JOLLT Journal of Languages and Language Teaching
https://e-journal.undikma.ac.id/index.php/jollt
Email: jollt@undikma.ac.id
DOI: https://doi.org/10.33394/jollt.v13i3.14709

July 2025 Vol. 13, No. 3
p-ISSN: 2338-0810
e-ISSN: 2621-1378
pp. 1165-1180

DIGITAL MULTIMODAL COMPOSING IN EFL GRAMMAR INSTRUCTION:EXPLORING PRE-SERVICE TEACHERS' EXPERIENCES AND PERSPECTIVES

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Article Info
Article History
Received: February 2025
Revised: April 2025
Published: July 2025

Keywords
Digital multimodal composing;
EFL grammar instruction;
Multimodal Literacy;
Digital fluency;
Pre-Service Teachers;

Abstract

The growing integration of Digital Multimodal Composing (DMC) in English as a Foreign Language (EFL) instruction has transformed conventional grammar teaching methods by incorporating text, images, sound, and movement. However, limited empirical research explores its application in grammar instruction, particularly from the perspective of pre-service teachers. Guided by Liang and Lim's (2020) DMC pedagogical framework, grounded in Systemic Functional Linguistics and Design Thinking, this study examines the implementation of DMC in an Indonesian EFL higher education context. Fifteen pre-service teachers from an English Language Education Program participated in the study. Data were collected using a case study design through classroom observations, semi-structured interviews, and student reflections. Findings indicate that DMC fosters engagement, enhances conceptual understanding, and develops digital literacy skills. High-achieving students demonstrated strong digital fluency, creativity, and analytical skills in integrating multimodal elements into grammar lessons. Conversely, low-achieving students faced challenges with multimodal cohesion, tool navigation, and troubleshooting technical issues. The study highlights the importance of explicit instruction, guided practice, and peer collaboration in supporting students' multimodal literacy development. It emphasizes the need for structured pedagogical scaffolding to effectively integrate DMC into EFL grammar instruction. The findings suggest that while DMC promotes student-centered and multimodal learning, sustained instructional support and curriculum integration are essential for its success.

How to cite: Sadikin, I.S., & Apsari, Y. (2025). Digital Multimodal Composing in EFL Grammar Instruction:Exploring Pre-Service Teachers' Experiences and Perspectives, *JOLLT Journal of Languages and Language Teaching*, 13(3), 1165-1180. Doi: https://doi.org/10.33394/jollt.v13i3.14709

INTRODUCTION

Many educators are concerned about the effects of the continually changing communication and technological paradigms on the teaching and learning process in English as a foreign language (EFL) classrooms. Consequently, the teacher began instructing students using Digital Multimodal Composing (DMC), which may include symbols, images, emoticons, and other forms of digital media (Pecheco et al., 2021; Unsworth & Milis, 2020; Hafner & Ho, 2020). This could engage students with the use of digital tools to combine texts with other semiotic modalities such as images, voice, and movement (Hafner & Ho, 2020; Belcher, 2017, Hafner, 2014) and address the changing requirements of learners that has been used frequently in language classrooms for a variety of learning purposes in various contexts (Tour & Barnes, 2021; Hafner & Ho, 2020; Shin et. al., 2020; Hafner, 2014). In second language (L2) classrooms, DMC has attracted significant interest for meaning-making, text composition, and various multimodal texts (Yi et al., 2020).

Although DMC has gained considerable traction in second language (L2) writing and literacy instruction, its application in explicit grammar teaching remains underexplored (Jiang & Ren, 2020; Zhang & Yu, 2022; Zhang, Akoto, & Li, 2021; Wang et al., 2023). Prior research has shown DMC's potential to promote creativity and learner engagement, but relatively little is known about how pre-service teachers—still developing their instructional competencies—navigate the pedagogical complexities of integrating DMC into grammar instruction (Lim & Unsworth, 2023; Tour & Barnes, 2021). One key challenge is the absence of structured pedagogical models that effectively guide pre-service teachers in scaffolding grammar-focused multimodal learning, resulting in inconsistent instructional practices (Hafner & Ho, 2020)

A crucial gap remains in understanding how pre-service teachers—who are still developing their instructional competencies—can effectively leverage Digital Multimodal Composing (DMC) to design engaging and pedagogically sound grammar lessons (Liang & Lim, 2020; Xu, 2021). While some research has explored teachers' general engagement with multimodal composing, limited empirical evidence exists on how pre-service teachers navigate technological challenges, scaffold learning, and align multimodal tasks with curricular objectives (Jiang et al., 2020). To address this gap, the present study introduces a novel adaptation of Liang and Lim's (2020) pedagogical framework for DMC—grounded in Systemic Functional Linguistics (SFL) and Design Thinking—to support grammar instruction in EFL classrooms. Unlike previous studies that focus broadly on teachers' use of multimodal strategies, this research specifically examines how Indonesian pre-service teachers implement DMC in grammar teaching, highlighting their real-world experiences, challenges, and strategies within a higher education context.

By adopting and adapting Liang and Lim's (2020) DMC framework, this research explores how pre-service teachers design grammar lessons that integrate multimodal elements, use digital tools effectively, and develop instructional strategies aligned with multimodal literacy principles. The study offers pedagogical guidance for integrating DMC in EFL instruction and contributes to bridging the gap between theoretical discussions and practical classroom application. The study is guided by the following research questions:

1. How is the process of teaching and learning of DMC implemented in grammar instruction in the EFL context?
2. What are the pre-service teachers' perspectives on the implementation of DMC for teaching grammar in EFL classrooms?

Pedagogical Frameworks in Teaching Digital Multimodal Composing

Digital Multimodal Composing (DMC) has transformed language instruction by integrating text, images, sound, and motion, redefining traditional literacy practices in English as a Foreign Language (EFL) classrooms (Hafner & Ho, 2020; Lim & Unsworth, 2023). Pedagogical frameworks for DMC provide structured methodologies to guide educators in incorporating multimodal composition effectively while fostering critical, creative, and technical competencies (Liang & Lim, 2020; Zhang & Yu, 2023). However, despite the increasing recognition of multimodal pedagogies, many educators face challenges in aligning DMC with curriculum goals and assessing students' multimodal work effectively (Jiang & Ren, 2020; Tour & Barnes, 2021). DMC pedagogical frameworks are grounded in Systemic Functional Linguistics (SFL) and Design Thinking, which emphasize meaning-making through multiple semiotic modes and iterative content creation (Halliday, 1978; Hafner & Ho, 2020). SFL provides a model for understanding how text, visuals, and sound interact to construct meaning, making it a crucial framework for multimodal instruction (Jewitt, 2016; Lim & Nguyen, 2022). Meanwhile, Design Thinking fosters student-centered, iterative learning, encouraging problem-solving and structured digital content development (Liang & Lim, 2020; Lim & Unsworth, 2023).

Several pedagogical models have been developed to implement DMC effectively. Liang and Lim (2020) introduced a Critical-Creative-Technical Model, where the Critical Domain focuses on analyzing multimodal texts, the Creative Domain fosters content design and storytelling, and the Technical Domain enhances students' digital literacy. Similarly, Jiang et. al., (2022) proposed a Genre-Based Model, which emphasizes genre awareness and structured instruction to enhance multimodal writing. These models ensure that students balance creativity, linguistic accuracy, and multimodal cohesion (Hafner & Ho, 2020; Zhang & Yu, 2023).

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The digital multimodal composing provides a comprehensive scaffold that guides learners through the conceptualization, preparation, and creation stages of their multimodal projects, ensuring that they acquire the necessary cognitive and technical skills to succeed in digital communication environments (Navila et. al., 2023). Moreover, to facilitate the effective integration of DMC in EFL instruction, several researchers have proposed structured pedagogical frameworks that guide learners through three essential domains: Critical Domain (Conceptualization), Creative Domain (Preparation), and Technical Domain (Creation) (Liang & Lim, 2020; Zhang & Yu, 2023). These domains ensure that students develop the cognitive, creative, and technical competencies necessary for digital composing.

Critical Domain (Conceptualization)

The critical domain focuses on fostering students' analytical abilities to evaluate multimodal texts and construct meaning through various semiotic resources. This phase encourages learners to assess audience expectations, analyze multimodal literacy features, and critically engage with digital content. Research suggests that explicit instruction in metalanguage—such as visual framing, spatial positioning, and color-coded cues—helps students interpret multimodal texts more effectively and make informed design choices in their own compositions (Hafner & Ho, 2020; Jiang & Ren, 2020; Zhang & Yu, 2023). Additionally, guided reflection and peer discussions allow students to articulate their thought processes and refine their ability to deconstruct digital texts (Jewitt, 2016; Kessler&Marino, 2023). However, studies indicate that low-achieving students may struggle to integrate multimodal elements into their learning due to limited exposure to multimodal literacy practices (Liang & Lim, 2020; McGrail et al., 2021). Therefore, pedagogical frameworks must incorporate scaffolding strategies, such as explicit instruction, peer collaboration, and structured analysis activities, to help students bridge the gap between textual and multimodal composition.

Creative Domain (Preparation)

The creative domain emphasizes ideation, planning, and content organization, enabling students to conceptualize their multimodal projects effectively. This phase encourages learners to experiment with different modes—such as animations, voiceovers, and text overlays—while aligning their content with linguistic objectives. Research has shown that incorporating multimodal composing in language education enhances student engagement, motivation, and self-expression, particularly when learners are given the autonomy to design

their own projects (Anderson et. al., 2018; García-Pinar, 2024). Furthermore, collaborative learning environments facilitate idea-sharing and iterative feedback, allowing students to refine their digital compositions before finalizing them (Tour & Barnes, 2021; Hafner & Ho, 2020). One of the challenges in the creative domain is balancing linguistic accuracy with creative storytelling. Studies indicate that students often prioritize aesthetic appeal over grammatical precision, leading to potential discrepancies between visual representation and language use (McGrail et al., 2021; Zhang & Yu, 2023). To address this, pedagogical frameworks should integrate structured guidelines—such as storyboarding templates and scaffolding rubrics—to ensure that students maintain coherence and pedagogical clarity in their multimodal grammar projects (Hafner & Ho, 2020; Jiang et. al., 2022).

Technical Domain (Creation)

The technical domain focuses on the practical application of digital tools and software to produce multimodal projects. This phase requires students to develop digital fluency by navigating various platforms, troubleshooting technical issues, and synchronizing multiple semiotic elements into cohesive compositions. Research has highlighted the importance of hands-on practice in helping students become more comfortable with digital tools, particularly when they receive guided support from instructors or peers (Lim & Unsworth, 2023; Zhang, Akoto, & Li, 2021). For example, using platforms like Canva, Powtoon, and iMovie allows students to integrate animations, voice recordings, and interactive elements to enhance their grammar explanations. Despite these benefits, studies have found that students with limited technical experience may struggle with integrating digital tools effectively, leading to challenges in synchronizing audio-visual elements and ensuring multimodal cohesion (Hafner & Ho, 2020; Zhang & Yu, 2023). To mitigate these issues, educators should incorporate step-by-step tutorials, peer mentorship, and iterative feedback loops to support students in developing their technical competencies (McGrail et al., 2021; Tour et al., 2023).

RESEARCH METHOD

Research Design

This study adopts a case study design, allowing for an in-depth exploration of Digital Multimodal Composing (DMC) practices within English as a Foreign Language (EFL) classrooms. The case study approach provides a rich, contextualized understanding of the teaching and learning process, capturing the complexities of DMC implementation in a natural classroom environment (Creswell, 2003). According to Yin (2014), multiple case studies enable comparisons across different settings, offering deeper insights into how DMC strategies are adapted and experienced by educators and students alike. By focusing on real-life classroom interactions, this research provides a detailed exploration of pedagogical strategies and student engagement, leading to valuable contributions in developing effective DMC frameworks (Jiang & Ren, 2020). The qualitative nature of the study ensures a nuanced perspective, capturing participants' experiences and reflections to inform best practices in multimodal instruction (Lim & Unsworth, 2023). This approach facilitates a deeper understanding of how multimodal teaching can enhance language learning outcomes, contributing to the ongoing development of digital literacy in EFL education.

Research Participants

The study involved 15 students who voluntarily participated as respondents. These participants were enrolled in an English Language Education Program in Indonesia and represented a diverse age range of 19 to 21 years. They engaged in the creation of teaching materials on grammar, specifically focusing on tenses, by incorporating images, audio, and video elements. A purposive sampling method was employed to select respondents, ensuring that all participants had prior experience with Digital Multimodal Composing during their

coursework. Prior to participation, each respondent provided informed consent, agreeing to take part in the study with the assurance that their identities would remain confidential.

Instruments

The research process was conducted in several phases to ensure comprehensive data collection. Initially, a diagnostic test was administered to assess the students' prior knowledge and skills related to digital multimodal text composition. Participants were required to respond to a series of questions based on a YouTube video titled *"The Power of Choice"* (https://www.youtube.com/watch?v=2uZhpRvvVM4). This video was selected for its strong relevance to the students' personal experiences with their daily life. The diagnostic test included a set of questions addressing key elements of DMC, which were presented in English. However, students were given the option to respond in either English or Bahasa Indonesia, their native language, to ensure clarity and accuracy in their responses. Student answers were scored quantitatively, with each relevant response awarded one point.

Following the diagnostic test, classroom observations were conducted through detailed note-taking during teaching sessions. These observations aimed to capture students' interactions, engagement levels, and their application of DMC concepts in real-time classroom settings. Finally, semi-structured interviews were conducted to gain deeper insights into students' perspectives on their experiences with DMC. The interview questions were structured around the Critical, Creative, and Technical Domains Framework to explore students' cognitive, creative, and technical engagement with digital multimodal composing.

Data Analysis

In alignment with the study's objectives, classroom observation was chosen as one of the primary data collection methods. Observations were conducted throughout DMC lessons, with the researchers assuming dual roles as both teachers and participant observers. Their direct involvement in the classroom setting provided an opportunity to obtain in-depth insights into the teaching and learning processes, allowing for a richer understanding of classroom dynamics (Merriam, 1998; Creswell, 1994). During each session, the researchers systematically recorded classroom events, interactions, and notable occurrences. At the conclusion of each session, these observations were compiled into detailed field notes. The structure and organization of the field notes were guided by the framework suggested by Bogdan & Biklen (1982) to ensure consistency and thoroughness in capturing classroom data.

The collected interview data were transcribed and analyzed using the interactive model analysis framework proposed by Miles et al. (2014). The interview questions were carefully designed to align with the Digital Multimodal Composing framework, ensuring they effectively captured students' perspectives on grammar instruction. The step involved a comprehensive literature review to establish the key themes in DMC-based instruction. Each interview theme and subtheme was derived from existing research on multimodal pedagogy. Critical Domain (Analyzing Multimodal Texts): This theme focused on students' ability to evaluate multimodal content and interpret meaning through text, images, and sound (Liang & Lim, 2020; Hafner & Ho, 2020; Jiang & Ren, 2021; Tour & Barnes, 2021; Lim & Unsworth, 2023).

RESEARCH FINDINGS AND DISCUSSION

Research Findings

Implementation of DMC in Grammar Instruction

Critical Domain (Conceptualization)

The Critical Domain (Conceptualization) marked the initial phase of implementing Digital Multimodal Composing (DMC) in grammar instruction, aiming to enhance students' critical thinking skills in analyzing, interpreting, and deconstructing multimodal texts. At this stage, students learned how text, images, and audio interact to construct meaning in grammar-

based multimodal content, allowing them to see how linguistic structures are visually and aurally represented. To lay a strong foundation in multimodal literacy, the lecturer delivered explicit instruction on metalanguage in video composition, which was grounded in Systemic Functional Linguistics (SFL). This framework guided students in understanding how textual, visual, and auditory elements work together in meaning-making (Zhang & Yu, 2023). Through structured direct instruction and scaffolding, students learned how to identify multimodal features, such as visual framing, spatial positioning, gaze, color contrast, and audio emphasis, enabling them to bridge the gap between linguistic and multimodal competencies (Kress & van Leeuwen, 2001).

To help students apply their analytical skills, the lecturer presented a video on verb tenses, which included varied sentence structures and visual storytelling techniques. This video provided opportunities for students to examine how different tenses were used in both spoken and written forms. The lecturer engaged students in structured discussions, prompting them with guided questions that incorporated metalanguage terminology, such as: How does the use of color and text placement in the video emphasize the difference between past and present tense?, how does the narrator's tone and voice contribute to the meaning of the grammar explanation?, and what visual or auditory cues help distinguish between different time frames in sentence structures? These discussions encouraged students to look beyond textual explanations and analyze how multimodal elements influence grammatical meaning, strengthening their ability to interpret multimodal representations of language (Hafner & Ho, 2020).Throughout this process, students actively engaged in multimodal analysis by paying close attention to the lecturer's explanation and participating in peer discussions and reflections.

The findings from the Critical Domain phase suggest that explicit instruction, guided scaffolding, and peer collaboration were instrumental in helping students critically analyze multimodal texts in grammar instruction. A recurring challenge observed was that students with limited digital literacy needed more structured support to meaningfully connect visual features with underlying grammar rules. Additionally, when students were explicitly taught to use metalanguage terminology, their ability to articulate insights and engage in grammar discussions significantly improved. Peer discussions also played a esensial role in supporting low-achieving learners, enabling them to interpret multimodal texts with greater clarity and confidence. These observations reinforce the importance of balancing direct instruction with reflective and interactive practices in building critical multimodal awareness. In addition, table 1 below summarizes the observed differences between high- and low-achieving students during the implementation of the Critical Domain in DMC-based grammar instruction.

Table 1
Student Performance in the Critical Domain

Focus Area	High-Achieving Students	Low-Achieving Students
Metalanguage Use	Confident in using terms like "gaze," "color contrast"	Initially confused; improved with guided prompts
Interpretation of Grammar & Media	Able to link visuals with grammar points	Focused more on visuals; struggled to grasp grammar nuances
Peer Collaboration	Provided support and clarification to peers	Benefited from group discussion; improved interpretation skills

Creative Domain (Preparation)

In the Creative Domain, students transitioned from passively analyzing multimodal content to actively designing their own grammar-based multimodal projects. This phase was

designed to foster collaboration, creativity, and structured content planning, allowing students to conceptualize and produce interactive learning videos that visually represent grammar rules. Research highlights that Digital Multimodal Composing (DMC) encourages self-expression and engagement, particularly when students are guided through structured multimodal tasks.

To initiate the creative process, the lecturer introduced a project assignment that required students to develop a video-based English lesson integrating text animations, voiceovers, and visual cues. This task was carefully aligned with the grammar lesson, ensuring that students engaged in an authentic learning experience that combined language learning with multimodal composition skills. Once in groups, students participated in discussions with the lecturer to finalize their lesson topics, critically considering which English grammar concepts would be most effectively taught through a multimodal approach. While some groups chose verb tenses such as Past Simple, Present Continuous, and Future Tense, others focused on sentence structures or modal verbs. Through these discussions, students developed a clearer understanding of how grammar rules could be visually and aurally represented. A low-achieving student reflected. Throughout this process, peer collaboration and instructor feedback played a crucial role, helping students grasp the pedagogical potential of multimodal composing while engaging more deeply in the creative process.

By the end of the Creative Domain phase, students had developed stronger skills in collaborative digital content creation. The findings indicate that structured planning tools, such as templates and storyboards, played a key role in managing students' cognitive load. Furthermore, collaborative learning not only enhanced students' digital literacy but also strengthened their grammar comprehension, reinforcing the importance of peer interaction in multimodal learning environments. Lastly, ongoing instructor feedback was critical in ensuring that students balanced linguistic accuracy with creative design, allowing them to produce well-structured, engaging instructional videos. Table 2 summarizes the observed outcomes and challenges faced by students during the implementation of the Creative Domain in DMC-based grammar instruction.

Table 2
Creative Domain: Student Outcomes and Challenges

Focus Area	Observations / Strengths	Challenges / Solutions
Collaboration	Mixed-ability groups fostered peer learning; high-achieving students supported peers	Cognitive gaps required ongoing instructor guidance and peer support
Planning & Design	Templates and storyboards helped organize ideas and reduce cognitive load	Some students struggled with initial content structuring and visual alignment
Linguistic Integration	Grammar concepts were explored through multimodal storytelling	Balancing grammar accuracy and creative design was difficult for some
Instructor Support	Feedback guided students to align creativity with pedagogy	Ongoing support needed to maintain focus on language objectives

Furthermore, collaborative learning not only enhanced students' digital literacy but also strengthened their grammar comprehension, reinforcing the importance of peer interaction in multimodal learning environments. Lastly, ongoing instructor feedback was critical in ensuring that students balanced linguistic accuracy with creative design, allowing them to produce well-structured, engaging instructional videos. These findings emphasize the

importance of guided multimodal instruction, ensuring that students can successfully integrate creative, linguistic, and digital skills to enhance grammar learning in the EFL classroom.

Technical Domain (Creation)

The Technical Domain marked the final stage of DMC framework, where students transitioned from conceptualizing and planning their projects to the actual production of interactive instructional videos. This phase required students to integrate various digital elements, including text, images, voiceovers, animations, and video editing to create engaging grammar lessons on topics such as Past Simple, Present Continuous, and Future Tense. The process encouraged students to apply their linguistic knowledge in a dynamic and visually enriched format, reinforcing their understanding of grammar through digital storytelling.

To facilitate this transition, the lecturer provided structured guidance by encouraging students to explore various technological tools, from Canva. These platform is selected due to their user-friendly interfaces and versatile multimedia features, making them accessible even to students with limited prior experience in video editing. Additionally, students were engaged in peer discussions, where more knowledgeable students shared their expertise on video production techniques, including editing, filtering, transitions, and audio synchronization. This collaborative approach helped students troubleshoot technical issues and gain confidence in navigating digital tools. To summarize the practical outcomes of this phase, Table 3 outlines the key technical skills students developed, challenges they faced, and the strategies employed to support their growth.

Table 3
Technical Domain: Digital Skills and Challenges

Focus Area	Observed Outcomes	Support Strategies
Tool Exploration	Students explored platforms like Canva and video editors	Guided tutorials and user-friendly tools introduced by lecturer
Peer Collaboration	Experienced students shared tips on editing, transitions, audio syncing	Group-based troubleshooting sessions
Digital Storytelling Skills	Students integrated visuals, audio, and grammar explanations effectively	Continuous feedback on content synchronization
Challenges with Production	Low-achieving students struggled with timing and transitions	Step-by-step video tutorials and peer assistance provided

As students continued working on their digital projects, it became clear that individual differences in digital fluency influenced their performance. High-achieving students demonstrated creativity and technical confidence, integrating advanced visual features to reinforce grammar points. Meanwhile, students with limited technical experience needed ongoing support to manage content synchronization and visual coherence. To further enhance learning, the lecturer provided access to online instructional videos, guiding students through step-by-step tutorials on video production. Research has shown that self-paced online tutorials enable students to acquire digital skills at their own speed, reinforcing their ability to manage multimodal projects independently. Throughout the process, students engaged in discussions with their instructor, seeking feedback on how to effectively integrate grammar explanations with visual design to create engaging instructional content.

Students' Perspectives on the Implementation of DMC in Teaching Grammar in the EFL Context

The findings from student interviews reveal significant differences in perceptions and experiences with Digital Multimodal Composing based on students' levels of achievement. High-achieving students demonstrated strong analytical, creative, and technical competencies,

whereas low-achieving students encountered challenges in multimodal comprehension, content structuring, and digital proficiency. The perspectives of students across Critical, Creative, and Technical Domains highlight the varying degrees of engagement and obstacles faced during the implementation of DMC in grammar instruction.

Audience Awareness: Understanding the Target Audience

High-achieving students demonstrated a strong awareness of their audience, ensuring that their multimodal content was tailored to enhance understanding. Students 9 explained,

> *"When I create a lesson, I think about what would make grammar easier for my classmates to understand. Using color-coding and examples from daily conversations helps them relate."*

This response indicates that these students consider visual and contextual factors to improve audience comprehension, making grammar explanations more accessible and engaging. On the other hand, low-achieving students found it challenging to adapt their content to meet audience needs. Student 12 shared,

> *"I just put the information in the video without thinking too much about how it looks to others."*

This highlights a lack of strategic content planning, suggesting that these students may need explicit guidance on audience adaptation and visual organization to improve the effectiveness of their grammar lessons. Another low-achieving student, student 3 reflected,

> *"I know what I want to explain, but I don't know how to make it interesting for others."*

This response suggests that while students have ideas, they struggle with presentation techniques that make their content engaging. Providing structured frameworks or scaffolding strategies could support their ability to design materials that cater to audience needs.

Multimodal Literacy: Integrating Various Resources

High-achieving students exhibited confidence in utilizing multimodal resources, integrating text, visuals, and audio effectively. Students 5, 8, 14 expressed,

"I learned how to combine animations with explanations, which makes my grammar lesson more interactive and fun to watch."

This indicates that multimodal composing helps students enhance their instructional clarity by synchronizing different modes of communication. In contrast, low-achieving students struggled with effectively integrating different semiotic elements.

"I use pictures, but I don't always know how they relate to the grammar rule."

"Sometimes I just put text on the screen without knowing if it actually helps explain the grammar."

The excepts show that the students struggled with effectively integrating different semiotic elements. This suggests that while they recognize the importance of visuals, they require explicit instruction on how to connect multimodal elements to linguistic explanations.

Analytical Skills: Evaluating the Credibility of Digital Sources

High-achieving students displayed critical awareness in assessing digital resources, recognizing the importance of credibility in multimodal composing. Student 11 stated,

"Before using an online example, I check if it comes from a reliable grammar website or a professional educator."

This shows that these students actively verify information, ensuring that their materials align with accurate linguistic conventions.

However, low-achieving students found it difficult to assess the reliability of digital sources. Student 3 and 8 admitted,

"I just use whatever I find first because I assume it's correct."

"I see different grammar explanations online, and sometimes I don't know which one to trust."

This shows that some students rely on convenience rather than critical evaluation, indicating the need for explicit training in source validation to help them distinguish credible linguistic content from unreliable ones. Also, it highlights confusion caused by conflicting online information, underscoring the importance of teaching students how to compare and validate sources to develop a more analytical approach to multimodal composing.

Discussion

The Implementation of Digital Multimodal Composing (DMC)

This study aimed to explore how pre-service teachers engage with Digital Multimodal Composing (DMC) in grammar instruction, the challenges they encounter, and the pedagogical strategies they adopt to navigate these challenges. The findings reveal that DMC implementation, structured around three interconnected domains—Critical, Creative, and Technical—effectively supported students in developing multimodal literacy and pedagogical awareness, aligning with the research questions posed earlier.

The first phase of the DMC framework involved critical engagement with multimodal texts, where students analyzed how semiotic resources (text, images, and sound) interact to convey grammatical meaning. Research has consistently shown that explicit instruction in multimodal metalanguage is essential for enabling learners to interpret multimodal texts with greater precision (Hafner & Ho, 2020; Shin, et. al., 2020). The study findings confirmed this, as students who were introduced to visual framing, spatial positioning, and color-coded text analysis developed a more refined understanding of grammar patterns. This supports Hafner and Ho's (2020) argument that multimodal literacy instruction facilitates deeper comprehension of linguistic structures by reinforcing grammatical distinctions through multimodal cues.

However, the transition from text-based to multimodal analysis posed challenges for low-achieving students, who initially struggled to connect linguistic features with visual and auditory representations. These findings highlight that novice multimodal learners often experience cognitive overload, as they are required to process multiple modes of meaning simultaneously (Zhang & Yu, 2022; Huang et al., 2022). The findings align with this perspective, as students without prior exposure to multimodal texts focused more on the aesthetic components rather than the functional role of semiotic resources in grammar instruction. This supports the need for structured scaffolding techniques, such as guided discussions and peer feedback sessions, which proved effective in helping students refine their multimodal analysis skills (Jewitt, 2016; Froehlich & Guias, 2021).

The second phase, Creative Domain required students to transition from analyzing multimodal content to designing their own multimodal grammar lessons, integrating text, images, animations, and voiceovers. Research indicates that engaging in multimodal composing enhances students' creative problem-solving skills and fosters deeper cognitive engagement with linguistic content (Andreson et. al., 2018; Lim & Kessler, 2023; García-Pinar, 2024). This was reflected in the study's findings, as students expressed enthusiasm for exploring new ways to visually represent grammar concepts, reinforcing the previous studies that multimodal composing allows students to personalize their learning experience.

Despite these benefits, some students felt overwhelmed when trying to balance linguistic accuracy with visual storytelling. Prior research suggests that students unfamiliar with multimodal composing often prioritize aesthetics over pedagogical clarity, a phenomenon also observed in this study (Hafner & Ho, 2020; McGrail et al., 2021; Jiang et. al., 2022). The lack of structured planning tools, such as storyboarding frameworks and content organization templates, contributed to students' difficulties in structuring their digital lessons effectively. Hafner & Ho (2020) and Kessler &Marino (2022) emphasize that

successful multimodal composing requires structured content planning, as it ensures that students maintain a clear instructional focus while integrating multimodal elements. The study findings align with this, as students who were provided with structured templates demonstrated greater success in balancing creativity with content clarity.

The final phase of the DMC framework focused on technical proficiency, where students engaged in the production of multimodal grammar lessons using digital tools. Research underscores that students' ability to manipulate multimodal resources depends on their digital literacy skills, which influence their capacity to integrate text, visuals, and audio cohesively (Fedorenko, 2019). The study found that high-achieving students adapted quickly, demonstrating proficiency in video editing, animation design, and content structuring, which aligns with their argumenta that digitally proficient learners leverage multimodal tools more effectively to enhance instructional content.

However, low-achieving students encountered difficulties with technical aspects of video production, including synchronizing narration with visuals and ensuring instructional coherence. This finding supports Hafner & Ho's (2020) and Jiang & Ren (2020) assertion that students unfamiliar with digital tools often struggle with multimodal cohesion, requiring additional instructional support and peer collaboration. The use of peer mentoring and online tutorials helped bridge this gap, reinforcing research that highlights the importance of collaborative learning in developing students' digital literacy competencies.

The integration of Digital Multimodal Composing (DMC) in grammar instruction has significantly impacted students' ability to analyze, conceptualize, and produce multimodal grammar explanations. The findings reveal that students, particularly those with varying levels of proficiency, demonstrated different degrees of engagement, comprehension, and skill acquisition when working with multimodal texts. These findings align with existing research that emphasizes the cognitive and pedagogical benefits of multimodal learning, but also highlight the challenges in balancing linguistic accuracy, creativity, and digital literacy (Jiang & Ren, 2020; Li & Akoto, 2021; Lim & Unsworth, 2023).

One of the core advantages of using DMC in grammar instruction is its ability to enhance students' critical thinking and analytical skills when engaging with multimodal texts. Research suggests that exposure to multimodal representations of language fosters deeper cognitive processing, as learners must decode meaning from various semiotic resources, including text, visuals, and audio (Hafner & Ho, 2020). The findings indicate that students who had prior experience with multimodal literacy were more adept at identifying linguistic patterns within multimodal texts, such as the way color-coded text emphasized verb tense differences or how narrative structure influenced grammatical choices. This supports Hafner & Ho's (2020) claim that explicit instruction in multimodal literacy enhances learners' ability to navigate digital texts effectively.

However, students with lower levels of digital literacy often struggled to identify the communicative function of visual and auditory elements in their grammar-focused multimodal compositions. Rather than connecting these modes to grammatical meaning, they tended to focus on surface-level design features such as color or layout. This finding aligns with research by Zhang and Yu (2023), who observed that learners with limited prior exposure to multimodal tasks often lacked the skills to link linguistic and non-linguistic modes effectively without explicit instructional support. Their study emphasized the need for targeted scaffolding to help students make informed design choices grounded in meaning-making. Additionally, the structured peer discussions and scaffolded instruction implemented in this study helped bridge the gap in multimodal understanding, echoing earlier work by Jewitt (2016), who argued that collaborative learning environments play a critical role in enhancing learners' capacity to critically engage with multimodal texts.

DMC has also been shown to foster creativity in language learning, allowing students to engage in interactive, visually dynamic approaches to grammar instruction. Research by Anderson et. al., (2018) argues that when students are encouraged to design multimodal compositions, they are more likely to develop a personal connection with the learning material, leading to higher engagement and deeper understanding. This was evident in the study's findings, where students who were actively involved in creating instructional videos on grammar topics expressed greater motivation and enthusiasm in their learning (McGrail et al., 2021; García-Pinar, 2024). The opportunity to design content using animations, voiceovers, and interactive elements allowed students to visualize grammar rules in context, supporting research that suggests multimodal composing increases engagement by making abstract linguistic concepts more tangible.

However, the key challenge in implementing DMC in grammar instruction was students' varying levels of technical proficiency in digital tools. Students with lower technical proficiency faced significant challenges, particularly in synchronizing audio with visuals and structuring their content effectively. These difficulties mirror findings from Hafner & Ho (2020), who argue that students unfamiliar with digital tools often struggle with multimodal cohesion, requiring additional instructional support and peer collaboration. In this study, peer mentoring played a crucial role in overcoming these challenges, reinforcing research that highlights the benefits of collaborative learning in developing digital literacy skills (Jiang et. al., 2020; Li & Pham , 2022; Paradita, 2023).

The results of this study offer several implications for teacher educators. Teacher preparation programs should incorporate dedicated training in DMC, particularly in grammar instruction, to equip pre-service teachers with the necessary digital, creative, and pedagogical competencies. Course designs should include hands-on workshops on video-editing tools, exemplars of successful multimodal grammar projects, and guided instruction on using metalanguage to analyze multimodal texts. Additionally, teacher educators should integrate peer-review activities and provide scaffolded planning templates to support the structuring of multimodal lessons. Embedding these practices into pre-service teacher education can foster reflective, digitally literate educators who are confident in designing student-centered, multimodal grammar instruction.

Students' Perspectives on the Implementation of DMC in Teaching Grammar in the EFL Context (Technical Domain)

In EFL grammar teaching, DMC reveals how students' digital skills, enthusiasm, and capacity to combine multimodal elements vary. The results reveal that students' capacity to provide successful multimodal grammar lectures is much influenced by their technical skills and problem-solving capacity. High achievers used digital agency, skilfully combined voiceovers, animations, and transitions to enhance their grammar instruction. Studies show that students who actively engage with digital technology acquire deeper conceptual knowledge as they control semiotic resources to effectively convey linguistic concepts (Amgott, 2022; Jiang et al., 2022; Liang & Lim, 2020; Hafner & Ho, 2020). Low-achieving students, however, often limited their compositions to basic text and static images, demonstrating a lack of confidence in navigating digital platforms. This finding aligns with prior research showing that learners with low digital literacy tend to avoid using complex multimodal features due to perceived cognitive overload, thereby missing opportunities to fully exploit the affordances of multimodal composition (Zhang, Akoto, & Li, 2021). To address this gap, studies have shown that explicit instruction in digital multimodal composition significantly enhances learner engagement and technical skill development. In particular, structured training in navigating digital tools, organizing multimodal content, and understanding platform-specific features is essential for building student competence (Lim & Nguyen, 2022).

Students' capacity to produce well-integrated multimodal compositions was much influenced by their digital fluency—that is, their capacity to browse, integrate, and creatively modify several digital resources cohesively. High-achieving developed a high awareness of multimodal coherence by designing structured grammar courses including text, audio, and visuals. Research indicates that when learners successfully combine different semiotic modes and participate in sophisticated meaning-making activities, multimodal literacy enhances language learning (Hafner & Ho, 2020; Tour & Barnes, 2021). These findings accordance with the results of the study, in which high achievers created interesting, interactive grammar lessons using synchronising multimodal components. Low-achieving students struggled to balance linguistic accuracy with multimodal representation, resulting in incoherent compositions dependent on stationary text (Navila et al., 2023). Research indicates that students who are not used to multimodal composition frequently struggle with content organisation, which supports the need of scaffolding strategies including templates, structured frameworks, and guided feedback to improve multimodal integration (Jiang et al., 2022; Lim & Unsworth, 2023).

Underachieving students often struggled with technology, which reduced their confidence in using digital tools. Limited digital literacy skills remain a significant barrier for many EFL learners engaging in multimodal activities (Paradita, 2023; Nabhan & Hidayat, 2018). In contrast, high-achieving students demonstrated self-directed problem-solving strategies, utilizing online tutorials and peer collaboration to overcome technical obstacles. These learners actively experimented with digital tools, thereby improving their digital literacy and enhancing their ability to resolve issues independently (Hafner & Ho, 2020). Meanwhile, low-achieving students tended to rely heavily on peers and frequently substituted or omitted digital components when faced with technical difficulties. Research has shown that novice multimodal composers experiencing technological challenges often display frustration and avoid complex multimodal elements instead of exploring potential solutions (Zhang, Akoto, & Li, 2021). These patterns underscore the necessity for explicit instruction in troubleshooting and digital problem-solving during teacher training. Pre-service teachers, in particular, benefit from structured workshops that focus on technical fluency, confidence-building, and autonomous digital learning. Interactive tutorials, hands-on digital seminars, and embedded troubleshooting guidance can empower learners to manage multimodal composition challenges more independently, contributing to a more resilient and adaptable digital learning environment (Lim & Nguyen, 2022; Liang & Lim, 2020; Zhang & Yu, 2023; Navila, Mahmud, & Rahman, 2023).

The findings reveal that students' digital literacy, comfort in using technology, and competence to fix technical problems determine their capability to apply multimodal features in grammar instruction. While low-achieving students struggled tool exploration, multimodal integration, and overcoming digital challenges, high-achieving students displayed digital fluency, problem-solving skills, and a systematic approach to multimodal writing. These results highlight the need of methodical digital training, peer collaboration, and scaffolded multimodal education to guarantee that every student learns the competencies required to interact effectively with DMC (Marissa, 2022; Paradita, 2023). By addressing these challenges through explicit instruction, guided practice, and continuous technical support (Hafner & Ho, 2020; Liang & Lim, 2020; Wang et al., 2023), students can maximise the potential of digital multimodal composing in EFL grammar instruction and create a more interactive and student-centered learning experience.

CONCLUSION

This research examined the application of Digital Multimodal Composing (DMC) in grammar instruction within the EFL setting and its effects on students' learning experiences.

The results demonstrate that DMC promotes engagement, improves conceptual comprehension, and fosters digital literacy abilities, making it an effective pedagogical method in grammar training. Students engaged with multimodal texts, developed digital content, and enhanced their technical abilities in the creation of instructional materials in Critical, Creative, and Technical Domains. The Critical Domain assisted students in analysing multimodal texts and comprehending grammatical structures more effectively; nonetheless, certain low achiever learners necessitated further coaching. The Creative Domain promoted inventive course design; nonetheless, students encountered difficulties in reconciling creativity with linguistic precision. The Technical Domain indicated that students with previous digital literacy transitioned effectively, whilst others encountered difficulties with video editing and content synchronisation, finding assistance through peer mentoring and structured training. Despite these limitations, the systematic execution of DMC afforded students significant learning experiences, enhancing their multimodal literacy, creativity, and technical skills. To enhance DMC's efficacy in EFL grammar instruction, it is essential to use structured scaffolding, clear instruction, and digital literacy training.

ACKNOWLEDGEMENT

We would like to express my sincere gratitude to Esa Unggul University for the invaluable support provided throughout this research. My deepest appreciation also goes to the students of the English Language Education Program, whose participation and insights contributed significantly to the success of this study.

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