



Collaborative Learning through Digital Writing: Peer Editing and Feedback in EFL Contexts

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ABSTRACT

This study investigated the impact of integrating digital writing tools into pre-service EFL teacher training at Universitas Muhammadiyah Enrekang. The research aimed to understand the effectiveness of this approach in enhancing writing skills, fostering creativity, and promoting engagement. A mixed-methods approach was employed, collecting data through digital essay assessments, reflective journals, a focus group interview, and thematic analysis. The findings revealed strong overall performance in digital essay writing, particularly in content and multimodal features. Qualitative data highlighted increased engagement and motivation, significant skill development, and the crucial role of peer collaboration. Challenges included initial technical difficulties and time management. Six key themes emerged: engagement and motivation, challenges and solutions, skill development, peer collaboration, practicality of digital tools, and creativity and expression. The study demonstrates the potential of digital writing to enhance EFL teacher training, fostering creativity and improving writing skills. However, successful implementation requires adequate training, resource allocation, and careful curriculum design. While this study highlights the benefits of digital writing for pre-service EFL teacher training, it has certain limitations. First, the small sample size limits the generalizability of findings to a broader population. Second, technical challenges, such as internet access and familiarity with digital tools, may have influenced participants' engagement. Lastly, the study was conducted over a limited timeframe, preventing an assessment of the long-term impact of digital writing on writing proficiency. Future research should examine these aspects by conducting longitudinal studies, exploring diverse digital writing platforms, and assessing scalability across different educational settings. This study contributes valuable insights into the effective integration of digital writing into EFL teacher education.

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Introduction

In the era of rapid technological advancements, the integration of digital tools into education has become increasingly significant. Writing, as a fundamental skill in language acquisition, plays a pivotal role in communication, academic success, and professional development (Anaktototy et al., 2024; Bora, 2023; Wu et al., 2020). Over the past decades, traditional approaches to teaching writing have faced criticism for their inability to engage students effectively, particularly in English as a Foreign Language (EFL) context (Alshammari, 2020; Yu & Yang, 2021). Consequently, educators and researchers have been exploring innovative methodologies to enhance writing instruction. Among these, digital writing has emerged as a promising approach that incorporates Information and Communication Technology (ICT) to make the learning process more interactive, engaging, and relevant to students' lives (Atabek, 2020; DelVecchio, 2022).

This study aligns with previous findings on the benefits of digital writing, such as increased engagement and multimodal creativity (Marzuki et al., 2023; Ruiz-Rojas et al., 2024). However, unlike earlier studies that focused primarily on student outcomes, this research provides a novel contribution by examining pre-service teachers' perceptions and readiness to implement digital writing in their future classrooms. The findings suggest that while digital tools enhance collaboration and creativity, their effectiveness depends on adequate training and institutional support. This contrasts with studies by Jabri & Ismail (2021) that emphasized technological accessibility as the primary barrier, indicating that pedagogical preparation is equally crucial. Studies have demonstrated that digital writing platforms (Bonina et al., 2021; Decuypere et al., 2021), such as Storyjumper, enable students to produce multimodal compositions, combining text with images, videos, and other media (Amin & Sundari, 2020; Nazari et al., 2021). This approach not only aligns with the

preferences of digitally literate learners but also facilitates the development of higher-order thinking skills (Mat et al., 2023; Mejia & Sargent, 2023; Venkatraman et al., 2022). Furthermore, digital writing has been found to enhance learners' motivation and self-efficacy, as it provides opportunities for immediate feedback (Jabri & Ismail, 2021), peer collaboration, and publication of work in accessible formats (Jiang & Eslami, 2022). Despite these benefits, the adoption of digital writing remains limited, particularly in EFL teacher education programs in developing regions, highlighting the need for further exploration and implementation.

While the general advantages of digital writing are well-documented, specific challenges persist in its integration into EFL instruction. Many students struggle with writing due to limited vocabulary, lack of exposure to authentic writing contexts, and low confidence in their abilities (Taye & Mengesha, 2024). Additionally, traditional methods of teaching writing often fail to address these issues, resulting in students perceiving writing as a tedious and irrelevant task (Ruiz-Rojas et al., 2024). These challenges are particularly evident in EFL contexts, where students must navigate linguistic and cultural barriers while developing their writing skills. Addressing these challenges requires a shift from conventional product-based approaches to more process-oriented and technology-enhanced methodologies.

The English Language Education program at Universitas Muhammadiyah Enrekang faces similar challenges in preparing pre-service teachers to teach writing effectively. A survey conducted in 2024 involving 50 pre-service teachers revealed that 78% of respondents rated their own writing skills as "inadequate" for professional teaching contexts. Additionally, 64% reported having minimal experience with digital writing tools, citing a lack of institutional resources and training as primary barriers. These findings highlight a significant gap in the program's ability to prepare student teachers for the demands of 21st-century classrooms, where digital

literacy is increasingly essential. This gap underscores the urgency of integrating digital writing into the curriculum to equip future teachers with the skills and confidence needed to foster writing development among their students.

As a general solution, incorporating ICT into writing instruction has been widely recommended. Digital writing, in particular, offers a practical and effective approach to addressing the limitations of traditional methods. By leveraging digital tools, educators can create engaging, student-centered learning environments that promote active participation (Lee et al., 2024; Nguyen et al., 2024) and (Ismail et al., 2023). Digital platforms also provide a scaffolded writing process, enabling students to plan, draft, revise, and publish their work systematically (LeBlanc et al., 2023; Moorhouse & Beaumont, 2020). This iterative process not only improves the quality of writing but also encourages students to view writing as a meaningful and enjoyable activity.

A more specific solution can be drawn from existing literature, which highlights the use of digital storytelling as a powerful tool for enhancing writing instruction. Digital storytelling combines narrative writing with multimedia elements, fostering creativity and critical thinking (Ismail et al., 2024). Studies have shown that digital storytelling platforms, such as Storyjumper, can significantly improve students' writing skills by making the process more interactive and visually appealing (Ezeh, 2020; Kazazoglu & Bilir, 2021; Made & Murtini, 2023; Nur Habibah et al., 2023). Additionally, peer editing and collaborative writing activities enabled by digital tools have been found to enhance students' language accuracy and coherence, addressing common challenges in EFL writing (Jabri & Ismail, 2021; Jiang & Eslami, 2022; Pitukwong & Saraiwang, 2024).

Several studies have examined the effectiveness of digital writing in various educational contexts. For instance, research by (Aktaş & Akyol, 2020) demonstrated that digital writing tools increase students'

engagement and motivation, while Castillo-Cuesta (2020) and Vnucko & Klimova (2023) highlighted their potential to improve vocabulary and grammar. However, there remains a gap in the literature regarding the application of digital writing in EFL teacher education programs, particularly in developing regions such as Indonesia. This gap underscores the need for context-specific research to explore how digital writing can be effectively integrated into teacher training curricula to address the unique challenges faced by pre-service teachers.

The present study aims to address this gap by exploring the use of digital writing as an instructional approach in the English Language Education program at Universitas Muhammadiyah Enrekang. Specifically, it investigates the impact of digital writing on pre-service teachers' motivation, collaboration, and writing quality. The novelty of this study lies in its focus on the integration of digital storytelling tools into a teacher education program, providing insights into their potential to enhance writing instruction in resource-constrained settings. By examining the experiences and outcomes of pre-service teachers, this study seeks to contribute to the growing body of knowledge on digital writing and inform the development of innovative pedagogical practices for EFL education.

Methodology

Research Design

This study employs a qualitative case study approach to explore the use of digital writing as an instructional strategy in EFL teacher education. A case study is particularly suitable for this research because it allows for an in-depth investigation of participants' experiences and interactions with digital writing tools in an authentic educational setting (Martinsuo & Huemann, 2021; Tasci et al., 2020). Unlike experimental methods that isolate variables, this approach captures the complexities of digital writing implementation in real-life contexts. Additionally, thematic analysis

following Kiger & Varpio's (2020) six-step framework was used to systematically analyze qualitative data, ensuring consistency and reliability in identifying key themes. Given the focus on understanding the experiences of pre-service teachers in adopting digital writing, the case study approach is well-suited to provide in-depth insights and contextual understanding.

Participants

This study involved ten prospective teachers from the English Language Education program at Universitas Muhammadiyah Enrekang, selected through purposive sampling to ensure representativeness of diverse experiences with digital writing tools. Although the sample size is small, this approach aligns with qualitative research principles that prioritize depth over breadth. To enhance validity, data triangulation was employed, incorporating multiple sources such as digital essays, reflective journals, and focus group discussions. Future studies may expand participant numbers to enhance generalizability. Participants were selected

through purposive sampling to ensure they represented the common challenges and opportunities associated with teaching writing in an EFL context. Of the ten participants, seven were female, and three were male, with diverse linguistic and cultural backgrounds that reflected the student population at the university.

Research Setting

The study was conducted within the course titled "Writing Project," a two-credit course designed to enhance the pedagogical competencies of pre-service teachers. This course included a digital writing project using the [Storyjumper](#) platform, an online tool for creating digital books. The research setting provided a structured environment where participants could engage with digital tools to compose, edit, and publish various types of essays, including narrative, expository, descriptive, and persuasive texts. Figure 1 systematically outlines the main components, from the course context to the activities carried out using the [Storyjumper](#) platform.

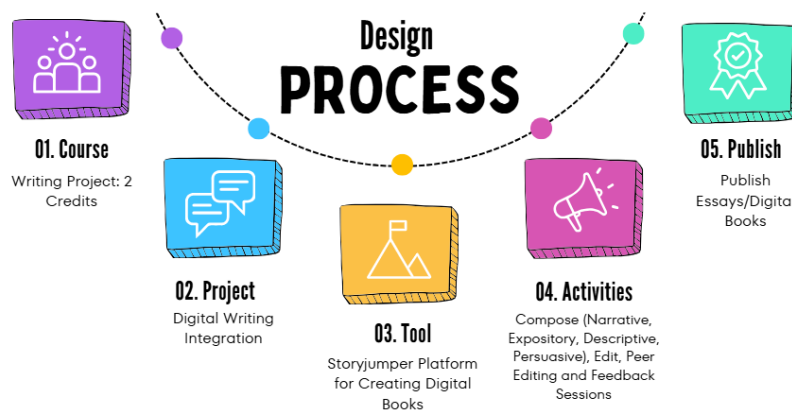


Figure 1: Components of the Digital Writing Project in the EFL Course

Data Collection

Data collection for this study employed a mixed-methods approach, utilizing multiple data sources to ensure data triangulation and enhance the validity and reliability of the findings. This strategy aimed to provide a comprehensive understanding of the pre-service teachers' experiences with

digital writing, capturing both quantitative and qualitative aspects of their learning process. The primary data sources included: participants' digital essays created using the Storyjumper platform, weekly reflective journal entries documenting their experiences and reflections, and a focus group interview conducted at the conclusion

of the project to gather collective perspectives. This multifaceted approach allowed for a robust analysis, minimizing the limitations of relying on a single data source and maximizing the richness of the insights obtained. The specific methods used for each data source are detailed in the following subsections. The integration of these diverse data streams facilitated a more nuanced and comprehensive interpretation of the research findings, strengthening the overall validity and trustworthiness of the study.

Student Work

The participants’ digital essays created using [Storyjumper](#) served as the primary data source. These essays provided insights into the participants’ writing processes, language use, and creativity. The essays were analyzed for their organization, content, grammar, and multimodal features, such as the integration of images and text.

Reflective Journals

Participants were required to maintain reflective journals throughout the project. These journals allowed them to document their experiences, challenges, and perceptions of digital writing. Reflective journal entries were analyzed thematically to identify recurring patterns and insights

related to motivation, collaboration, and learning outcomes.

Focus Group Interviews

A focus group interview was conducted at the end of the project to gather participants’ collective perspectives on the use of digital writing in their learning. The interview questions focused on their experiences with the [Storyjumper](#) platform, the perceived impact on their writing skills, and their views on the practicality of digital writing as an instructional strategy. The interview was audio-recorded and transcribed for thematic analysis.

Data Analysis

Thematic analysis was used to analyze the qualitative data collected from student work, reflective journals, and focus group interviews. Kiger & Varpio (2020) and Naeem et al. (2023) six-step framework guided the analysis process, which included familiarizing with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the final report. This systematic approach ensured a comprehensive understanding of the data and its alignment with the research objectives.

Table 1: Rubric for Digital Essay Assessment

Criterion	Description	Weight (%)	Scoring Scale (1-5)
Organization	Logical flow, paragraph transitions, and overall essay structure	20%	1: Poor, 2: Fair, 3: Good, 4: Very Good, 5: Excellent
Content	Originality, relevance to the topic, and depth of analysis	30%	1: Poor, 2: Fair, 3: Good, 4: Very Good, 5: Excellent
Grammar and Language Use	Accuracy in grammar, punctuation, and sentence structure	25%	1: Poor, 2: Fair, 3: Good, 4: Very Good, 5: Excellent
Multimodal Features	Effective use of images, layout, and visual storytelling	25%	1: Poor, 2: Fair, 3: Good, 4: Very Good, 5: Excellent

Each criterion is scored on a scale from 1 to 5. The weighted score for each criterion is calculated by multiplying the score by the criterion's weight. The total score is the sum of all weighted scores, with a maximum possible score of 100.

RESULT AND DISCUSSION

This section presents the findings from the digital writing project conducted with pre-service teachers in the English Language Education program at Universitas Muhammadiyah Enrekang. The results are

organized into subsections corresponding to the data sources: Digital Essays, Reflective Journals, Focus Group Interviews, and the Thematic Analysis Framework. Each subsection provides a detailed analysis of the data, highlighting key themes and insights. The results are further discussed in the context of existing literature, with implications and limitations addressed.

Digital Essays

The analysis of digital essays produced by the participants revealed significant improvements in writing skills, particularly in terms of organization, content, and multimodal storytelling. As shown in **Table 2 and table 3**, the majority of students scored high in content and multimodal features, indicating their ability to integrate text with images and other design elements effectively. This aligns with (DelVecchio, 2022; Nazari et al., 2021), who emphasized the role of digital platforms in enhancing multimodal composition skills.

Table 2 showcases a diverse collection of digital essays created by the participants, each reflecting unique themes and storytelling techniques. The essays, spanning various genres such as narrative, fantasy, fable, and inspirational stories, demonstrate the participants' ability to convey meaningful messages through their writing.

For instance, "Adventure in the Magic Forest" (*Petualangan di Hutan Ajaib*) is a narrative piece that emphasizes themes of courage, friendship, and environmental conservation. The essay effectively uses illustrations of forest scenes to bring the story to life, engaging readers with vivid imagery. Similarly, "The Little One Who Never Gives Up" (*Si Kecil yang Tak Pernah Menyerah*) tells a narrative of perseverance and resilience, enhanced by character sketches and motivational quotes that inspire and motivate the audience.

Table 2: Digital Essays (Student Work)

Student ID	Essay Title	Genre	Key Themes/Values Taught	Multimodal Features
S1	"Adventure in the Magic Forest" (<i>"Petualangan di Hutan Ajaib"</i>)	Narrative	Courage, friendship, environmental conservation	Illustrations of forest scenes
S2	"The Little One Who Never Gives Up" (<i>"Si Kecil yang Tak Pernah Menyerah"</i>)	Narrative	Perseverance, resilience	Character sketches, motivational quotes
S3	"The Mystery of the Door of Time at School" (<i>"Misteri Pintu Waktu di Sekolah"</i>)	Fantasy	History, learning from the past	Time-travel imagery, historical references
S4	"The Story of Friendship Between the Mouse Deer and the Crocodile" (<i>"Kisah Persahabatan Antara Si Kancil dan Si Buaya"</i>)	Fable	Friendship, respect, cooperation	Animal characters, moral of the story
S5	"The Heroic Child from a Remote Village" (<i>"Anak Pahlawan dari Desa Terpencil"</i>)	Narrative	Heroism, problem-solving	Village setting, heroic actions
S6	"Small Steps Towards Big Dreams" (<i>"Langkah Kecil Menuju Impian Besar"</i>)	Inspirational	Ambition, hard work	Dream imagery, success milestones
S7	"Magical Series in Library Books" (<i>"Rangkaian Ajaib di Buku Perpustakaan"</i>)	Narrative	Literacy, discovery through reading	Books and library visuals
S8	"Treasure Behind Kindness" (<i>"Harta Karun di Balik Kebajikan"</i>)	Narrative	Kindness, positive outcomes of good deeds	Treasure imagery, acts of kindness
S9	"Friends from the Land of the Rainbow" (<i>"Sahabat dari Negeri Pelangi"</i>)	Narrative	Acceptance, diversity	Rainbow motifs, diverse characters
S10	"The Star Lost in the Sky" (<i>"Bintang yang Hilang di Langit"</i>)	Narrative	Courage, overcoming fears	Starry sky imagery, problem-solving

In the realm of fantasy, "The Mystery of the Door of Time at School" (*Misteri Pintu*

Waktu di Sekolah) explores themes of history and learning from the past. The story is

enriched with time-travel imagery and historical references, which add depth and intrigue to the narrative. On the other hand, "The Story of Friendship Between the Mouse Deer and the Crocodile" (*Kisah Persahabatan Antara Si Kancil dan Si Buaya*) is a fable that imparts lessons on friendship, respect, and cooperation, brought to life through charming animal characters and a clear moral message.

"The Heroic Child from a Remote Village" (*Anak Pahlawan dari Desa Terpencil*) is another narrative that highlights heroism and problem-solving, set against a village backdrop with depictions of heroic actions. This is complemented by "Small Steps Towards Big Dreams" (*Langkah Kecil Menuju Impian Besar*), an inspirational tale of ambition and hard work, illustrated with dream imagery and success milestones that encourage readers to pursue their aspirations.

"Magical Series in Library Books" (*Rangkaian Ajaib di Buku Perpustakaan*) promotes literacy and discovery through reading, using books and library visuals to captivate young audiences. In contrast, "Treasure Behind Kindness" (*Harta Karun di Balik Kebajikan*) focuses on kindness and the positive outcomes of good deeds, employing treasure imagery to symbolize the rewards of a compassionate heart.

"Friends from the Land of the Rainbow" (*Sahabat dari Negeri Pelangi*) addresses themes of acceptance and diversity, with rainbow motifs and diverse characters that celebrate inclusivity. Lastly, "The Star Lost in the Sky" (*Bintang yang Hilang di Langit*) is a narrative that teaches courage and overcoming fears, using starry sky imagery to underscore the journey of facing and resolving challenges.

Overall, the digital essays reflect the participants' proficiency in integrating multimodal features to enhance storytelling, effectively communicating key themes and values to their audience. This integration of text and visual elements aligns with (DelVecchio, 2022; Gao, 2023; Kustini et al., 2020; Weninger, 2020), who highlighted the role of digital platforms in enhancing multimodal composition skills.

Understanding the distribution of scores on the digital essay assessment is crucial for interpreting the results. Table 3 provides descriptive statistics for 10 participants, detailing the mean, standard deviation, and standard error of the mean for each assessment criterion (Organization, Content, Grammar and Language Use, and Multimodal Features) and the total score. These data will be used to further explore the relationship between digital writing and student performance.

Table 3: Descriptive Statistics of Digital Essay Assessment Scores

Variable	N	Mean	Std. Deviation	Std. Error Mean
Organization	10	17.10	.994	.312
Content	10	25.40	1.897	.600
Grammar and Language Use	10	21.50	1.080	.342
Multimodal Features	10	21.90	1.370	.433
Total Score		85.90		

The mean scores for the digital essay assessment provide valuable insights into the participants' overall performance across various criteria. The mean score for organization is 17.10, indicating that, on average, participants demonstrated a level of logical flow and structure in their essays. This suggests that the digital writing project supported students in organizing their

thoughts and ideas. In terms of content, the mean score is 25.40, reflecting the originality and depth of ideas presented in the essays. This score underscores the participants' ability to engage with the writing prompts and produce meaningful compositions. The integration of digital tools appears to have fostered an environment conducive to exploring diverse ideas. The mean score for

grammar and language use is 21.50, showing that participants maintained a level of accuracy in syntax and vocabulary. This suggests that the digital writing process did not compromise linguistic precision. Multimodal features received a mean score of 21.90, highlighting the use of images and design elements to enhance storytelling. This demonstrates the participants' proficiency in leveraging digital platforms to create engaging narratives. Overall, the mean total score is 85.90, indicating a level of performance across all assessed criteria. This underscores the effectiveness of digital writing as an instructional strategy in EFL contexts. The results suggest that digital tools can enhance traditional writing instruction by fostering creativity, engagement, and critical thinking. The essays

demonstrated a logical flow of ideas and coherent structure, reflecting the participants' understanding of narrative techniques. The use of images and layout design enhanced storytelling, making the essays more engaging. This finding supports Atabek (2020); Hidayah et al. (2021); Zhao (2023), who noted the motivational impact of digital writing on learners.

Reflective Journals

Analysis of reflective journals offered valuable qualitative insights into preservice teachers' experiences with the digital writing project, complementing quantitative data from previous essay assessments. Systematic examination of journal entries revealed recurring themes that explained the learning process and its impact on participants.

Table 4: Reflective Journal Entries

Student ID	Week	Reflection Summary	Key Themes/Insights
S1	1	Enjoyed using Storyjumper; found it intuitive. Faced initial challenges with designing pages.	Initial excitement, design challenges
S2	1	Felt overwhelmed by the digital tools but appreciated the creative freedom.	Overwhelm, creative freedom
S3	2	Collaborating with peers was helpful; received valuable feedback on story structure.	Peer collaboration, feedback benefits
S4	2	Struggled with integrating images effectively, but learned new techniques through peer suggestions.	Image integration, peer learning
S5	3	Noticed improvement in writing skills; digital format encouraged more revision and editing.	Skill improvement, revision practices
S6	3	Motivated by seeing others' work; inspired to experiment with different narrative styles.	Motivation, narrative experimentation
S7	4	Faced time management issues; balancing digital and traditional writing tasks was challenging.	Time management, task balancing
S8	4	Felt more confident in using digital tools; appreciated the multimodal storytelling aspect.	Increased confidence, multimodal storytelling
S1	5	Reflected on the positive impact of peer feedback on final essay quality.	Peer feedback, essay quality
S2	5	Realized the importance of planning and organization in digital projects.	Planning, organization

Engagement and Motivation

The initial entries (Week 1) reveal a dichotomy in participant responses. While S1 expressed immediate enjoyment and ease of use with Storyjumper, S2 felt overwhelmed by the digital tools. This highlights the importance of providing adequate

introductory training and support to ensure all participants feel comfortable navigating the platform. The contrasting experiences underscore the need for differentiated instruction to cater to varying levels of technological proficiency. The subsequent weeks, however, show a consistent increase

in engagement and motivation, particularly after peer interaction (Weeks 2-3). S6's motivation, spurred by observing peers' work, exemplifies the positive influence of a collaborative learning environment, aligning with the findings of Zhao (2023) on the interactive nature of digital writing platforms.

Challenges and Solutions

Several challenges emerged, primarily related to technical aspects of the platform. S1 and S2's initial struggles with page design highlight the need for more comprehensive tutorials or workshops on Storyjumper's functionalities. S4's difficulties with image integration underscore the importance of providing guidance on multimodal design principles. However, the journals also demonstrate how these challenges were overcome. S4's successful integration of images after receiving peer suggestions exemplifies the effectiveness of peer learning and collaborative problem-solving, supporting (Jiang & Eslami, 2022; Pitukwong & Saraiwang, 2024) emphasis on social learning environments.

Skill Development

The reflective journals provide strong evidence of skill development. S5 explicitly notes improvements in writing skills, particularly in organization and revision practices. The iterative nature of digital writing, facilitated by the platform's ease of editing and revision, appears to have fostered a more process-oriented approach to writing, leading to higher-quality outputs. P6's experimentation with different narrative styles demonstrates the platform's capacity to encourage creative exploration and stylistic development. This aligns with the findings from the digital essay analysis, where many participants demonstrated strong multimodal storytelling skills (Ezeh, 2020).

Time Management

A notable challenge, highlighted in Week 4 by S7, was time management. Balancing digital and traditional writing

tasks proved demanding for some participants. This suggests the need for careful consideration of workload and project timelines when integrating digital writing into existing curricula. Future implementations might benefit from incorporating time management strategies into the course design.

The reflective journals offer a rich tapestry of experiences, revealing both the benefits and challenges of integrating digital writing into EFL teacher education. The consistent emergence of themes related to engagement, skill development, and the importance of peer collaboration strongly supports the efficacy of this approach. However, the challenges related to initial technical difficulties and time management highlight the need for careful planning, adequate training, and ongoing support to maximize the effectiveness of digital writing projects. The data suggests that while the digital platform fostered creativity and skill development, careful consideration of pedagogical support is crucial for successful implementation.

Focus Group Interviews

The focus group interview provided valuable qualitative data, offering a collective perspective on the pre-service teachers' experiences with the digital writing project. Analysis of the interview transcript reveals key themes that complement and contextualize the findings from the digital essays and reflective journals.

Positive Perceptions of Digital Tools

The overall impression of using digital tools for essay writing was overwhelmingly positive. Participants consistently highlighted increased engagement and creative possibilities. The user-friendly interface of Storyjumper was specifically praised, enabling intuitive navigation and facilitating visual storytelling. This aligns with the findings from the reflective journals, where several participants expressed similar sentiments regarding the platform's ease of use and its capacity to enhance creativity (Raymundo, 2020; Romadhon & Heriyawati,

2023). The positive feedback on the platform's user-friendliness suggests that the choice of tool was appropriate for the target audience and contributed to the overall positive experience.

Impact on Writing Process

The Storyjumper platform significantly influenced the writing process in two key ways: it encouraged visual storytelling and iterative revisions. The ability to easily integrate images and design elements fostered a more multimodal approach to writing, enhancing the overall engagement and impact of the essays. The ease of revision, a key feature of the platform, facilitated a more iterative writing process, allowing participants to refine their work more effectively. This aligns with the findings from the reflective journals, where several participants noted improvements in their writing skills due to the iterative nature of the digital writing process (Atabek, 2020).

Peer Collaboration and Feedback

The participants overwhelmingly valued peer collaboration and feedback. They recognized the benefits of diverse perspectives and constructive criticism in improving their essays. This finding strongly supports Jiang & Eslami (2022); Raymundo, (2020); Ruiz-Rojas et al. (2024), who emphasized the benefits of collaborative learning in digital environments. The positive impact of peer feedback is further corroborated by the reflective journals, where several participants specifically mentioned the positive influence of peer feedback on their final essay quality. The focus group interview data highlights the importance of incorporating collaborative activities into digital writing projects to maximize learning outcomes.

Practicality for Classroom Teaching

The findings indicate that digital writing is a promising instructional strategy for future EFL classrooms. To facilitate its integration, teacher education programs should incorporate hands-on training with digital writing tools, emphasizing not only

technical proficiency but also pedagogical strategies for scaffolding student learning. Additionally, curriculum developers should design lesson plans that embed digital writing activities within communicative and process-based writing frameworks. This approach ensures that digital writing complements rather than replaces traditional writing instruction, creating a balanced and effective learning environment. However, the interview also revealed a crucial caveat: the need for adequate resources and training. This highlights the importance of providing teachers with the necessary technological infrastructure and professional development opportunities to effectively integrate digital writing into their classrooms. The acknowledgement of resource needs underscores the importance of considering the practical limitations and ensuring equitable access to technology and training before widespread implementation.

Time Management Challenges

A potential limitation of digital writing projects, as identified in the interview, is the challenge of time management. Balancing digital and traditional writing tasks proved demanding for some participants. This finding aligns with the reflective journals, where one participant explicitly mentioned time management issues. This suggests that careful consideration of workload and project timelines is crucial when integrating digital writing into existing curricula. Future implementations should incorporate strategies for effective time management to mitigate this potential challenge.

Thematic Analysis Framework

The thematic analysis, summarized in Table 2, synthesized the qualitative and quantitative data from the digital essays, reflective journals, and focus group interviews, revealing six overarching themes that illuminate the multifaceted impact of the digital writing project on pre-service EFL teachers. These themes are interconnected and offer a holistic understanding of the learning experience.

Table 5: Thematic Analysis Framework

Theme ID	Theme Name	Description	Supporting Data Sources
T1	Engagement and Motivation	Participants showed increased engagement and motivation when using digital tools for writing.	Reflective journals; focus group interviews
T2	Challenges and Solutions	Participants faced technical and creative challenges but developed solutions through collaboration.	Reflective journals, focus group interviews
T3	Skill Development	Improvement in writing skills, particularly in organization and multimodal storytelling.	Digital essays, reflective journals
T4	Peer Collaboration	Peer feedback and collaboration were crucial for participants' learning and essay improvement.	Reflective journals, focus group interviews
T5	Practicality of Digital Tools	Participants perceived digital writing as a practical approach for modern teaching contexts.	Focus group interviews, reflective journals
T6	Creativity and Expression	Digital platforms allowed for enhanced creativity and expression in storytelling.	Digital essays, focus group interviews

Engagement and Motivation (T1)

This theme, strongly supported by data from reflective journals and focus group interviews, confirms the positive impact of digital tools on learner engagement and motivation. Participants consistently reported increased enjoyment and a heightened sense of purpose in their writing tasks. This aligns with research emphasizing the motivational potential of technology-enhanced learning environments (e.g., Ruiz-Rojas et al., 2024). The interactive nature of the digital platform and the opportunity for immediate feedback likely contributed to this increased engagement.

Challenges and Solutions (T2)

The emergence of this theme highlights the importance of acknowledging and addressing the challenges inherent in integrating new technologies into the learning process. While participants encountered technical and creative challenges, the data reveals that these were often overcome through collaboration and peer support. This underscores the crucial role of social learning and the value of creating supportive learning communities (e.g., Baeten, M, Dochy, F & Struyven, 2017; Slamet & Kuswandi, 2017). The ability to overcome challenges through collaboration speaks to the resilience and adaptability of the participants.

Skill Development (T3)

This theme, supported by data from both digital essays and reflective journals, provides strong evidence of improved writing skills. Participants demonstrated enhanced organizational skills and proficiency in multimodal storytelling. The iterative nature of the digital writing process, facilitated by the platform's ease of revision, likely contributed to this skill development. This aligns with research highlighting the benefits of process-oriented writing approaches and the potential of digital tools to enhance writing quality (e.g., Moradian & Rahmatian, 2016).

Peer Collaboration (T4)

The significant role of peer collaboration in the learning process is evident across multiple data sources. Participants consistently highlighted the value of peer feedback and collaborative problem-solving. This finding reinforces the importance of incorporating collaborative activities into digital writing projects to maximize learning outcomes (e.g., Jiang & Eslami, 2022; Ruiz-Rojas et al., 2024). The collaborative aspect appears to have been particularly effective in addressing technical challenges and refining the quality of the essays.

Practicality of Digital Tools (T5)

The focus group interviews revealed a largely positive perception of the practicality of digital writing for future classroom

teaching. Participants recognized the alignment of digital writing with modern teaching needs and the potential to enhance student engagement. However, this theme also highlighted the need for adequate resources and training, emphasizing the importance of addressing infrastructural and pedagogical challenges before widespread implementation.

Creativity and Expression (T6)

This theme, supported by data from digital essays and focus group interviews, demonstrates the potential of digital platforms to foster creativity and enhance expressive writing. The ability to integrate images and other multimedia elements allowed participants to express their ideas in more engaging and visually appealing ways. This aligns with research emphasizing the role of digital platforms in enhancing multimodal composition skills (DelVecchio, 2022).

The thematic analysis reveals a complex interplay between opportunities and challenges in integrating digital writing into EFL teacher education. While the digital platform fostered engagement, motivation, skill development, and creative expression, the successful implementation of such projects requires careful consideration of pedagogical support, resource allocation, and training. The findings strongly suggest that digital writing can be an effective instructional strategy, provided that adequate support and resources are available to address the identified challenges. Future research could explore the long-term impact of digital writing on pre-service teachers' pedagogical practices and the development of more effective strategies for integrating technology into EFL instruction.

The findings of this study offer valuable insights into the impact of integrating digital writing tools into pre-service EFL teacher training. The results, drawn from multiple data sources, reveal a complex interplay of positive outcomes and challenges associated with this pedagogical approach.

The quantitative data from the digital essay assessments (Table 3) demonstrate a high overall mean score (85.9/100), indicating a generally strong performance across all assessed criteria. The relatively high mean scores in "Content" (25.4/30) and "Multimodal Features" (21.9/25) are particularly noteworthy, suggesting that the digital platform effectively facilitated creative expression and the integration of visual elements into the writing process. This aligns with DelVecchio (2022) and Ezeh (2020) assertion that digital platforms enhance multimodal composition skills. However, the standard deviations reveal variability in performance, particularly in "Content," suggesting that while the average performance was high, individual student achievements varied considerably. This highlights the importance of providing differentiated instruction and support to cater to diverse learning needs.

The qualitative data from the reflective journals (Table 4) provide a nuanced understanding of the learning experience. The initial responses reveal a range of experiences, from immediate engagement (S1) to initial overwhelm (S2), emphasizing the need for adequate introductory training and support. The recurring themes of increased motivation (S6), skill development (S5), and the effectiveness of peer feedback (S1) strongly support the integration of digital writing into teacher training. The challenge of time management (S7) highlights the need for careful curriculum design and the incorporation of time management strategies.

The focus group interview data further reinforces these findings. The overwhelmingly positive perceptions of digital tools and the platform's influence on visual storytelling and iterative revisions align with the quantitative and qualitative data. The emphasis on the value of peer collaboration corroborates the findings from the reflective journals and underscores the importance of collaborative learning environments (Jiang & Eslami, 2022). The acknowledgement of the need for adequate resources and training highlights a crucial

practical consideration for wider implementation.

The thematic analysis (Table 5) synthesizes these findings, revealing six interconnected themes: engagement and motivation, challenges and solutions, skill development, peer collaboration, practicality of digital tools, and creativity and expression. These themes highlight the multifaceted nature of integrating digital writing, showcasing both its potential benefits and associated challenges. The consistent emergence of these themes across multiple data sources strengthens the validity and reliability of the findings.

The study's findings have significant implications for EFL teacher education. The integration of digital writing tools can enhance student engagement, foster creativity, and promote the development of essential writing skills. However, successful implementation requires careful planning, adequate training, and the provision of necessary resources. The challenges related to time management and the need for differentiated instruction highlight the importance of addressing these practical considerations to maximize the effectiveness of digital writing initiatives.

This study's limitations include the relatively small sample size and the specific context of a pre-service teacher training program at a single university. Future research should investigate the generalizability of these findings by employing larger samples and diverse educational settings. Longitudinal studies could explore the long-term impact of digital writing on pre-service teachers' pedagogical practices and student outcomes. Further research could also investigate the effectiveness of different digital writing platforms and pedagogical approaches.

CONCLUSION

This study investigated the impact of integrating digital writing tools into pre-service EFL teacher training. The findings, derived from a mixed-methods approach encompassing digital essay assessments,

reflective journals, focus group interviews, and thematic analysis, reveal a multifaceted picture of the learning experience.

The quantitative data demonstrated strong overall performance in digital essay writing, particularly in content and multimodal features, aligning with research highlighting the potential of digital platforms to enhance multimodal composition skills. However, variability in performance underscored the need for differentiated instruction. Qualitative data revealed a predominantly positive experience, with increased engagement and motivation, significant skill development, and the crucial role of peer collaboration. Challenges related to initial technical difficulties and time management highlighted the importance of adequate training and careful curriculum design. The thematic analysis synthesized these findings, revealing six key themes: engagement and motivation, challenges and solutions, skill development, peer collaboration, practicality of digital tools, and creativity and expression.

This study contributes to the existing body of knowledge by providing empirical evidence of the effectiveness of digital writing in pre-service EFL teacher training. The findings demonstrate the potential of digital tools to enhance writing skills, foster creativity, and promote engagement. However, the study also highlights the importance of addressing practical challenges, such as providing adequate training and support, managing workload effectively, and ensuring equitable access to resources.

Future research could explore the long-term impact of digital writing on pre-service teachers' pedagogical practices and student outcomes. Investigating the effectiveness of different digital writing platforms and pedagogical approaches in diverse contexts would further enhance our understanding of this evolving field. Studies focusing on the development of effective strategies for integrating technology into EFL instruction, addressing issues of equity and access, would be particularly valuable. This research underscores the potential of digital

writing to transform EFL teacher education, but emphasizes the need for careful planning and ongoing support to maximize its benefits.


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