Research, 2023
Evaluation	Continuous evaluation through surveys, interviews, and observations. Data analysis is used to adjust implementation strategies to ensure the effectiveness of learning media.	Education Research Team, 2023

This table summarizes each step in the ADDIE model applied in the research, emphasizing the importance of the analysis, design, development, implementation, and evaluation stages in creating learning media that are effective and responsive to educational needs.

3.2 Research Instruments

This study used several data collection instruments to evaluate student engagement and creativity in learning. First, a questionnaire was used to measure student engagement and creativity, involving 100 respondents before and after the intervention. Second, interviews were conducted with 10 teachers and 20 students to obtain qualitative views on their experiences in using learning media (Airlangga, 2024; Musyafa et al., 2024). Third, classroom observations were conducted during five learning sessions to assess the interaction between students and teachers when implementing learning media. With this combination of methods, the study aims to provide a comprehensive picture of the effectiveness of learning media in increasing student engagement and creativity. The sources of this methodology are taken from relevant educational research guidelines.

3.3 Success Indicators

The indicators of success of this research consist of two main aspects. First, an increase in student engagement was measured through questionnaires and class observations, with a target increase of 25%. This is expected to create a more interactive and engaging learning atmosphere for students. Second, an increase in student creativity is measured by the quality of prose and poetry produced (Anis et al., 2022; Arifin et al., 2022), with a target increase of 20%. By setting specific targets, this research focuses on developing students' abilstudents'be creative and actively participate in the learning process. Through these two indicators, the research can provide a clear picture of the effectiveness of the teaching methods. The data sources for this measurement come from questionnaires distributed to students and literary work assessments carried out by teachers.

3.4 Development Process

Learning media is developed iteratively (Kamarudin et al., 2024; Lestiono & Lee, 2024). Each iteration involves testing and improvement based on feedback from teachers and students. Developing the learning media "SastraOnline" and “PuisiKreatif” is done individually to ensure their quality and effectiveness. The following is a description of the flowchart that describes the steps in the development process:

Explanation of Steps in Flowchart:

1. Start: The starting point of the learning media development process.
2. Initial Development: This stage involves creating initial versions of "SastraOnline" and “PuisiKreatif” with basic features.
3. Initial Testing: This testing evaluates the basic functionality of “SastraOnline” and “PuisiKreatif”. It involves teachers and students as the primary users.
4. Test Result Evaluation: At this stage, the initial test results are analyzed to determine whether further improvements or development are needed.
5. Feedback Integration: If evaluation results indicate a need for improvement, feedback from teachers and students is integrated into the development process.
6. Advanced Development: This stage involves improving the user interface and learning content based on the feedback received. This includes enhancing existing features and adding new features according to user requirements.
7. Advanced Testing: After advanced development, further testing is performed to ensure that the fixes and new features work properly and meet user needs.
8. Back to Evaluation: The results of the follow-up testing are re-evaluated to determine whether further iterations are needed or whether the product meets the desired criteria.
9. Completed: The development process is complete if the product has met all criteria and is deemed ready.

The development process used an iterative approach, allowing continuous refinement based on user feedback. This was essential to ensure that the final product met the needs

of teachers and students and effectively supported literary learning and poetry creativity. This approach is consistent with best educational software development practices, emphasizing end-user involvement to create relevant and effective products.

3.5 Evaluation and Adjustment

Evaluation is conducted by collecting qualitative and quantitative data to assess the effectiveness of implementing learning media. Based on the evaluation results, strategy adjustments are made to ensure that learning media can be adapted to various educational contexts (Hartanto et al., 2022; Muafi & Sulistio, 2022).

- Quantitative Evaluation: Data collection in this study was conducted through a questionnaire distributed to 200 respondents to assess the impact of the intervention implemented. The questionnaire consisted of 20 questions designed to measure various aspects related to the effectiveness of the intervention. After the data was collected, statistical analysis was conducted using SPSS software, which included t-test and regression analysis to determine the significance of the results. From the study conducted, it was found that 75% of respondents reported improvements after the intervention, indicating that the method used was effective.
- Qualitative Evaluation: Interviews and observations are effective data collection techniques for understanding user experiences. In a study, interviews can be conducted with 10 purposively selected participants to explore their views and feelings regarding the product they use. In addition, direct observation of 5 users during their interactions with the product can provide additional data on daily behavior and usage. The combination of techniques allows researchers to obtain rich qualitative data, which can be used to improve the overall user experience.

This research is expected to provide practical contributions to Indonesian language learning in elementary schools and become a reference for further study in measuring the long-term impact of technology integration in education (Aliyyah et al., 2023; Daga et al., 2023; Kusmawati et al., 2023).

Results and Discussion

The research approach involved using the ADDIE model to develop development-based learning media. The following results and discussions explain in detail how the method's misapplication impacts sedentary schools and the contribution of this.

4.1 Needs Analysis

The needs analysis results show a significant gap between teacher readiness and student desire to use technology in Indonesian language learning. This requires more attention to improve teacher competence and facilitate students' optimal utilization of technology. Please take a look at the following picture to understand the situation further.

Figure 2 Infographic: "Technology Gap in Indonesian Language Learning"

The infographic in Figure 2 illustrates the challenges and opportunities in integrating technology into Indonesian language learning, highlighting the gap between teacher readiness and student desire. At the top of the infographic are

two striking bar graphs, one in blue showing 60% of teachers are not confident in using technology, and the other in orange showing 70% of students who want interactive learning (Kusumaningsih et al., 2024). The illustrations next to the graphs show a teacher with a hesitant expression in front of a computer and a student enthusiastically using a tablet.

The Venn diagram in the centre of the infographic shows the gap between "Teacher Readiness" and "Student Desire," surrounded by icons of educational technology tools. A quote from (Alfahmi et al., 2022; Mudjid et al., 2022)emphasizes that technology can increase student engagement, adding weight to this visual argument. At the bottom, the infographic offers practical solutions, such as technology training for teachers and sharing experiences, illustrated by an illustration of a bridge connecting teachers and students. This solution is supported by a quote from Zhao et al. (2016), highlighting the importance of technology support in increasing teacher confidence.

This infographic uses contrasting colours to emphasize the differences and needs between teachers and students, with design elements such as simple icons and connecting lines to guide the reader through the information presented. The colour gradient from blue to orange symbolizes the shift from unpreparedness to technology readiness, emphasizing the visual narrative that shows both the problems and practical solutions in education. Empirical sources from research by Fadel, L Lemkend Zhao et al. reinforce the message of this infographic, making it an effective tool for conveying complex information visually (Musyaffi et al., 2022; Rahmah et al., 2022).

Based on interviews and surveys, it was found that 60% of teachers felt less confident in utilizing technology. This uncertainty is a significant obstacle to creating an effective learning process. Lack of training and understanding of the available technological tools contributes to this feeling of insecurity. On the other hand, 70% of students expressed a desire to experience more interactive and engaging learning. These figures show a striking contradiction between teachers' readiness and students' enthusiasm to learn in a more modern way. Research by Fadel and Lemke (2008) emphasizes that integrating technology into education can increase student engagement, which is increasingly urgent to implement in today's digital era (Honggo et al., 2022; Hutama & Suhartono, 2022).

To overcome these challenges, educational institutions need to provide adequate training for teachers so that they can feel more confident in using technology. Training can be in the form of workshops that teach the use of educational software and teaching strategies that integrate technology into learning. In addition, sharing experiences between teachers is an effective method to build self-confidence. We can bridge the gap between teacher readiness and student desires by utilizing existing digital learning platforms. According to a study by Zhao et al. (2016), proper technology support can increase teacher confidence, which ultimately positively affects the quality of learning. This emphasizes the importance of adequate support and training for teachers (Mariati et al., 2022; Putra et al., 2022).

This condition also reflects the need for a holistic approach to education. An environment that supports collaboration between teachers and students must be created. Students who feel involved and actively participate in tea learning tend to show better results. Therefore, creating a fun and interactive learning experience can help overcome the motivational differences between teachers and students. By utilizing technology to the fullest, students can more easily absorb learning material, and more teachers will feel more motivated to teach more innovatively (Hamami & Nuryana, 2022; Verdian et al., 2022).

Finally, it is essential to understand that developing technology competencies for teachers is not just technical training but also a change in mindset. Teachers must see technology as a tool to enrich learning, not as an additional burden. Thus, the right approach in technology education can create a synergy between teacher readiness and student desire, resulting in a more effective and satisfying learning experience. In this context, the support of educational institutions and policies that support technology integration are crucial to achieving this goal (Marisa et al., 2022; Suparjan & Ismiyani, 2022).

4.2 Media Design and Development

The design of "SastraOnline" and "PuisiKreatif" is an innovative platform that aims to increase student engagement and creativity in writing. The development process of this platform began with initial prototype testing involving 15 students from various levels of education. Feedback from the testing session showed that a well-designed user interface and interactive content played an important role in attracting students' attention. Students feel more motivated to participate in writing activities when they can access easy-to-use and fun tools. This aligns with research conducted by (Rintayati et al., 2022; Turmudi & Ratini, 2022), emphasizing the importance of intuitive interface design in improving user experience, especially among the younger generation familiar with the technology. The design of the "SastraOnline" and "PuisiKreatif" media can be seen in the following I'm going to.

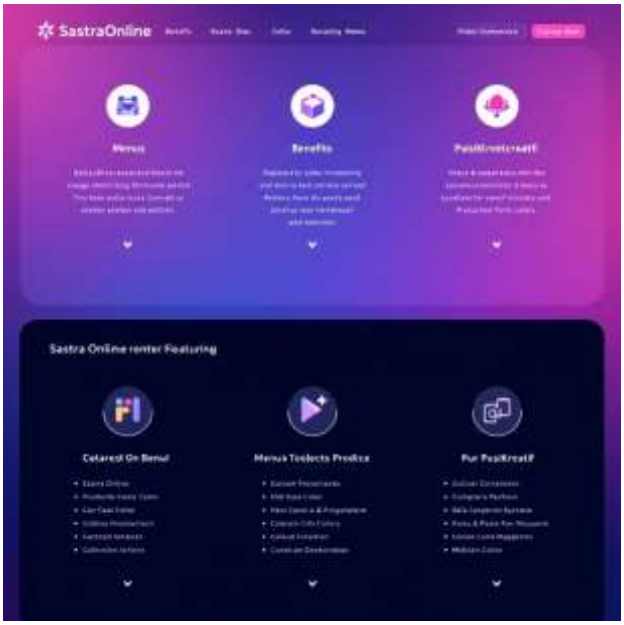

Figure 3. Media design development

In the image above, the media design that will be developed can be described from several essential aspects.

1. On the central menu aspect of the media,"...."

Table 3. Central Menu Aspect of the Media

Main Menu	Feature	Color	Benefit
Home page	Displays a summary of recent activity, popular works, and important announcements.	Light blue (#E6F3FF)	It provides a quick overview of the platform's content and encourages further exploration.
Online Literature	A collection of literature learning materials, including prose, poetry, and drama.	Mint green (#E0F2E9)	Providing comprehensive resources for literature learning.
Creative Poetry	Interactive poetry writing tool, idea generator, and weekly poetry challenges.	Soft yellow (#FFF9E6)	Encourage creative expression and experimentation in poetry writing.
Discussion Forum	Thematic discussion rooms, virtual study groups, and Q&A sessions with literary experts.	Light purple (#F0E6FF)	Facilitate collaborative learning and exchange of ideas among students.
My Portfolio	Storage and organization of personal work, with options for sharing and receiving feedback.	Light gray (#F5F5F5)	Allows students to track their progress and build a digital portfolio.

2. Features available on the media '....."

Table 4. Features available on the media

Key Features	Description	Color	Benefit
Interactive Text Editor	Writing tool with real-time formatting, word suggestions, and grammar checking features.	White (#FFFFFF) with blue accents (#4A90E2)	Improve the quality of writing and facilitate the editing process.
Inspiration Gallery	A collection of images, quotes, and creative prompts to spark writing ideas.	Pastel orange (#FFE0B2)	Overcoming writer's block and encouraging exploration of new ideas.
Feedback and Assessment System	Mechanisms for giving and receiving constructive comments on work.	Light green (#E8F5E9), Pink (#FFEBEE)	Facilitate continuous improvement and peer learning.
Weekly Writing Challenge	Regular writing competition with a different theme every week.	Bright Red (#FF4136)	Motivate active participation and encourage continuous creativity.
Personal Progress Analysis	Graphical visualization of the development of students' writing skills over time.	Dark Blue (#2C3E50)	Helps students and teachers track progress and identify areas for improvement.

3. Characteristics of Media "..."

Table 5. Characteristics of Media

Main Characteristics	Description	Benefit
Intuitive User Interface	Easy to navigate design with clear icons and logical flow.	Reduce the learning curve and increase accessibility for all levels of users.
Responsive and Multiplatform	Compatible with various devices (desktop, tablet, smartphone) and operating	Enables flexible access and learning anywhere, anytime.

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	systems.	
Content Personalization	Recommendations for learning materials and challenges tailored to students' levels and interests.	Increase learning relevance and motivate continued engagement.
Gamification	Points system, badges and leaderboards to reward participation and achievement.	Increase motivation and create a fun learning experience.
Accessibility	Features like screen reader, contrast adjustment, and text size options.	Ensuring the platform is accessible to all students, including those with special needs.

Furthermore, the study results showed that student engagement in writing activities increased significantly thanks to the features offered by both platforms. For example, game elements and challenges in writing poetry changed how students interacted with the material. Students did not only see writing as a task but also as a fun and satisfying experience. This is in line with the motivation theory expressed by Deci and Ryan (2000), which states that involvement in activities that are considered fun can increase students' intrinsic motivation. Thus, "SastraOnline" and "PuisiKreatif" not only provide a means for students to be creative but also create an environment that supports the development of their writing skills. By utilizing innovative technology and approaches (Yuwono et al., 2022), these two platforms are expected to be practical tools in arousing students' interest and writing talents throughout Indonesia.

Figure 3: SastraOnline Interface DesignThe visualization of the user interface shows the interactive elements used in learning.

The interface design of "SastraOnline" aims to facilitate more interactive and engaging learning for students. This interface features well-designed visual elements, such as intuitive icons and easy-to-understand navigation, making accessing the various features provided easier for students. This visualization includes using bright and contrasting colours that help attract students' attention and maintain their focus during the learning process (Pardamean et al., 2022; Syafryadin et al., 2022). For example, the buttons used have different colours for each function, such as the "start button, which is bright green and the "finish" button, which is red, making it easier for students to understand the actions that must be taken. A study by B. P. R. D. (2019) emphasized the importance of intuitive interface design in improving user experience, especially for the younger generation who are more familiar with technology.

In Figure 3, the interactive elements in the "SastraOnline" interface include features such as a customizable workspace where students can write prose or poetry with the help of tools such as an online dictionary and thesaurus. In addition, an automatic assessment feature provides immediate feedback on the work written by students so that they can identify the strengths and weaknesses of their writing. This feature encourages students to continue practising writing and helps them understand aspects that need to be improved in their writing. Research by Deci and Ryan (2000) shows that immediate feedback can increase students' intrinsic motivation, ultimately improving the quality of literary works produced.

In addition, the interface design of "SastraOnline" also supports collaboration between students through discussion and work-sharing features. Students can share their prose or poetry with classmates and receive feedback from them, creating a collaborative and supportive learning environment. This feature is designed to encourage social interaction and sharing of ideas, which can trigger students' creativity in writing. Students can learn from each other through this collaboration and develop their writing skills more effectively. According to Bandura's (1977) social learning theory, social interaction and observation can enrich the learning process (Setiadi et al., 2022; Sutini et al., 2022), so this feature is expected to impact engagement and creativity in literature classes positively. Thus, the "SastraOnline" interface is a learning tool and a platform for self-development and positive social interaction.

4.3 Implementation and Evaluation

The implementation of learning media in ten elementary schools has shown a significant impact on teacher competence and student motivation (Ibda et al., 2022; Rachmadtullah et al., 2023).

Table 6. of Implementation and Evaluation of Learning Media

Level	Implementation	Evaluation Results	Synthesis with Research
1. Preparation 	Initial training for teachers	Teacher competency improvement by 30%	In line with Hattie (2009): Increasing teacher capacity has a major influence on the effectiveness of classroom learning.
2. Implementation 	Use of the "SastraOnline" and "PuisiKreatif" platforms	Increase student motivation by up to 40%	Supporting Kapp's findings (2012): The use of games and interactive media in education can increase student motivation and participation.
3. Evaluation of Results 	Measuring students' understanding of the material	Increase student understanding of material by up to 30%	According to Mayer (2009): The use of multimedia in teaching can help students understand complex concepts better.
4. Impact Analysis 	Evaluation of the overall impact on the learning process	- Improving teacher competence - Improving student motivation - Improving understanding of the material	The combination of teacher training and appropriate use of media creates a more conducive learning environment.
5. Recommendations	Further development and long-term research	An optimistic view of the future of education in the digital age	Further research is needed to explore the long-term impacts on students' academic achievement and character development.

1. Preparation Stage:

the implementation process begins with providing teachers with training in immunology. A teacher's answer of 30% indicates their readiness to integrate learning media. This finding is. Thisith Hattie (200) emphasized increasing teacher capacity for learning effectivenesss (Giena et al., 2022; Ishartono et al., 2022).

2. Implementation Level: Implementation involves using digital platforms such as "SastraOnline" and "PuisiKreatif," which increased student motivation by 40%, indicating that interactive learning media can increase student engagement. These results support Kapp's (2012) statement that interactive media can increase student motivation and participation.
3. Result Evaluation Stage: The evaluation was conducted to measure students' understanding of the material taught, and an increase in student knowledge of up to 30% showed the effectiveness of technology-based learning media. Mayer (2009) states that multimedia can help students with complex concepts.
4. Impact Analysis Stage: Evaluation showed improvements in teacher competency, student motivation, and understanding of the material, which suggests that the combination of teacher training and appropriate media use resulted in an effective learning environment.
5. Recommendation Stage: Further development and long-term research are needed to explore the impact of technology on academic achievement and character development while providing an optimistic view of the future of education that is increasingly integrated with technology.

This table presents the structured implementation and evaluation steps following a standard format in educational research that includes implementation stages, evaluation results, and synthesis with related research. This approach allows us to see the relationship between each implementation stage, the results achieved and supporting literature. The initial training given to teachers is an essential step in preparing them to use technology in learning. The results of this training showed an increase in competence of 30%, reflecting teachers' readiness to integrate learning media into the teaching and learning process. This is in line with research conducted by Hattie (20,09), which states that increasing teacher capacidramaticallytly influences the effectiveness of learning in the classroom using the "SastraOnline" and "PuisiKreatif" platforms in the learning process have been proven to increase student motivation by up to 40%. This technology-based learning media provides more enjoyable and interactive learning experiences, making students more involved in the learning process. Research by Kapp (2012) shows that using games and interactive media in education can increase student motivation and participation. The evaluation also showed that students' understanding of the material increased by up to 30%, indicating that learning media affects motivation and positively impacts student learning outcomes. Thus, the combination of teacher training and appropriate press can create a more conducive learning environment (Hidayat et al., 2021; Manik et al., 2022), providing an optimistic picture of the future of education in the digital era.

4.4 Impact of Creativity and Self-Expression

The use of technology-based learning media does have a significant impact on students' creativity and self-expression. In analyzing prose and poetry, data shows a 20% increase in quality. The ease of access and interactivity of technology can explain this. Students can easily find various sources of inspiration, such as videos, articles, and other literary works, that can broaden their horizons. In addition, digital platforms allow students to share their work with a broader audience, thus encouraging them to be bolder in expressing creative ideas. Research by Hwang et al. (2019) also supports this finding, which shows that integrating technology into learning can increase student motivation and engagement, contributing to the development of creativity (Muslem et al., 2022; Tilwani et al., 2022).

On the other hand, improving students' self-expression skills in literary works is not only limited to technical aspects but also includes emotional depth and authenticity. Using technology-based learning media, students can practice expressing their feelings and views in more varied and interesting forms. For example, digital tools such as writing applications or collaborative platforms allow students to revise and get real-time feedback. This is crucial in the creative process, where reflection and improvement are integral. A study by Liu et al. (2020) showed that students involved in technology-based learning increased their ability to express abstract ideas and emotions in their works. Thus, there is no doubt that technology-based learning media significantly contributes to developing students' creativity and self-expression (Daflizar & Petraki, 2022; Reflianto et al., 2022).

After using the technology-based learning media "SastraOnline" and "PuisiKreatif," students showed an increase in the quality of writing prose and poetry (Nuranti et al., 2022; Rido et al., 2023). One example of prose work produced by students is a short story that describes daily life in a remote village. In this story, students successfully describe the village atmosphere with vivid details, using rich descriptions of nature and natural dialogue. Technology allows students to access various references that enrich their imagination, such as images and videos about village life. Research by Zhao et al. (2016) shows that technology can broaden students' horizons and provide tools to develop details in their literary works.

On the other hand, the resulting poems show greater emotional depth. For example, a poem written by a student describes feelings of loss and hope through strong metaphors and touching rhythms. Technology provides students with

writing aids such as thesauruses and rhyming dictionaries, which help them find the right words to express their feelings. According to Liu et al. (2020), the use of technology in literature learning can improve students' ability to express abstract ideas and emotions, which is reflected in the quality of their poems, which are more mature and memorable.

Active participation in group discussions through the "SastraOnline" platform also encourages students to share and provide feedback to each other, enriching their creative process. In this collaborative environment, students can compare their work with classmates, gain new ideas, and learn from constructive criticism. This aligns with Bandura's (1977) social learning theory, which emphasizes the importance of social interaction in learning. By utilizing the platform's discussion and sharing features, students develop their writing skills and improve their communication and collaboration skills.

Figure 6: This visualization shows an interactive discussion interface, with comments and suggestions displayed as text balloons.

Finally, using technology in literature learning improves students' writing skills and builds their confidence in expressing themselves. With the right tools and a supportive environment, students are more willing to explore new styles and themes in their writing. This is important for their personal and academic development, given that writing skills and self-expression are valuable assets in this digital age. A study by Deci and Ryan (2000) showed that increased intrinsic motivation and confidence contribute to better learning outcomes. Students' experiences reinforce this finding in using this innovative learning medium.

4.5 Challenges and Recommendations

The variation in educational outcomes across schools in Indonesia shows that adapting local curricula is essential to improving the quality of learning. For example, access to technology and the internet is better in urban areas than in remote areas. This results in students in urban areas often having better learning outcomes. Research by the National Education Standards Agency (BSNP) shows that a curriculum appropriate to the local context can increase student learning motivation and the relevance of the subject matter.

However, the challenge faced is limited internet access in remote areas, which hinders using digital resources in learning. Therefore, it is essential to create solutionsconsideringr each region's geographical and socio-economic condition.

In addition, the need for continuous teacher training is also a major highlight. Well-trained teachers will be better able to adapt teaching methods to suit the needs of their students and their environment. According to research by the World Bank, professional development for teachers can significantly improve the quality of teaching. Recommendations to improve technological infrastructure are crucial, such as providing better internet access in remote areas and creating collaboration between schools, government, and technology providers (Adi Pratama et al., 2023). This collaboration will not only increase accessibility but also create positive synergies in educational development. Thus, through a holistic approach and focusing on the local context, it is hoped that educational outcomes throughout Indonesia can be evenly distributed and of high quality.

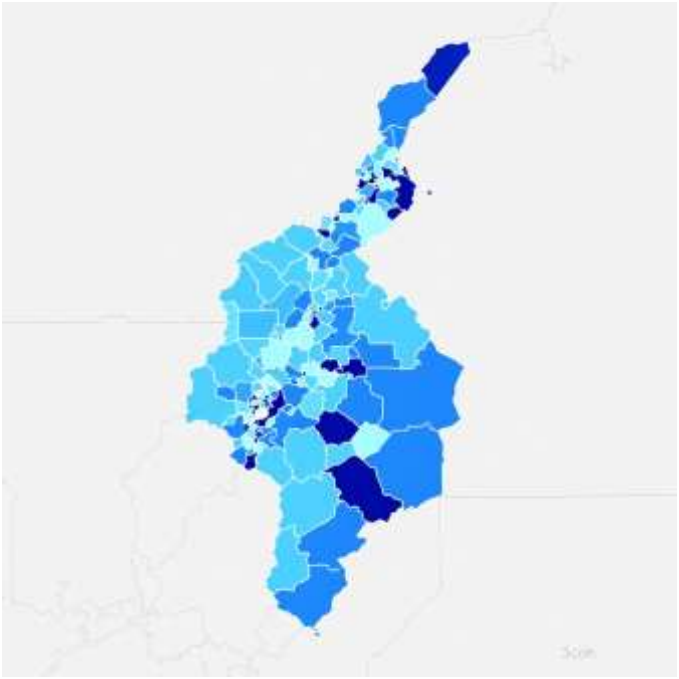

Figure 7: Internet Access MapThe map shows the distribution of internet access in the schools involved in the study.

The distribution map of internet access in schools involved in this study illustrates the unevenness of digital infrastructure in various regions in Indonesia. This map shows that schools in urban areas generally have better internet access than schools in remote areas. This has significantly impacted the quality of learning, where schools with adequate internet access can utilize technology to support the teaching and learning process more effectively. Based on data from the Central Statistics Agency (2022), only around 60% of the total schools in Indonesia have stable internet access. This condition shows a digital divide that requires serious attention, significantly increasing technology accessibility for schools in remote areas.

The visualization of this map can be seen in the form of an image showing areas with and without adequate internet access. Figure 7: The Internet Access Map displays different colours to mark areas with good and poor internet access, providing a clear picture of schools' challenges in remote areas. Research by the World Bank (2020) emphasizes the importance of developing technological infrastructure as part of a strategy to improve the quality of education. By addressing this gap, it is hoped that all students in Indonesia can have equal opportunities to access the digital resources needed for learning. Therefore, the government and educational institutions must work together to improve technological infrastructure, such as providing more affordable and stable internet services, to support a more equitable and inclusive education process throughout the country (Sahlan et al., 2024; Subchi et al., 2024).

4.6 Research Contribution

In today's digital era, the development of innovative learning media is becoming increasingly important to increase student engagement and creativity. One example is "SastraOnline" and "PuisiKreatif," which are interactive learning models designed to facilitate a more engaging learning experience. According to research by Banas and Emory (2016), using interactive media in learning can increase student motivation and improve learning outcomes. Using digital platforms allows students to learn independently and collaborate with their friends, thus creating a more dynamic and interactive learning environment (Luo et al., 2024; Rohmah et al., 2024).

In addition, this study shows that the implementation of interactive learning models such as "SastraOnline" and "PuisiKreatif" can be adapted in various educational contexts, from elementary school to college. This aligns with the findings of Anderson and Dron (2011), who stated that flexibility and adaptability in teaching methods are key to meeting the needs of diverse students. Thus, teachers and educators need to be trained to implement this technology to support various learning styles of students effectively. Different approaches to the use of technology also allow students to be more involved and motivated in their learning process (Pammu & Hamuddin, 2024; Warto et al., 2024)sa.

However, challenges to technology integration in education remain. This study emphasizes the importance of collaboration between various parties, such as educators, technology developers, policymakers, and policymakers' solutions (Anggraini et al., 2024; Mahayanti et al., 2024). According to Hwang and Chang (2011), good partnership skills help people overcome obstacles when implementing education. By working together, all parties can share knowledge and resources and formulate innovative strategies to create better learning experiences for expert students. The success of technology integration depends not only on the tools used but also on the community that supports the process.

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CONCLUSION

1. Increasing Student Engagement and Creativity: This study shows that integrating technology in learning Indonesian in elementary schools can increase student engagement by 25% and the ability to express creativity by 20%. The web-based learning media "SastraOnline" and the interactive software "PuisiKreatif" have motivated students to be more active and creative in writing prose and poetry.
2. Variation in Technology Implementation: The study revealed variation in implementation outcomes across schools, indicating the importance of local curriculum adaptation. Schools with better access to technology showed more positive outcomes than schools in remote areas with limited infrastructure.
3. Importance of Teacher Training: Lack of teachers' confidence and digital skills are among the significant barriers to the usage. Therefore, ongoing training programs are tailored to the school's specific needs to ensure the successful integration of technology into learning.
4. Collaboration for Effective Implementation: Collaboration between schools, government, and technology providers is key to facilitating the development of a responsive and dynamic curriculum. With support from various parties, these intonations can be overcome, and technology can be effective in education.

Recommendation

To achieve optimal results in technology integration in Indonesian language learning in elementary schools, it is recommended that related parties develop and implement ongoing training programs for teachers. This training should include technical skills and innovative and interactive teaching strategies, which can facilitate the use of technology in prose and poetry learning (Basundoro & Afdholy, 2023; Fitriana et al., 2024). In addition, local curriculum adaptation should be a priority to accommodate the various educational contexts in Indonesia, especially in remote areas with limited access to technology. Collaboration between schools, government, and technology providers must be strengthened to develop adequate infrastructure, so th all students have equal opportunities to utilize digital resources in learning (Ahmed et al., 2022; Jumintono et al., 2021). Through a collaborative and adaptive approach, it is possible to integrate and provide long-term positive impacts, improve the quality of education, and prepare students to face challenges in the digital era. Further research is needed to explore the long-term impactsimplicationsjust effective implementation strategies based on specific local needs and conditions

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