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The integration of generative artificial intelligence into digital multimodal composing in second language classrooms: a scoping review from the perspective of tasks

FENGRUI CI
LIANJIANG JIANG

Faculty of Education, The University of Hong Kong, Hong Kong SAR, China

Abstract

With the rise of generative artificial intelligence (GenAI), integrating it into digital multimodal composing (DMC) has created innovative pedagogical opportunities for second language (L2) education. In the current research, the integration of GenAI into DMC, particularly how it facilitates task design and implementation in DMC, remains insufficiently explored. This scoping review investigates two questions. (1) In what forms is GenAI integrated into DMC tasks in L2 classrooms? (2) What specific pedagogical roles does GenAI perform in DMC task design and implementation? Using Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA), 12 empirical studies were selected and analyzed. Three forms of GenAI-assisted DMC tasks were identified, and GenAI fulfilled five functional roles. The findings further suggest that the pedagogical functions of GenAI blur the conventional boundaries of the task phases, driving a shift towards more dynamic and functionally structured language tasks. The research redefines GenAI-assisted DMC tasks as dynamic instructional practices co-constructed by teachers, students, and GenAI. The study proposes a task design framework, namely role identification–interaction and forms–instruction design, and calls for future research to validate this framework and expand GenAI applications across diverse contexts and disciplines. This review claims that GenAI should be positioned not only as a tool but as an interactive agent in meaning-making in L2 DMC tasks.

Keywords: Digital multimodal composing; generative artificial intelligence; L2 education; task design

Introduction

Over the past two decades, with the increasing multimodal and digital nature of second language (L2) education context, digital multimodal composing (DMC) has emerged as a new approach in L2 teaching and has attracted significant attention from educational researchers. From a social semiotics perspective, language extends beyond text, vocabulary, and grammar. DMC encompasses linguistic and nonlinguistic modes, such as images, sounds, and videos, to create meanings (Gee, 2014; Kress, 2000). Researchers have redefined traditional "literacy" as "multiliteracies", shifting from being previously limited to reading and writing to include learners' ability to design and express meaning and their sociocultural identities using multimodal resources (Belcher, 2017; Kern, 2024; Li, 2022; Lim et al., 2024; New London Group, 1996). The concentration on digital literacies and multiliteracies has positioned DMC as an essential agenda in L2 education. Current research has inquired about the educational potential of DMC from various theoretical perspectives, highlighting its role in enhancing learners' writing and speaking skills, critical thinking, self-expression, and learning motivation (Xu, 2023; Yang et al., 2022; Zhang & Yu, 2023). As a dynamic process of meaning-making, DMC not only improves learners' language proficiency but also increases their engagement in peer interaction and identity construction. At present, DMC is developing as one of the most prominent research themes, with empirical studies focusing on digital storytelling, video production, and poster creation to inquire about the implementation and assessment of DMC tasks, as well as the experiences of both students and teachers (Jiang & Hafner, 2024; Kessler, 2024).

With the emergence of generative artificial intelligence (GenAI), integrating powerful chatbots such as ChatGPT, Poe, and DALLE-2 into DMC practice has drawn the attention of L2 education researchers, which is considered the next major direction for DMC research (Li, 2022). However, most existing research focuses on monomodal teaching tasks like GenAI-assisted English as a foreign language (EFL) writing, while GenAI can facilitate learners' cognitive skills and engagement as an assistant (Teng, 2024). As a result, our understanding of how GenAI influences the design and implementation of DMC tasks remains limited. Although GenAI has been implemented in L2 writing for content generation, translation, and feedback, its role in multimodal composing tasks remains underexplored (Vigil & Yi, 2024). There is an urgent need to explore how GenAI can support the design, implementation, and assessment of DMC tasks. It is also essential to clarify whether GenAI only assists as a tool in specific task phases, such as text generation or translation, or whether it plays an agentive, collaborative role throughout the task process. Addressing this research gap holds significant value and makes a notable contribution. On the one hand, a review of GenAI-assisted DMC tasks can identify the characteristics and types of such tasks, which addresses the gap in the DMC task design mentioned by Jiang and Hafner (2024). It also provides useful insights for educators when designing DMC tasks. On the other hand, clarifying the roles played by GenAI in DMC tasks contributes to the emerging discussions about a posthumanist turn in language education, which regards GenAI as an active agent in the processes of teaching, learning, and meaning-making rather than merely as a supportive tool (Peng & Liang, 2025; Pennycook, 2018). It also offers a theoretical foundation and starting point for future research on GenAI-assisted DMC tasks. Therefore, the present study conducts a scoping review of empirical research on GenAI-assisted DMC tasks in L2 classrooms. It aims to address the above gap by identifying how GenAI is integrated into DMC task design and what specific roles it fulfils in the instructional process.

Literature Review

DMC in L2 Education

DMC refers to approaches that use digital tools to create compositions combining text, sound, images, video, and other semiotic resources (Jiang, 2017). It is grounded in social semiotics theory (Halliday, 1978; Hodge & Kress, 1988; Kress, 2010), which emphasizes that language is one of the linguistic modes to design, reframe, and transform meaning with other nonlinguistic modes. DMC has already been implemented across various educational phases, contexts, and disciplines, which demonstrates its alignment with the practices and developmental trends of language education in the digital age (Li & Akoto, 2021; Zhang et al., 2023). From various theoretical perspectives, DMC positions learners as agentive designers who make meaning by utilizing their language proficiency, multiliteracies, sociocultural contexts, and identities (Jiang & Hafner, 2024). Previous literature indicates that DMC has a strong and comprehensive pedagogical impact on L2 education. From a cognitive perspective, DMC supports the development of learners' L2 proficiency, particularly in writing and speaking (Kim et al., 2022; Xu, 2023; Yang et al., 2022). In the sociocultural landscape, it also increases learners' engagement, autonomy, and peer interaction in L2 learning (Xie & Jiang, 2025). When participating in DMC activities, L2 learners interact with their environment, classmates, and nonverbal semiotic resources, which enhances their multiliteracies, learning motivation, and cultural identity (Kress, 2010; Jiang et al., 2024; Zhang et al., 2023). For L2 educators, implementing DMC presents a valuable opportunity to integrate digital tools and multimodal resources in ways that prompt a necessary rethinking of language teaching (Jiang et al., 2021). In sum, DMC has significant potential for L2 education and represents a key area of research in language education and applied linguistics.

Previous Research on GenAI in DMC

Since the rapid development of GenAI, substantial research has already demonstrated its supportive functions in making monomodal language outputs, which suggests that GenAI may also be further integrated into DMC tasks. For example, GenAI can be implemented as a translation tool or writing assistant, providing ideas for L2 writing, generating accurate L2 text resembling human language, and assessing and providing feedback for revision (Guo & Wang, 2024; Huang & Teng, 2025; Kang & Yi, 2023; Su et al., 2023; Wang & Dang, 2024; Wu et al., 2025). Encouraging learners to use GenAI for training in EFL speaking can create more opportunities for oral practice, significantly enhance their learning motivation, and provide strong psychological and emotional support (Huang & Zou, 2024). These transformations in the production of linguistic modes indicate that GenAI has had a significant impact on the meaning-making process in L2 classrooms.

Some studies have begun integrating GenAI into the DMC process, which is known as GenAI-assisted DMC. On one hand, L2 learners can use GenAI as a tool to remix and transform various modes and generate images that are consistent with the meaning of the text (Lin et al., 2025). GenAI with sound generation functions can assist L2 students in converting text into audio, facilitating tasks like composing English songs based on text and pictures (M.R.A. Chen, 2024). In the common DMC video production task, L2 learners can use text and animation generated by GenAI to create videos, thus integrating multimodal resources (Wünsch-Nagy, 2025). On the other hand, GenAI can also be integrated into DMC tasks to foster multiliteracies such as collaboration awareness, audience awareness, and critical thinking. Kim et al. (2022) explored how students critically reflect on the implications of AI for the future while promoting group collaboration in DMC tasks. Jao et al. (2025) introduced AI robots into L2 classrooms, where

students collaborated with the robots to create audience-oriented English texts, enhancing their awareness of the audience. Tan (2025) found that the use of GenAI in DMC tasks helped students realize the importance of critically engaging with AI-generated content and identifying stereotypes and misinformation in order to develop critical ethical thinking. Obviously, integrating GenAI into DMC tasks could bring about revolutionary changes in L2 teaching, which will follow the development of language education.

Necessity of a Review on GenAI-Assisted DMC Tasks

In L2 education, tasks are widely regarded as the basic structure and primary unit of coursework and curriculum (Ellis et al., 2020; Swales & Feak, 2023). A task is generally defined as a meaning-focused activity that engages learners using the target language to achieve communicative outcomes, which is framed as an interactive process with a real-world context (Ellis, 2003; Ellis et al., 2020; Long, 1992; Nunan, 2004). However, in DMC, tasks are often treated as interchangeable with activities, which reduces tasks to the production of a specific DMC product and overlooks the shared focus of DMC and tasks on meaning-making and interaction (Kessler, 2024). This study refers to the definition of DMC tasks proposed by Jiang and Hafner (2024), which views tasks as meaning-making processes where L2 learners integrate various modes of communication. In this view, concrete outputs such as videos or digital storytelling are considered DMC products rather than the tasks themselves.

So far, research on DMC tasks and their design remains limited. Although previous review articles rarely focus on DMC tasks specifically, exploring the design of DMC tasks is essential for advancing both the theoretical and practical development of DMC pedagogy in L2 education (Li & Zhang, 2023; Zhang et al., 2023). After the emergence of GenAI, despite recognizing the revolutionary significance of combining GenAI with DMC for L2 teaching, research that has incorporated GenAI activities into DMC tasks still lacks an understanding of how DMC tasks are supported and changed by GenAI tools and the roles of GenAI in each task. The gap is significant because clarifying the implementations and functions of GenAI in DMC activities can inform more effective DMC task designs, enhance pedagogical practices, and ensure that the integration of GenAI aligns with the goals of each DMC task. Therefore, this paper reviews existing research on using GenAI in DMC tasks and examines the contributions of GenAI in activities throughout the DMC task process. This research aims to identify the types of GenAI-assisted DMC tasks, specifically how these tasks integrate with GenAI. In addition, it seeks to investigate the specific roles that GenAI plays within DMC task design and implementation.

Methodology

This study adopts a scoping review design and follows the six-stage framework proposed by Sargeant and O'Connor (2020). The six stages include (1) identifying the research questions, (2) identifying the studies, (3) selecting relevant studies, (4) charting the data, (5) collecting, summarizing, and reporting the results, and (6) stakeholder consultation. This framework is an adaptation of the original model by Arksey and O'Malley (2005) and has been applied in multimodal teaching reviews (e.g., Zaidi & Sah, 2024). The scoping review was selected over other types of reviews because the academic community is still exploring how GenAI, as an emerging tool, integrates with DMC as a novel pedagogical approach. This study aims to define GenAI-assisted DMC as a new form of language-learning task and to identify its features and research gaps (Munn et al., 2018). The inclusion of stakeholders is essential, as the study seeks to identify the specific types of GenAI-assisted DMC tasks and the pedagogical roles of GenAI, which will provide clearer research niches for both teaching practice and academic inquiry.

In the first stage of the review process, and in line with the research aims, two research questions were formulated:

(1) In what forms is GenAI integrated into DMC tasks in L2 classrooms?
(2) What specific pedagogical roles does GenAI perform in DMC task design and implementation?

The literature search was conducted across five databases: Google Scholar, Web of Science, ERIC, Scopus, and EBSCO. These databases were selected because previous reviews related to DMC have shown that they contain a substantial body of educational research (e.g., Lim et al., 2024; Zhang et al., 2023). Based on the research questions, the initial search used the following keywords: (Digital Multimodal Composing/Multimodal Composing) AND (Artificial Intelligence) AND (L2 Education/Second Language Education). However, after the first round of searching, very few relevant results were found in databases other than Google Scholar. To address this issue, we added keywords for specific DMC task types, including Digital Storytelling, Video Making, and Posters, to the remaining four databases. In Scopus, the initial search returned only four results. Upon review, one of the results was a call for papers for a special issue, and we subsequently included all published and forthcoming articles from that special issue in our review.

A total of 516 articles were identified through keyword searches. The study followed the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) framework for the screening process and applied specific inclusion criteria:

(1) The article must be written in English.
(2) Publication time: Articles published between 2015 and 2025 were considered.
(3) Article type and accessibility: Articles must be peer-reviewed and accessible.

To ensure a sufficiently broad scope that captured studies on both GenAI and DMC, published and in-press peer-reviewed journal and conference papers were included. After reviewing the titles and abstracts, 445 articles were excluded. These were either duplicates, did not meet the inclusion criteria, or were unrelated to language education. The remaining articles were read in full and assessed against the exclusion criteria. First, three articles were excluded because they focused on AI-assisted multimodal composition in other disciplines and only briefly mentioned educational or language-related applications. Second, four articles were excluded due to a lack of access to the full text. Among the 64 remaining articles, 18 focused only on monomodal language learning tasks using GenAI and did not involve other modalities. Eleven articles discussed the use of DMC in language education but only speculated on the possible integration of GenAI. Nine articles did not describe the concrete processes of GenAI-assisted DMC tasks, such as task types, steps, or genres. Fourteen articles were excluded because they were not empirical studies but literature reviews or commentary papers. Although Kostopolus (2025) included a case of using GenAI in DMC instruction, the scenario was hypothetical and not based on empirical research. Therefore, it was excluded. In the end, 12 articles met all inclusion criteria and did not fall under any of the exclusion criteria (Figure 1). These articles were included in the final review.

The data analysis proceeded in three stages. First, we reviewed the 12 selected articles to summarize their teaching context, methodology, and DMC products. The classification of DMC

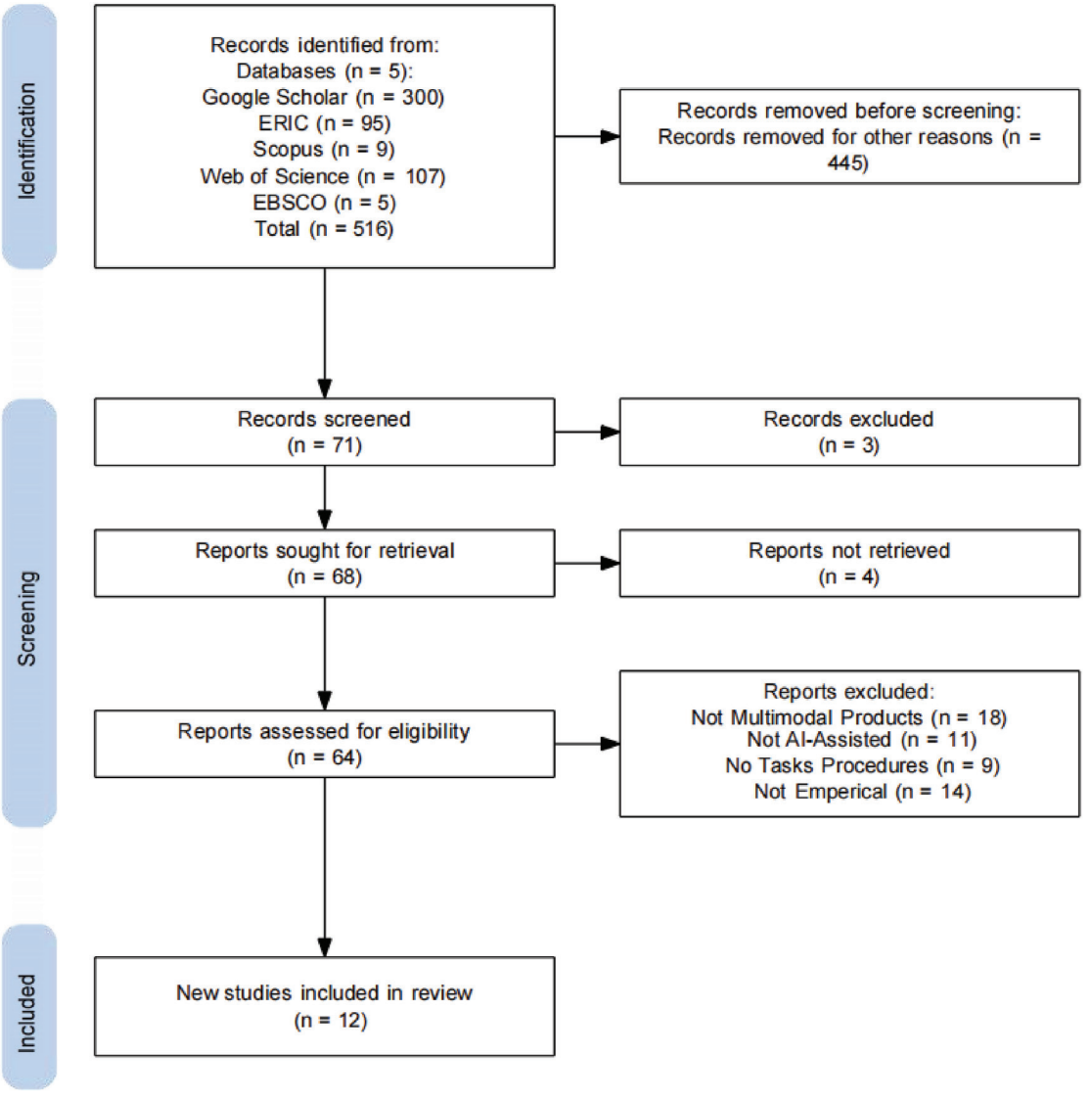

Figure 1. *Article inclusion process. Adapted from Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) in Haddaway et al. (2022).*

products followed the framework proposed by Kessler (2024). Next, we analyzed the design of GenAI-assisted DMC tasks and identified three models based on the form of GenAI support: DMC tasks in which GenAI is embedded as part of the instructional plan, tasks using GenAI as a tool during implementation, and tasks involving formative assessment with GenAI. In the third stage, we examined the specific roles that GenAI played in the tasks. We identified five main roles: stimulator with scaffolding, co-instructor, co-composer, instant feedback provider, and mediator of critical literacies. It is important to note that GenAI did not perform a single role in each task. Instead, it often took on multiple roles across different task activities. We documented coding lists for each stage using MAXQDA. To ensure the reliability of the review, we read every article carefully and invited an external reviewer to measure the coding results. Any discrepancies were discussed and resolved through negotiation until an agreement was reached.

Table 1. Included articles

Article and year	Title	Journal or conference	Region
Y. Chen (2024)	Perceptions of AI-facilitated creativity in language education: A study on digital storytelling	*The JALT CALL Journal*	Taiwan, China
Cheung & Shi (2025)	Co-creating stories with generative AI: Reflections from undergraduate students of a storytelling service-learning subject in Hong Kong	*Australian Review of Applied Linguistics*	Hong Kong Special Administrative Region (SAR), China
Huang et al. (2024)	Leveraging multimodal GenAI chatbots in EFL learning: Learning attitudes and user experiences	2024 International Conference on Artificial Intelligence and Teacher Education (ICAITE 2024)	Mainland China
Hwang et al. (2024)	AI-enhanced video drama-making for improving writing and speaking skills of students learning English as a foreign language	*Innovation in Language Learning and Teaching*	Taiwan, China
Jiang & Lai (2025)	How did the generative artificial intelligence-assisted digital multimodal composing process facilitate the production of quality digital multimodal compositions: Toward a process-genre integrated model.	*TESOL Quarterly*	Hong Kong SAR, China
Li et al. (2025)	Investigating L2 learners' text-to-video resemiotisation in AI-enhanced digital multimodal composing	*Computer Assisted Language Learning*	Mainland, China
Lin et al. (2025)	Integrating generative AI into digital multimodal composition: A study of multicultural second-language classrooms.	*Computers and Composition*	Hong Kong SAR, China
Liu et al. (2024)	Investigating students' cognitive processes in generative AI-assisted digital multimodal composing and traditional writing	*Computers & Education*	New Zealand

(*Continued*)

Article and year	Title	Journal or conference	Region
Mesa Morales & Zapata (2024)	Digital multimodal composing in beginning L2 Spanish classes: Student-created children's books.	*The International Journal of Literacies*	US
Smith et al. (2025)	Multimodal composing with generative AI: Examining preservice teachers' processes and perspectives	*Computers and Composition*	US
Tan et al. (2025)	Purposeful remixing with generative AI: Constructing designer voice in multimodal composing.	*Computers and Composition*	US
Wünsch-Nagy (2025)	From multimodal space to digital multimodal text: Making choices in digital multimodal compositions inspired by museum visits in higher education.	*Computers and Composition*	Hungary

Table 2. Five roles of GenAI in DMC tasks

Roles of GenAI	Articles
Stimulator with scaffolding	Y. Chen (2024); Huang et al. (2024); Hwang et al. (2024); Jiang & Lai (2025); Li et al. (2025); Lin et al. (2025); Liu et al., (2024); Mesa Morales & Zapata (2024); Smith et al. (2025); Tan et al. (2025)
Co-teacher	Cheung & Shi (2025); Jiang & Lai (2025); Lin et al. (2025); Liu et al., 2024); Smith et al. (2025); Tan et al., (2025)
Co-composer with resource generation	All
Feedback provider	Cheung & Shi (2025); Huang et al. (2024); Hwang et al. (2024); Jiang & Lai (2025); Lin et al. (2025); Smith et al. (2025)
Facilitator of critical literacies	Cheung & Shi (2025); Hwang et al. (2024); Li et al. (2025); Lin et al. (2025); Liu et al., (2024); Mesa Morales & Zapata (2024); Tan et al.(2025)

Findings

Context, Methodology, and Products

To understand the current state of research on GenAI-assisted DMC tasks, we analyzed the overall characteristics of the selected studies. Most studies were conducted in undergraduate (9) and secondary school (2) classrooms. One exception is Smith et al. (2025), who applied

GenAI-assisted DMC tasks in a course for both undergraduate and postgraduate students. In terms of language background, five studies focused on EFL learners who share the same first language. Three studies involved EFL learners with diverse first language (L1) backgrounds. Two studies were conducted in non-English language contexts, specifically Chinese and Spanish (Lin et al., 2025; Mesa-Morales & Zapata, 2024). Two other studies involved mixed-language contexts, including both international and local students (Smith et al., 2025; Wünsch-Nagy, 2025) (Figure 2).

Regarding methodology, seven studies adopted a qualitative paradigm (Figure 3). These studies used case studies, narrative inquiry, or unspecified qualitative designs, and most relied on thematic and multimodal analysis for data interpretation. Two studies followed a quantitative approach, both using quasi-experimental designs (Y. Chen, 2024; Hwang et al., 2024). Lin et al. (2025) adopted a mixed-methods approach, using a survey to collect learners' motivation data, which were analyzed descriptively to triangulate the qualitative findings. Jiang and Lai (2025) took a nonparadigm-specific approach, examining both the quality of students' work with and without GenAI assistance and the creative process of GenAI-assisted DMC tasks. In terms of task products, video production (4) and multimodal texts (4) were the most common types of GenAI-assisted DMC tasks. Other tasks included digital storytelling (2), digital books

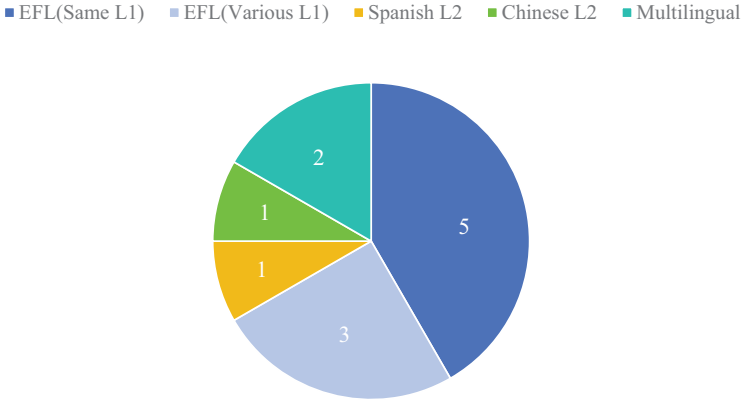

Figure 2. *Language contexts of GenAI-assisted DMC tasks.*

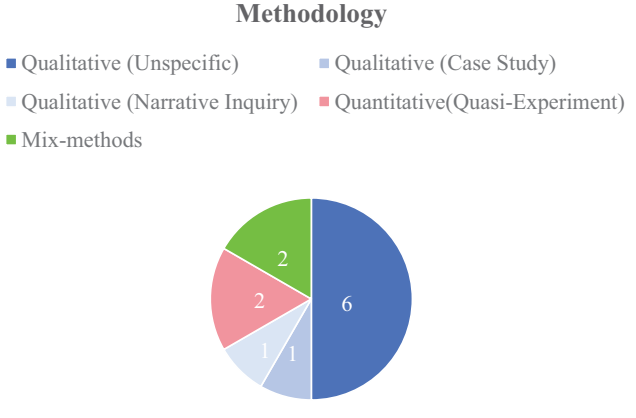

Figure 3. *Methodology of included articles.*

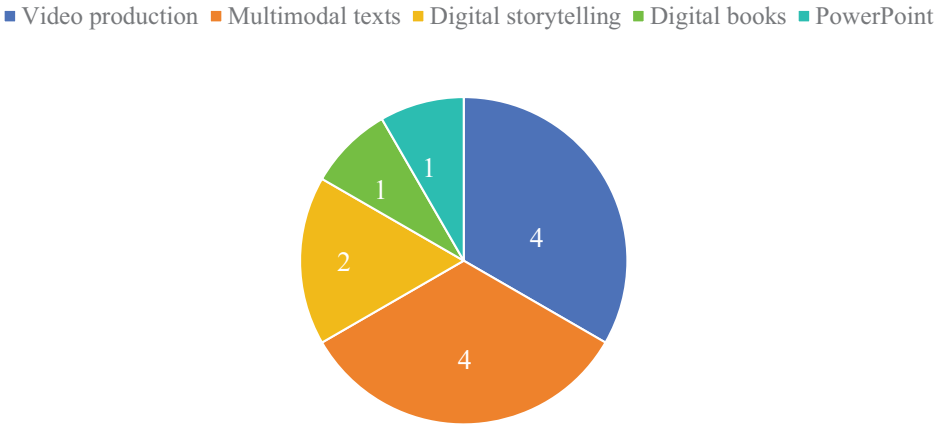

Figure 4. *Products of GenAI-assisted DMC tasks.*

(1), and PowerPoint presentations (1) (Figure 4). The emergence of GenAI does not seem to have introduced new types of DMC products but has transformed the processes through which existing products are created.

Overall, research on GenAI-assisted DMC tasks in language education remains in its early stages. Current studies focus on specific contexts, such as English language instruction and higher education, showing a preference for qualitative methods and concentrating on video and multimodal text outputs.

RQ1: The Types of GenAI-Assisted DMC Tasks

Including GenAI as a Part of the Instructional Framework

The first type of GenAI-assisted DMC task incorporates GenAI into the task workplans (Ellis et al., 2020). Such tasks require the use of GenAI to achieve the teaching goals set by the teacher. Students' use of GenAI is an integral part of the task workplan and is essential in shaping the intended learning process. Thus, tasks are designed with explicit consideration of the function of GenAI, ensuring a close integration with the language teaching objectives. A representative example is provided by Lin et al. (2025), who developed an instructional framework called IDEA (Interpret, Design, Evaluate, and Articulate). This framework embeds GenAI into each stage of DMC instruction and assigns specific functions to GenAI throughout the process. At each stage, teacher and student activities are aligned with support from GenAI, which certainly has an irreplaceable function. For instance, during the interpretation and evaluation stages, students used GenAI to articulate and review their awareness of multicultural audiences in their DMC work. The study involved 11 secondary school students from six different countries, indicating that developing such awareness would likely require significant instructional time and additional teaching resources without GenAI's support. Another example of this task type is Y. Chen (2024), who designed a digital storytelling (DST) project. In the four-step instructional plan, the second and third steps explicitly required students to use GenAI for drafting and generating multimodal resources such as music and images. The teacher also integrated GenAI tools into the assessment design by offering an award for effective students' effective use of GenAI. This type of task is also found in comparative studies. For example, in Hwang et al. (2024), students were asked to use GenAI to generate vocabulary and sentences related to a video drama, while the control group received vocabulary and sentence support from standard course materials. These tasks, which included GenAI from the early stages of design, show a

high level of integration between GenAI and classroom activities. In comparative research, this task type can reveal that using GenAI influences the learning outcomes and task quality. For instance, Jiang and Lai (2025) designed two identical task processes which only differed in whether GenAI was used. Although both groups completed video production tasks, the GenAI-assisted group produced higher-quality outcomes. Otherwise, in DMC tasks designed with GenAI, learners engage with GenAI across multiple stages rather than in isolated activities. GenAI-assisted outputs often carry over into the next stage of the task, contributing to a more dynamic and coherent task implementation process.

Using GenAI as a Tool in Task Implementation

In these tasks, students use GenAI as a tool to generate multimodal resources such as text, images, and videos to support their DMC work. However, unlike the first task type, this use of GenAI is not listed in the design framework. Instead, it appears as an optional activity, either suggested by the teacher or initiated by the students themselves, which is only integrated with the tasks in the process (Ellis et al., 2020). For example, in the DMC project designed by Mesa-Morales and Zapata (2024), students were asked to produce digital books. The task design did not specifically integrate GenAI into the instructional framework. GenAI was only introduced by the teacher during the image-adding phase as a recommended tool. The same type of task was found in the DST task designed by Cheung and Shi (2024). Although the teacher recommended GenAI tools, some students chose to complete the task without using them. In Wünsch-Nagy (2025), students could decide whether to use GenAI or not to complete the DMC tasks. Regardless of their choice, all students produced posters combining text and images, fulfilling the task goal. These DMC tasks show a relatively low dependency on GenAI, since the use of GenAI does not structurally affect the task flow or content, and students retain greater autonomy in choosing whether or not to engage with the technology. In these tasks, GenAI functions as a flexible tool during task implementation rather than as a component of the instructional design.

Implementing GenAI as an Instant Feedback Tool

Some studies employed GenAI to provide feedback on DMC tasks. Although this type of task design is less established than the previous two forms, it warrants separate consideration. In most cases, GenAI did not assess the entire DMC product, as in monomodal writing (Guo & Wang, 2024). Instead, it provided instant evaluations of specific modalities and supported learners in revising their work. Researchers identified tasks where GenAI assisted in evaluating language use and content. In terms of text, GenAI gave feedback on learners' spelling, grammar, and lexical choices and suggested improvements (Hwang et al., 2024). GenAI also enhanced written expression, making it more accessible to multicultural audiences or more stylistically refined (Lin et al., 2025). The formative feedback provided by GenAI on writing allows learners to focus more on creating nonlinguistic modes and the overall meaning of their DMC products, reducing disruptions to the task process caused by textual errors. In Huang et al. (2024), GenAI evaluated and corrected students' spoken output through one-on-one interactions, ensuring the overall quality of the DMC product. When students need to record voiceovers for their videos, they can first practice speaking with an AI chatbot, which immediately corrects their grammar and pronunciation of each sentence. Through the instant feedback from GenAI, learners improve their oral accuracy and willingness to engage in DMC while also generating sound resources for their multimodal products. This use of GenAI introduced interactive feedback into the task, as learners had to engage with GenAI through prompts to obtain suitable suggestions. The immediacy of the feedback allowed students to access support at any stage of the task, making

it available throughout the process. However, this task type remains limited to feedback on text and speech. In this review, we did not identify tasks using GenAI to effectively evaluate visual or video-based products, or to provide summative feedback on multimodal products.

RQ2: The Roles of GenAI in DMC Tasks

Stimulator with Scaffolding

In some tasks, teachers encourage learners to use GenAI for preparing and introductory activities. In doing so, GenAI stimulates and supports the teacher's scaffolding of learners in the DMC task. Scaffolding refers to the support learners require in skills, language, content, and interaction to complete DMC tasks (Pacheco et al., 2021). In GenAI-assisted DMC tasks, teachers and researchers often introduce relevant GenAI tools and encourage learners to become familiar with them at the beginning of the DMC. GenAI can provide instant responses, which help learners to get familiar with DMC tasks. This process activates learners' prior linguistic knowledge and helps them develop effective prompting strategies (Y. Chen, 2024; Huang et al., 2024; Liu et al., 2024; Mesa-Morales & Zapata, 2024). With the scaffolding from GenAI, teachers have more opportunities to introduce, present, and guide students through DMC, addressing any initial difficulties in understanding and composing DMC texts (Jiang & Lai, 2025). In addition, GenAI can assist learners in constructing the initial framework of a DMC product. When students input their ideas and intended genres into GenAI, the tool can generate draft outlines, such as a DST script or a PowerPoint structure (Cheung & Shi, 2024; Liu et al., 2024). GenAI may also offer examples that clarify the task's expectations and help learners assess the feasibility of their ideas (Smith et al., 2025). Furthermore, GenAI can support linguistic resources by translating or polishing learners' input, particularly in multilingual or translanguaging classrooms, where language proficiency may otherwise hinder performance (Lin et al., 2025).

Some of this GenAI scaffolding occurs during the early stages of DMC tasks. However, unlike language tasks in task-based language teaching (TBLT), where scaffolding is typically limited to pre-task phases, GenAI provides continuous support throughout different stages of the task. In particular, GenAI introduces a new scaffolding mechanism through transduction—a concept from social semiotics closely related to resemiotization, which refers to the transformation of meaning across modes (Bezemer & Kress, 2008; Li et al., 2025). For example, learners can use GenAI to convert textual prompts into videos, which supports both contextualization and expressive clarity. This process enhances learners' ability to guide GenAI using textual prompts and requires them to coordinate meaning between text and visual modes. GenAI also enables learners to express tone and style through images, promoting semantic coherence between modalities (Tan et al., 2025). In summary, integrating a "pre-task" stage to familiarize learners with GenAI tools can maximize their scaffolding benefits during DMC tasks. Nevertheless, GenAI can also continue to provide scaffolding through transduction during the middle and later stages of the task.

Co-Teacher

In some articles, educators have integrated GenAI into their instructional plans and assigned it to certain teaching functions. Thus, GenAI can be viewed as a co-teacher in the learning process. For example, GenAI can explain unfamiliar concepts to students, answer their questions, and provide relevant knowledge related to DMC themes (Jiang & Lai, 2025). These explanatory functions, typically carried out by human teachers in traditional classrooms, are partially conveyed to GenAI in GenAI-assisted DMC tasks. In addition, GenAI can generate the linguistic resources required for DMC tasks, such as vocabulary and sentence structures for video scripts

(Hwang et al., 2024). Compared with traditional instructional materials, these AI-generated resources have shown a greater impact on enhancing learners' language performance. Smith et al. (2025) further demonstrated how preservice teachers experimented with different GenAI tools to generate texts, images, and music. Through these interactions, learners developed creative inspiration and discourse expression, with GenAI fulfilling a partial role in teaching how to use and adjust prompts. Moreover, the multimodal resources generated by GenAI can be integrated with student agencies, which facilitates decision-making and shapes the stylistic features of the final DMC products (Tan et al., 2025). In these tasks, the role of GenAI extends beyond that of a tool. Its contribution to instructional explanation, material generation, and design direction positions it as an agentive character within the teaching process.

Co-composer with Resource Generation

In GenAI-assisted DMC tasks, GenAI can become a co-composer and contribute to generating multimodal content with learners. In this role, GenAI supports both content creation and semiotic construction. Within the linguistic mode, some GenAI tools already possess advanced text generation capabilities that align with the requirements of DMC products. These tools can actively participate in DMC tasks by generating subtitles, describing nonverbal elements, narrating storylines, and translating or refining learner-produced texts (Cheung & Shi, 2025; Huang et al., 2024; Jiang & Lai, 2025; Lin et al., 2025). Certain GenAI tools can also provide voiceovers for videos or engage learners in simulated spoken dialogues, thus contributing to the audio aspect of DMC production (Huang et al., 2024; Jiang & Lai, 2025; Li et al., 2025). Moreover, GenAI can now generate nonverbal content such as images and videos. Those images can be used in infographics, presentations, and other DMC outputs, with prompts guiding the production of stylistically meaningful content (Liu et al., 2024; Tan et al., 2025). For video production, GenAI may help learners generate a series of images, which are then composed into a video either by the learners themselves or with GenAI's support (Smith et al., 2025). Some tools can convert English text directly into video, reconstructing the textual meaning through subtitles, visual transitions, and image composition (Li et al., 2025). Overall, GenAI, as a resource co-creator, is deeply involved in generating multimodal materials. Its collaboration with learners extends beyond linguistic input to cross-modal production, forming a significant partnership in DMC tasks. However, it is important to note that learners must possess a certain level of GenAI literacy to enable this co-composer role. This literacy may come from prior experience or scaffolding. Without such literacy, learners may choose to limit the composition of GenAI or reject its contribution entirely (Smith et al., 2025; Tan et al., 2025). Therefore, whether GenAI can act as a co-composer depends on learners' needs and multiliteracies and often requires dynamic adjustment during the task rather than predetermined integration into the task design.

Feedback Provider

Although GenAI does not yet possess enough capacity to assess multimodal outputs, some studies have shown that it can provide instant feedback on linguistic elements and certain contextual content during DMC tasks. This feedback is not limited to post-task evaluation but can be integrated throughout the process. For example, Huang et al. (2024) incorporated pronunciation AI tools such as Doubao into course design to help students identify spoken errors instantly and receive feedback on rhythm and accuracy. In the case of writing, GenAI offers suggestions during the composition process through ongoing interaction with learners (Huang et al., 2024; Lin et al., 2025). This process-oriented, nonsummative mechanism enables GenAI to support teachers in delivering immediate, informal feedback during task implementation.

However, the primary responsibility for assessing GenAI-assisted DMC products remains with the teachers or peer learners due to current limitations in the function of GenAI tools to evaluate nonlinguistic modes such as images, audio, and video. The current GenAI tools struggle to assess higher-order features such as visual coherence, narrative flow, or aesthetic style. As a result, GenAI currently supports formative feedback on DMC tasks. It can assist with language-focused feedback but cannot independently conduct comprehensive formative assessments across modalities.

Facilitator of Critical Literacies

In GenAI-assisted DMC tasks, GenAI also functions as a mediator in fostering students' critical literacies. Teachers can encourage or require learners to review and revise GenAI-generated content in order to promote critical thinking (Hwang et al., 2024). Learners often engage in reflective use of GenAI, identifying and modifying content that fails to meet their requirements (Cheung & Shi, 2024; Li et al., 2025; Lin et al., 2025). This reflective practice helps learners recognize the limitations of GenAI, particularly in addressing discipline-specific language, tone, emotion, or personal expression. It directs their attention to what GenAI cannot produce, encouraging a more critical stance toward AI-generated content. Moreover, some students recognize biased or inaccurate multimodal outputs generated by GenAI. These findings can trigger deeper reflection on the ethical issues and stereotypes associated with AI technologies. For example, Tan et al. (2025) found that students were able to detect stereotypical representations in AI-generated images. In response, they revised their prompts to challenge and eliminate these biases. Compared with textual outputs, such visual and audiovisual issues are often more easily identified by learners, leading to active engagement in critique and revision. Thus, GenAI acts not only as a knowledge provider but also initiates the development of learners' AI literacy. Its integration in DMC tasks extends beyond production support into becoming a facilitator for ethical awareness and critical engagement.

Discussion

This study conducted a scoping review of 12 empirical studies on GenAI-assisted DMC tasks. It outlined the research contexts, methodological approaches, and products. We identified both the forms of GenAI-assisted tasks and the roles GenAI played within DMC task design and implementation. In this section, we discuss the theoretical and practical contributions of the study based on these findings.

The Future Landscape of GenAI-Assisted DMC Tasks

Similar to earlier reviews on DMC (Li & Akoto, 2021; Zhang et al., 2023), this study found a clear concentration in the research contexts, methods, and products. Most studies were conducted in higher education, particularly in undergraduate EFL classrooms. Research in secondary schools, teacher education, or informal learning environments remains limited. The concentration of research contexts reflects the potential for implementing and popularizing GenAI-assisted DMC in higher education. However, such concentration also raises concerns that the GenAI-assisted DMC tasks developed in university settings may not transfer easily to more constrained environments with limited resources or high-stakes assessment pressure, which is an ongoing concern within the implementation of DMC (Jiang et al., 2021). For example, in under-resourced primary and secondary classrooms with limited technical accessibility or teacher support, can GenAI still effectively serve as a co-composer or feedback provider? Will its role be reduced to basic text generation or error correction? These questions challenge the generalizability and equity of GenAI-assisted DMC tasks across diverse educational settings.

Furthermore, existing studies have paid limited attention to the dynamic nature of the roles of GenAI within tasks. Our review showed that the role of GenAI often shifts and evolves during task implementation by interacting with learners. Some interactions followed the workplan of the tasks, while others emerged spontaneously as the task progressed. Future research should explore these developments through longitudinal designs and explore how teachers adapt GenAI-assisted tasks in response to such changes.

In terms of products, most studies have continued to focus on popular DMC genres such as video production, multimodal texts, and posters. This preference for products aligns with the current strengths of GenAI in image and script generation and is relatively easy to implement. However, this preference also indicates a limitation in task design. Many tasks still involve embedding GenAI into existing instructional frameworks and courses rather than reconstructing the tasks around the integration of GenAI. It suggests that recognizing the changes GenAI introduces to DMC processes is insufficient. Researchers and educators need a coherent theoretical framework for GenAI-assisted DMC task design to guide both scholarly inquiry and classroom practice.

Fixed Forms and Flexible Designs of GenAI-Assisted DMC Tasks

Our review identified three distinct types of GenAI-assisted DMC tasks. The first two types are distinguished by the extent to which GenAI is embedded within the task design framework, while the third type is defined by whether GenAI contributes to the evaluation of DMC outputs. To set the scope of the type of GenAI-assisted DMC tasks, we propose a categorization into strong-form and weak-form GenAI-assisted DMC tasks. This distinction refers to task classification in TBLT and DMC (Ellis, 2003; Kessler, 2022), which emphasizes whether GenAI is integrated into the task design as a core element. In the strong form, GenAI is explicitly included in the instructional design. Teachers integrate GenAI to support specific teaching objectives, and the ability to use GenAI becomes a parallel instructional goal with language development and multimodal literacies. In this case, GenAI is not only an optional tool but an irreplaceable component of GenAI-assisted DMC tasks. In contrast, the weak form describes tasks where GenAI plays a limited, optional role—typically as a support tool used in isolated stages of the task. In such cases, its contribution does not significantly shape the structure or learning goals of the task.

It is necessary to emphasize that the integration of assessment might be included as a criterion for distinguishing task types since we figured out that the third type of task involves GenAI as a tool for feedback. As GenAI technologies rapidly evolve, it is foreseeable that future DMC tasks may integrate GenAI into the assessment of the nonlinguistic modes and the entire DMC product, potentially constituting a strong form of GenAI-assisted DMC task. However, according to our review, the feedback was monomodal and casually appeared in the task process. Therefore, we hope that future research will expand the use of GenAI in assessing DMC tasks and provide more empirical cases to help refine the classification criteria for this type of task.

Identifying strong and weak forms of GenAI-assisted DMC tasks offers a useful framework for future research. Scholars and educators can investigate the similar and different design principles of these two forms, examine how different levels of GenAI integration influence task outcomes, and explore how task design can be adapted to provide learners with various language proficiency and multimodal literacies. Furthermore, our review of GenAI-assisted DMC tasks reveals that these tasks involve complex multimodal production and varied uses of GenAI. This finding supports the view of Jiang and Hafner (2024), who argued that DMC often consists of multiple activities. We extend this understanding by observing that, in actual

classroom practice, the process of GenAI-assisted DMC tasks could be nonlinear and repetitive. This process differs from the traditional task structure in language education.

Conventionally, the design of language tasks has followed a clearly defined, staged structure such as pre–while–post tasks (Ellis et al., 2020). However, the integration of GenAI blurs these sequential boundaries. In the tasks we reviewed, learners can start creating multimodal outputs supported by GenAI-generated content at the beginning of the tasks. Instructional knowledge and skills can be developed throughout the task, and students receive immediate feedback at any stage. Thus, we argue that GenAI-assisted DMC tasks require a reconceptualization of the task design paradigm. Rather than perceiving tasks as a fixed pedagogical plan, they should be understood as open-ended semiotic processes. This reconceptualization aligns with the sociocultural basis of DMC, which is a meaning-making process with social semiotic interaction, while the integration of GenAI reinforces this process. With GenAI, task design can accommodate activities that serve various instructional goals and functions without a stable implementation order. This flexibility enables a more dynamic task design, allowing teachers, learners, GenAI tools, and contextual factors to shape the task process in responsive and adaptive ways.

Repositioning GenAI in DMC Tasks: A Design Framework

Another implication of this study is the redefinition of participants' roles and relations within GenAI-assisted DMC tasks, as well as theoretical guidance for task design based on these roles. Our review identified five functional roles played by GenAI: Stimulator with scaffolding, co-teacher, co-composer, feedback provider, and mediator of critical literacies. These roles emerged from the dynamic interactions among learners, teachers, and GenAI, which responded and extended the roles of GenAI identified in previous EFL research (Teng, 2024). The diversity of these roles demonstrates that GenAI can act as an agentive and pedagogically active participant in the DMC process. The appearance of strong-form GenAI-assisted DMC tasks provides evidence that GenAI can fulfil instructional and interactive responsibilities. This finding suggests a paradigmatic shift in language task design, which evolves from a binary teacher–student or peer interaction model towards a triadic interaction model involving the teacher, student, and GenAI. This shift reflects a posthumanist turn in language education (Pennycook, 2018), and GenAI-assisted DMC tasks may represent an important stance for this transformation.

In response, we propose a preliminary framework for GenAI-assisted DMC task design: Role identification–interaction and forms–instruction design (Figure 5). Firstly, role identification refers to clearly defining the roles of teachers, learners, and GenAI within the task design, which is important, as the semiotic interactions in such tasks are co-constructed not only by human agents but also by GenAI (Pennycook, 2018). It becomes essential for educators to consciously consider how these three agents contribute to the meaning-making process, which reflects a posthumanist turn in language pedagogy. Teachers can design tasks that better reflect the distributed agency involved in DMC by considering GenAI as an active participant rather than a passive tool. The notion of interaction is consistent with role identification, which draws on the theoretical foundations of DMC, i.e., social semiotics, and is reinterpreted through a posthumanist epistemology (Hodge & Kress, 1988; Pennycook, 2018). In social semiotics, meaning is constructed through social interactions using both linguistic and nonlinguistic modes, while posthumanist perspectives expand this idea to include the dynamic relations among teachers, learners, and the various semiotic resources and artefacts created in the objectives, including GenAI. In the reviewed studies, the expansion is evident, given that all GenAI-assisted DMC tasks incorporate GenAI-generated content or involve GenAI in the composing process, which positions it as an essential agent in pedagogical interaction. Researchers and educators can identify the interaction patterns among teachers, learners,

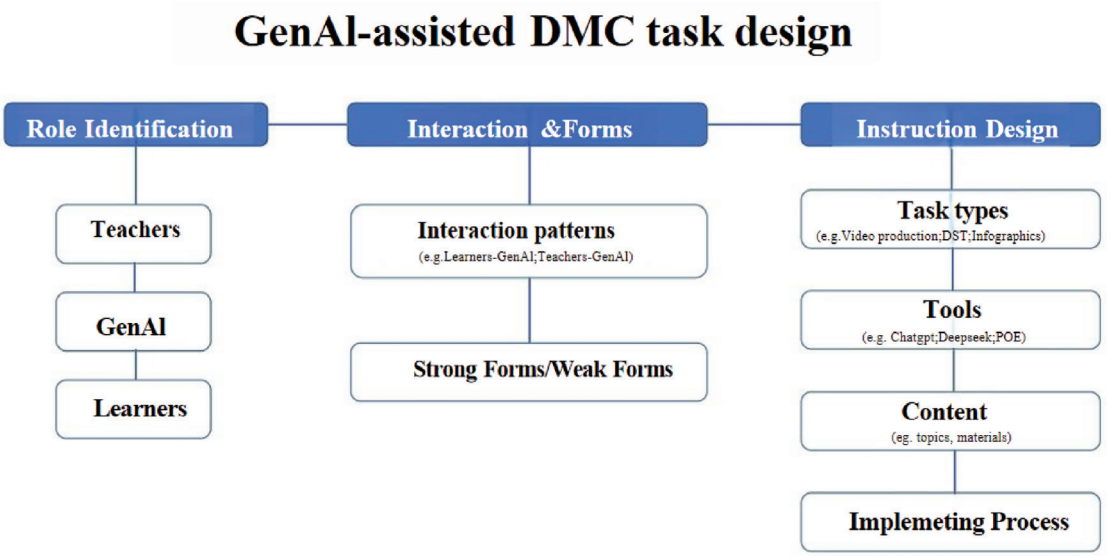

Figure 5. *Role identification–interaction and forms–instruction design framework of GenAI-assisted DMC tasks.*

and GenAI in tasks and even define the basic functions of these interactions. Meanwhile, task designers need to determine, from a practical perspective, whether the GenAI-assisted DMC task has a strong form or weak form, and carry out subsequent task design based on the roles assigned to GenAI to fulfil their goals. For example, suppose GenAI is positioned as a co-teacher, as in Lin et al. (2025). In that case, teachers might indicate the function of GenAI in each activity, generating lesson outlines or preparing instructional materials and supporting resources. If GenAI is defined as a co-composer or mediator of critical literacy, teachers can design activities that require the students to use GenAI to create multimodal products, and to criticize and reflect on those outputs. Otherwise, task designers could consider the semiotic functions between participants in the DMC process, recognizing that meaning-making is socially constructed through interaction (Halliday, 1978; Jiang, 2017; Kress, 2010). The final step involves selecting appropriate task products, GenAI tools, instructional content, and procedural structures. This role identification–interaction and forms–instruction design model provides a task design framework that shifts DMC task design from a specific practical dimension towards a consistent theory. This framework reconceptualized the L2 task design framework, which not only provides a clear construction path for teaching practice but also offers a theoretical foundation for rethinking the instructional status of GenAI in language education. It signals a move from content- and procedure-driven design toward a role- and agency-oriented approach, which emphasizes the importance of social interaction and provides an innovative methodology for human–AI co-constructed L2 tasks in the posthumanist era.

Future Research Directions

This study defined the forms of GenAI-assisted DMC tasks and the roles played by GenAI, and proposed a task design framework with potential for both research and practice. As an emerging area of inquiry, we advise several future research directions in this field. First of all, this paper suggest the need for further research on GenAI-assisted DMC tasks, since there is a lack of research papers that could be included in this review. Future research should expand

the empirical base by exploring GenAI-assisted DMC tasks across various educational settings, such as primary, secondary, and higher education, and involving diverse learner populations. Such research can deepen our understanding of how GenAI supports multimodal task design with more practice. Second, most of the reviewed studies focus on EFL contexts. This limited disciplinary focus overlooks the potential of GenAI in other subject areas. Future research should explore interdisciplinary applications of GenAI-assisted DMC tasks, particularly in science, technology, engineering, art, and math, or content and language-integrated learning. Investigating how GenAI facilitates DMC in different disciplines can help extend its pedagogical relevance. Otherwise, the "Role identification–interaction and forms–instruction design" framework proposed in this study is a preliminary pedagogical model derived from theories and existing literature. The framework requires further refinement and validation through empirical inquiry. Future research may adopt participatory action research approaches to revise and enhance the framework with practice. With the emergence of more powerful GenAI tools, GenAI is likely to take on more complex roles and lead to the development of various GenAI-assisted DMC tasks. In summary, although this review has limitations, it reflects the potential in this research niche.

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Author Bios

Fengrui Ci is a PhD student of the Faculty of Education at the University of Hong Kong. His research focuses on digital multimodal composing, language task design, and language teacher education

Lianjiang Jiang is an Assistant Professor at the Faculty of Education at the University of Hong Kong. His expertise is in multimodality and multiliteracies in second language education, with a focus on digital multimodal composing, digital/multilingual pedagogies, and L2 writing and feedback.