

Student engagement in EFL writing through multimodal digital pedagogy: A mixed-methods study

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Abstract. Student engagement is widely recognized as a crucial element in effective language learning, particularly in EFL writing classrooms where students are expected to actively generate and communicate ideas. Although recent studies have explored the integration of digital technologies in language instruction, limited empirical research has specifically examined how multimodal digital pedagogy influences student engagement in EFL writing contexts. Addressing this gap, this study investigates the impact of multimodal digital pedagogy on student engagement in EFL writing classrooms, identifies the dimensions of engagement most influenced by this approach, and explores students' perceptions of multimodal learning activities. This research employed a mixed-methods design involving 30 undergraduate EFL students enrolled in an academic writing course. Quantitative data were collected using a student engagement questionnaire administered before and after the pedagogical intervention, while qualitative data were obtained through semi-structured interviews. The findings demonstrate a significant increase in student engagement following the implementation of multimodal digital pedagogy. The mean engagement score improved from 3.18 (SD= 0.56) to 4.05 (SD= 0.50) on a five-point scale ($t(29) = 6.84, p < .001$). The improvement was particularly evident in behavioral and emotional engagement, as students participated more actively and showed greater enthusiasm during multimodal writing tasks. Qualitative findings further indicate that multimodal digital activities encouraged collaboration, interaction, and sustained attention in the learning process. These results suggest that multimodal digital pedagogy can be an effective instructional approach for enhancing student engagement in EFL writing classrooms and for creating more interactive and participatory learning environments in digitally mediated education.

Keywords: student engagement, multimodal pedagogy, digital learning, EFL writing, higher education

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1 Introduction

In recent years, the landscape of language education has undergone a profound transformation driven by rapid technological advancement and the increasing integration of digital tools into classroom practices. This shift has not only changed how knowledge is delivered but also redefined how learners engage with learning tasks, particularly in English as a Foreign Language (EFL) contexts. Among the various language skills, writing remains one of the most challenging for EFL learners, as it requires not only linguistic competence but also the ability to organize ideas, express meaning coherently, and engage critically with content (Hyland, 2021). In many traditional classrooms, writing instruction continues to rely heavily on text-based approaches, where students are expected to produce written outputs with limited interaction, feedback, or creative exploration. As a result, students often perceive writing as a monotonous and cognitively demanding task, which may negatively affect their engagement and motivation (Zhang & Hyland, 2022).

Student engagement has been widely recognized as a central factor influencing learning outcomes across educational contexts. It encompasses the degree to which students are actively involved in learning activities, both behaviorally, emotionally, and cognitively (Fredricks et al., 2023). Behavioral engagement refers to students' participation and involvement in tasks, emotional engagement reflects their interest and affective responses, while cognitive engagement involves investment in learning and the use of deep learning strategies. In EFL writing classrooms, engagement plays a particularly crucial role because writing requires sustained attention, active participation, and higher-order thinking skills. When students are disengaged, they are less likely to invest effort in drafting, revising, or reflecting on their writing, which ultimately limits their learning progress (Mercer & Dörnyei, 2020).

To address this issue, educators have increasingly turned to digital technologies to create more interactive and engaging learning environments. One promising approach that has gained attention in recent years is multimodal digital pedagogy. Rooted in the theory of multimodality, this approach emphasizes the use of multiple modes of communication—such as text, images, audio, video, and interactive media—to construct meaning (Kress, 2010; Lim & Tan, 2023). In the context of EFL writing, multimodal pedagogy allows students to go beyond traditional text-based compositions by integrating visual and multimedia elements into their writing. For example, students may create digital stories, multimedia essays, or infographics that combine written text with images, sound, and design elements. These activities not only diversify the ways in which students express their ideas but also align with the communicative practices of the digital age (Hafner & Ho, 2020).

Recent studies have suggested that multimodal digital pedagogy has the potential to enhance student engagement by making learning more interactive, meaningful, and relevant to students' everyday experiences. For instance, digital storytelling has been found to increase students' motivation and participation in writing tasks, as it allows them to connect personal experiences with creative expression (Yang et al., 2021). Similarly, the use of multimedia tools has been shown to promote collaboration and peer interaction, which are important aspects of behavioral engagement (Sari & Putra, 2022). From an emotional perspective, multimodal activities can make writing more enjoyable and less intimidating, as students are not limited to linguistic resources alone but can rely on visual and auditory elements to support their expression (Chen et al., 2023). Furthermore, multimodal composition encourages cognitive engagement by requiring students to make decisions about how different modes interact to convey meaning effectively (Lim & Tan, 2023).

Despite these promising findings, the integration of multimodal digital pedagogy in EFL writing classrooms is not without challenges. One common concern is that the use of digital tools may shift students' focus away from language accuracy toward aesthetic or technical

aspects of multimodal production (Hafner & Ho, 2020). Additionally, not all students may have equal access to digital resources or possess the necessary digital literacy skills, which can affect their participation and engagement (Kessler, 2021). Teachers also face challenges in designing effective multimodal tasks and assessing students' work, as traditional assessment criteria may not adequately capture the complexity of multimodal compositions (Lim & Tan, 2023).

More importantly, while existing studies have explored the use of digital tools and multimodal approaches in language learning, there remains a lack of empirical research that specifically examines how multimodal digital pedagogy influences student engagement in EFL writing contexts. Much of the current literature tends to focus either on technological integration in general or on students' writing outcomes, with less attention given to the multidimensional nature of engagement (behavioral, emotional, and cognitive) (Fredricks et al., 2023; Mercer & Dörnyei, 2020). In addition, previous studies often rely on either quantitative or qualitative methods, making it difficult to capture the complexity of students' engagement experiences in multimodal learning environments.

Another gap lies in the limited exploration of students' perspectives on multimodal digital learning. Understanding how students perceive and experience multimodal writing tasks is essential for designing pedagogical practices that are both effective and meaningful. Students' voices can provide valuable insights into the factors that promote or hinder their engagement, such as task design, technological affordances, and classroom dynamics (Zhang & Hyland, 2022). However, such perspectives are often underrepresented in the literature, particularly in EFL contexts in developing countries where digital pedagogy is still emerging.

Although previous studies have consistently reported the benefits of multimodal digital pedagogy in improving writing performance, motivation, or technology integration, relatively few studies have specifically examined student engagement as a multidimensional construct encompassing behavioral, emotional, and cognitive dimensions within EFL writing classrooms. Existing research also tends to employ either quantitative or qualitative approaches separately, limiting a comprehensive understanding of how multimodal learning shapes students' engagement experiences. Furthermore, empirical evidence from Indonesian higher education contexts remains limited, despite the rapid expansion of digital learning practices in the country. Therefore, this study extends previous research by integrating quantitative and qualitative evidence to examine how multimodal digital pedagogy influences different dimensions of student engagement in EFL writing instruction. By doing so, this study contributes both theoretically, by enriching the understanding of multidimensional engagement in multimodal learning environments, and practically, by providing evidence-based guidance for implementing multimodal writing instruction in EFL higher education.

Given these gaps, there is a clear need for research that not only examines the impact of multimodal digital pedagogy on student engagement but also explores the different dimensions of engagement and students' perceptions of multimodal learning experiences. This study aims to address these gaps by investigating the implementation of multimodal digital pedagogy in an EFL writing classroom and examining its influence on student engagement. Specifically, the study focuses on three key aspects: (1) the extent to which multimodal digital pedagogy enhances overall student engagement, (2) the dimensions of engagement that are most affected, and (3) students' perceptions of multimodal digital writing activities. By doing so, this study seeks to contribute to the growing body of literature on digital pedagogy and provide practical insights for educators who wish to create more engaging and effective writing instruction.

In the broader context of language education, this study also responds to the increasing demand for pedagogical approaches that prepare students for communication in digitally mediated environments. As digital technologies continue to shape how people communicate

and share information, it is essential for language classrooms to reflect these changes and equip students with the skills needed to navigate multimodal communication (Kress, 2010; Lim & Tan, 2023). Multimodal digital pedagogy offers a promising pathway toward this goal by integrating language learning with digital literacy and creative expression.

Ultimately, enhancing student engagement is not merely about increasing participation or motivation; it is about creating meaningful learning experiences that empower students to take an active role in their own learning. In EFL writing classrooms, this means moving beyond traditional approaches and embracing innovative pedagogies that align with students' needs, interests, and the realities of the digital age. By exploring the potential of multimodal digital pedagogy, this study aims to provide a deeper understanding of how engagement can be fostered in contemporary language learning environments. Based on the discussion above, this study addresses the following research questions (1) To what extent does the implementation of multimodal digital pedagogy influence students' engagement in EFL writing classrooms? (2) Which dimensions of student engagement (behavioral, emotional, and cognitive) are most affected by the use of multimodal digital pedagogy in EFL writing instruction? (3) How do students perceive the use of multimodal digital activities in promoting their engagement during EFL writing learning?

2 Methods

2.1 Research Design

This study employed a mixed-methods research design, specifically a convergent parallel design, to investigate the impact of multimodal digital pedagogy on student engagement in EFL writing classrooms. This design allows the researcher to collect and analyze quantitative and qualitative data concurrently and then integrate the findings to obtain a more comprehensive understanding of the research problem (Creswell & Plano Clark, 2021). The use of mixed methods is particularly relevant for this study, as student engagement is a multidimensional construct that cannot be fully captured through a single method.

The quantitative component aimed to measure changes in students' engagement levels before and after the implementation of multimodal digital pedagogy. This was achieved through a pre-test and post-test design using a student engagement questionnaire. Meanwhile, the qualitative component sought to explore students' experiences and perceptions of multimodal digital learning activities through classroom observations and semi-structured interviews. By combining these two approaches, the study not only examines the extent of change in engagement but also provides deeper insights into how and why such changes occur.

The instructional intervention was conducted over six weeks, during which multimodal digital pedagogy was integrated into EFL writing instruction. Students were engaged in various multimodal writing tasks, including digital storytelling, multimedia essays, and infographic-based writing, designed to encourage active participation and interaction.

The intervention consisted of six consecutive weekly sessions, each lasting approximately 100 minutes. During the first week, students were introduced to the concept of multimodal writing and received training on the digital platforms used throughout the study, including Canva, Google Slides, and Padlet. The instructor demonstrated how written texts could be integrated with images, audio, video, and graphic elements to construct meaning effectively.

During Weeks 2 and 3, students completed digital storytelling activities in small collaborative groups. They planned storylines, developed scripts, selected supporting visual materials, and presented their stories digitally. Peer discussion and instructor feedback were incorporated throughout the writing process.

During Weeks 4 and 5, students produced multimedia essays integrating written arguments with infographics, photographs, and short video clips. Students revised their work based on peer comments and instructor suggestions before submitting the final version.

In the final week, students created infographic-based writing projects individually. They presented their products to the class, participated in reflective discussions, and completed the post-test questionnaire and interviews. Throughout the intervention, the instructor functioned as a facilitator by providing scaffolding, encouraging collaboration, and ensuring that language development remained the primary instructional focus.

2.1.1 Participants / Population and Sample

The participants of this study were 30 undergraduate students from the English Education Study Program at Universitas Muhammadiyah Kotabumi, Indonesia, who were enrolled in a Writing course during the academic semester. The participants were selected using a purposive sampling technique, as they met the specific criteria required for the study, namely: (1) being actively enrolled in an EFL writing course, and (2) having basic familiarity with digital tools used in writing activities.

2.1.2 Instruments and Data Collection

To address the research questions, this study employed both quantitative and qualitative instruments. Quantitative data were collected using a student engagement questionnaire adapted from Fredricks et al. (2023) and Mercer and Dörnyei (2020), which measured behavioral, emotional, and cognitive engagement. The questionnaire consisted of 20 items on a five-point Likert scale and was administered as a pre-test and post-test. Its validity was ensured through expert review and pilot testing, while reliability analysis showed a high internal consistency (Cronbach's $\alpha = 0.87$).

In another hand, qualitative data were obtained through classroom observations and semi-structured interviews. Observations were conducted during each session using a checklist to record students' participation, collaboration, attentiveness, and on-task behavior, supported by field notes to capture classroom dynamics. In addition, semi-structured interviews were conducted with ten students representing different levels of engagement to explore their experiences, perceived benefits, challenges, and factors influencing their engagement. Each interview lasted 15–20 minutes, was audio-recorded, and transcribed for analysis.

2.2 Data Analysis

2.2.1 Quantitative Data Analysis

Quantitative data obtained from the student engagement questionnaire were analyzed using descriptive and inferential statistics. Descriptive statistics, including mean and standard deviation, were used to summarize students' engagement levels before and after the intervention. To examine the effect of multimodal digital pedagogy on student engagement, a paired-sample t-test was conducted to compare pre-test and post-test scores. The level of significance was set at $p < .05$. Additionally, analysis of engagement dimensions (behavioral, emotional, and cognitive) was conducted to identify which aspects showed the most significant improvement.

2.2.2 Qualitative Data Analysis

Qualitative data from classroom observations and interviews were analyzed using thematic analysis (Braun & Clarke, 2021). The analysis followed several steps: (1) Data familiarization (reading transcripts and field notes), (2) Initial coding (identifying meaningful segments of data), (3) Theme development (grouping codes into broader themes), (4) Reviewing and refining themes, (5) Interpreting and reporting findings. This process allowed

the researcher to identify recurring patterns related to student engagement, including factors that facilitated or hindered engagement in multimodal digital learning environments.

3 Results and Discussions

3.1 Results

3.1.1 Quantitative Results: Changes in Student Engagement and Engagement Across Dimensions

To address RQ1, a paired-sample t-test was conducted to examine the effect of multimodal digital pedagogy on students’ engagement in EFL writing classrooms. The results indicate a statistically significant improvement in overall student engagement after the intervention.

The mean engagement score increased from $M = 3.18$ ($SD = 0.56$) in the pre-test to $M = 4.05$ ($SD = 0.50$) in the post-test. The difference was statistically significant, $t(29) = 6.84$, $p < .001$, indicating that the implementation of multimodal digital pedagogy had a strong positive effect on student engagement. To estimate the practical significance of the intervention, Cohen’s d was also calculated. The analysis yielded a large effect size (Cohen’s $d = 1.25$), indicating that multimodal digital pedagogy produced not only statistically significant improvements but also substantial educational impact on students’ engagement. This finding aligns with previous research highlighting the role of digital and multimodal learning environments in fostering active student participation.

For instance, Chen et al. (2023) found that multimodal learning environments significantly enhance engagement by providing diverse channels for interaction. Beyond statistical significance, the magnitude of change also suggests a meaningful pedagogical impact. The increase of nearly 0.9 points on a five-point scale reflects a substantial shift in students’ engagement levels, indicating that students were not only more involved in writing tasks but also more invested in the learning process overall.

To further address RQ2, engagement was analyzed across its three dimensions: behavioral, emotional, and cognitive engagement. The results show that all three dimensions improved after the intervention, with varying degrees of change.

Table 1. Meanscore of Students Engagement in Pre-test and Post-test

Aspect	Pre-test	Post-test	Mean Difference
Behavioral Engagement	3.25	4.20	+0.95
Emotional Engagement	3.10	4.15	+1.05
Cognitive engagement	3.19	3.82	+0.63

The most notable improvements were observed in behavioral and emotional engagement, while cognitive engagement showed a moderate increase. The significant rise in behavioral engagement indicates that students became more actively involved in classroom activities, including participating in discussions, completing tasks, and collaborating with peers. This finding is consistent with Sari and Putra (2022), who reported that digital storytelling activities promote active participation and collaboration among EFL learners. The interactive nature of multimodal tasks appears to reduce passivity and encourage students to take a more active role in their learning. Moreover, emotional engagement also showed a substantial increase, suggesting that students developed more positive attitudes toward writing activities. Many students reported feeling more interested and motivated when engaging in multimodal tasks compared to traditional writing assignments. This aligns with Mercer and Dörnyei (2020), who emphasize that emotional engagement is closely linked to motivation and enjoyment in language learning. Multimodal activities, by incorporating visual and

multimedia elements, may reduce anxiety and make writing tasks more enjoyable and less intimidating.

In contrast, the improvement in cognitive engagement, while still significant, was less pronounced. This suggests that although students were more active and emotionally invested, the development of deeper cognitive processes—such as critical thinking and strategic learning—may require longer exposure to multimodal pedagogy. Lim and Tan (2023) note that cognitive engagement in multimodal learning involves complex meaning-making processes that may not fully develop in short-term interventions.

3.1.2 Qualitative Result: Students' Perceptions and Experiences

To address RQ3, qualitative data from classroom observations and interviews were analyzed to explore students' perceptions of multimodal digital pedagogy.

Increased Participation and Interaction

One of the most prominent themes that emerged from the data was increased participation. Students reported that multimodal activities encouraged them to be more actively involved in the learning process. *"I feel more active in class because we don't just write, but also create something using pictures and videos."* Classroom observations confirmed this perception, as students were more engaged in discussions, group work, and task completion. *"Working together using digital media made me more confident to share ideas because everyone contributed in different ways."* The use of digital tools appeared to create a more dynamic and interactive learning environment, supporting previous findings that technology-enhanced learning can promote behavioral engagement (Kessler, 2021).

Enhanced Motivation and Enjoyment

Another key theme was increased motivation and enjoyment. Many students expressed that multimodal writing tasks were more interesting and enjoyable compared to traditional writing activities. *"Writing becomes more fun because we can be creative, not just focus on grammar."*

This finding reinforces the idea that emotional engagement plays a crucial role in sustaining students' interest in learning (Mercer & Dörnyei, 2020). Besides, one of the participants said that *"The activities made writing feel less stressful because we could express our ideas creatively instead of only focusing on grammatical correctness"*. The incorporation of multimedia elements allows students to express themselves more freely, which can enhance their intrinsic motivation.

Collaboration and Social Interaction

Students also highlighted the importance of collaboration in multimodal tasks. Group activities, such as creating digital stories or multimedia projects, encouraged peer interaction and knowledge sharing. Another participant noted that *"Discussing ideas with friends before creating the multimedia project helped me organize my writing more effectively."* This aligns with the social constructivist perspective of learning, which emphasizes the role of interaction in knowledge construction (Vygotsky, as cited in Lim & Tan, 2023). Collaborative multimodal tasks provide opportunities for students to negotiate meaning, exchange ideas, and learn from each other, thereby enhancing engagement.

Challenges in Cognitive Processing

Despite the positive findings, some students reported challenges related to cognitive engagement, particularly in balancing content creation with language accuracy. *"Sometimes I focus too much on design and forget about grammar."* This suggests that while multimodal

pedagogy enhances engagement, it may also introduce new cognitive demands that require careful instructional design. Hafner and Ho (2020) caution that multimodal composition should be guided to ensure that language learning remains a central focus.

3.2 Discussions

The findings of this study demonstrate that multimodal digital pedagogy plays a significant role in enhancing student engagement in EFL writing classrooms. The statistically significant increase in engagement scores indicates that when students are provided with opportunities to interact with content through multiple modes such as text, images, audio, and video they become more actively involved in the learning process. This suggests that engagement in writing is not solely determined by linguistic complexity or task demands, but is also shaped by how learning experiences are designed and mediated within the classroom (Fredricks et al., 2023). In other words, the integration of multimodal elements transforms writing from a traditionally text-bound activity into a more dynamic and participatory learning experience.

A closer examination of the findings reveals that the impact of multimodal digital pedagogy is not uniform across all dimensions of engagement. Behavioral and emotional engagement showed more substantial improvement compared to cognitive engagement. This pattern suggests that multimodal approaches are particularly effective in stimulating observable participation and fostering positive emotional responses, such as enjoyment and interest. Students were more willing to participate, collaborate, and invest effort in writing tasks when these tasks incorporated multimedia elements. However, the relatively moderate improvement in cognitive engagement indicates that deeper processes—such as critical thinking, idea development, and self-regulated learning—require more sustained instructional support and cannot be automatically achieved through technological integration alone. This aligns with Lim and Tan (2023), who argue that multimodal environments tend to first activate surface-level engagement before facilitating deeper cognitive involvement.

These findings reinforce the conceptualization of student engagement as a multidimensional and dynamic construct, where behavioral, emotional, and cognitive components interact but develop at different rates (Mercer & Dörnyei, 2020). The results also highlight the importance of aligning pedagogical practices with students' digital habits and preferences. In contemporary learning environments, students are increasingly accustomed to multimodal forms of communication, and incorporating these elements into writing instruction can make learning more relevant and meaningful (Chen et al., 2023). As a result, students are not only more engaged but also more willing to express their ideas creatively and confidently.

The importance of these findings lies in their contribution to addressing a long-standing challenge in EFL writing instruction—low student engagement. Writing has often been perceived as one of the most demanding and least interactive language skills, leading to passive learning behaviors and reduced motivation (Hyland, 2021). By providing empirical evidence that multimodal digital pedagogy can significantly improve engagement, this study offers a compelling argument for rethinking traditional approaches to teaching writing. Rather than focusing solely on grammatical accuracy and textual production, writing instruction should incorporate interactive, creative, and student-centered activities that reflect the realities of digital communication.

Moreover, this study offers a more nuanced understanding of engagement in digital learning contexts by demonstrating that different dimensions of engagement respond differently to pedagogical innovation. This distinction is crucial because it challenges the tendency to treat engagement as a single, unified outcome. Instead, it encourages educators to adopt a more targeted approach in designing instructional strategies that address specific dimensions of engagement (Fredricks et al., 2023). For instance, while multimodal tasks may

effectively increase participation and motivation, additional scaffolding is needed to promote higher-order thinking and deeper cognitive processing.

Another important contribution of this study is its contextual relevance. Conducted in an Indonesian EFL higher education setting, the findings demonstrate that multimodal digital pedagogy can be successfully implemented even in contexts where digital integration is still developing. This extends previous research that has predominantly been conducted in technologically advanced environments and confirms that multimodal approaches are adaptable across diverse educational settings (Hafner & Ho, 2020; Kessler, 2021). It also suggests that the effectiveness of digital pedagogy is not solely dependent on technological sophistication, but rather on how technology is pedagogically utilized.

From a practical perspective, the findings suggest several important implications for EFL teachers. First, there is a need to design learning activities that promote active participation and collaboration. Tasks such as digital storytelling, multimedia projects, and collaborative writing can increase behavioral engagement by encouraging students to take an active role in the learning process (Sari & Putra, 2022). Second, to enhance emotional engagement, teachers should create a supportive learning environment that allows for creativity and personal expression. Multimodal tasks provide opportunities for students to represent their ideas in diverse ways, making writing more enjoyable and personally meaningful (Chen et al., 2023). Third, the relatively lower improvement in cognitive engagement highlights the importance of providing explicit scaffolding. Teachers should guide students in organizing ideas, integrating multimodal elements effectively, and reflecting on their learning processes. Without such support, there is a risk that students may prioritize visual aesthetics over the quality of their writing (Lim & Tan, 2023). Finally, attention should also be given to students' digital literacy and access to technology to ensure that all learners can participate meaningfully in multimodal activities (Kessler, 2021).

Theoretically, this study contributes to the advancement of student engagement theory by demonstrating how different dimensions of engagement respond to multimodal instructional practices. The findings suggest that behavioral and emotional engagement are more immediately influenced by pedagogical innovation, while cognitive engagement develops more gradually and requires intentional instructional design (Fredricks et al., 2023). In addition, the study provides empirical support for multimodal learning theory, which emphasizes that meaning-making is enhanced when learners engage with multiple modes of representation (Kress, 2010; Lim & Tan, 2023). By showing that multimodal tasks can reshape how students engage with writing, this study highlights the transformative potential of multimodal pedagogy in language education.

Importantly, this study also introduces a critical perspective by highlighting that increased engagement does not necessarily lead to deeper cognitive processing. This finding challenges the assumption that engagement is inherently beneficial in all its forms and underscores the need for a more balanced approach to instructional design (Mercer & Dörnyei, 2020). Engagement should not be viewed merely as an end goal, but as a means to facilitate meaningful learning. Therefore, educators must carefully design multimodal learning experiences that not only capture students' attention but also promote critical thinking and language development.

Taken together, the findings suggest that multimodal digital pedagogy has strong potential to transform EFL writing classrooms into more engaging, interactive, and meaningful learning environments. However, its effectiveness ultimately depends on how well educators can balance engagement, creativity, and cognitive development. By recognizing engagement as a multidimensional construct and designing instruction that addresses its different components, teachers can create richer and more impactful learning experiences in the digital era.

4 Conclusion

From the results and discussions above, it can be concluded that; First, the findings confirm that the implementation of multimodal digital pedagogy has a significant positive effect on overall student engagement. The statistical results demonstrate a meaningful increase in engagement levels after the intervention, indicating that integrating multimodal digital activities can effectively transform students from passive participants into more active learners in writing classrooms. Second, the study reveals that the effects of multimodal digital pedagogy vary across different dimensions of engagement. Behavioral and emotional engagement showed the most substantial improvement, as students participated more actively and developed more positive attitudes toward writing tasks. In contrast, cognitive engagement improved to a lesser extent, suggesting that deeper cognitive involvement may require more sustained exposure and targeted instructional scaffolding. Third, the qualitative findings highlight that students generally perceive multimodal digital learning activities as engaging, interactive, and motivating. Students reported that tasks such as digital storytelling and multimedia-based writing encouraged collaboration, creativity, and sustained attention. However, some also noted challenges in balancing multimodal design with language accuracy, indicating the need for careful task design. Overall, this study underscores that the effectiveness of multimodal digital pedagogy lies not only in technological integration but also in how learning experiences are structured to support meaningful engagement. These findings provide practical insights for educators to design more engaging and pedagogically balanced EFL writing instruction in the digital era. The future studies are encouraged to investigate the long-term effects of multimodal digital pedagogy through longitudinal research involving larger and more diverse participant populations.

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