
A review on digital multimodal composing (DMC) in post-secondary EFL context: practices and implications

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ABSTRACT

Keywords:
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The availability of texts and how they are produced have become more multimodal, along with the rapid development of technology. In the English as Foreign Language (EFL) context, this change has influenced classroom instructions where digital multimodal composing (DMC) is incorporated into students' meaning-making. This qualitative study aims to review recent studies on DMC in the post-secondary EFL contexts to find out the DMC tasks implemented in this setting and what implications have resulted from the tasks. Based on the analytical review of twenty empirical studies from 2015-2022, DMC was generally used to leverage students' English language skills, train students' digital literacy skills, advocate students' voices, build learning engagement and investment, and increase students' participation in collaborative projects. The implication of the studies showed that teacher support is needed and that the DMC tasks afford to expand students' meaning-making. Future direction on DMC studies in the post-secondary EFL context is also discussed.

1. INTRODUCTION

The deployment of various semiotic resources has been a common practice in our negotiation of meaning. We orchestrate multiple modes, such as image, gaze, body posture, sound, writing, music, and others (Jewitt, 2008), to form a coherent meaning within a particular context. Thus, with the rapid development of technology in communication, the opportunity to use various semiotic resources is expanded and consequently changes the way we ensemble the modes. The negotiation of meaning and the modes used in the negotiation are constantly restructured and reformed, along with the users' response to the communicative needs of communities, institutions, and societies (Jewitt, 2008). One obvious example is the shift of reading from "page to screen," where linear reading is now less common practice (Cope & Kalantzis, 2009a as cited in Lotherington & Jenson, 2011) and becomes more multimodal and non-linear because of the availability of hypertexts (Cope, Kalantzis, & Abrams, 2017). Accordingly, the change in the available texts expands how we read and produce texts. Put into a learning context, students, therefore, act not only as an active decoder of meaning but also as the designer of meaning (Serafini & Gee, 2017).

Digital multimodal composing (DMC) refers to the activities that engage students in the use of digital tools to construct meaning through incorporating multiple semiotic modes, including writing, image, sound, and others (Hafner, 2015) to reach a broader audience (Shen, Hao, & Peng, 2022). In orchestrating multiple modes, students can remix or mesh up the available semiotic resources (Hafner, 2015) or transmediate the resources by changing or adapting the original form

into a new one (Shen, Hao, & Peng, 2022). Through the mixing and transmediating of the available semiotic resources, students expand their meaning-making by continuously reflecting on their design process. Moreover, research on DMC have indicated the benefits it brings to the language learning such as writing skill development and genre awareness (Yeh, et. al., 2021; Balaman, 2018; Yiqin, 2022), improved learning engagement and investment (Jiang, 2020; Smith, 2021), development of digital literacy skills (Yeh, 2018; Jiang, 2020), and practice on authorship (Hafner, 2015) and digital empathy (Chen, 2018; Christopher, 2021).

In a review of 60 empirical studies on digital multimodal composing at the tertiary level in the L2 setting, Zhang, Akoto, and Li (2021) laid out an empirical landscape of DMC integration within teaching instructions in the L2 setting. Though the review was intended to provide a general insight into the study on DMC from 2005-2020, it provided a valuable glimpse into the description of the DMC research context and the methodological approach used in the study. The review found that DMC studies were predominantly used in English class, DMC tasks were majorly video projects compared to visual projects, and focused more on students' perspectives. In another review of more recent DMC studies in ESL/EFL settings, Li and Akoto (2021) reviewed 20 studies to search for general insights into DMC learning contexts, DMC research strands, and the pedagogical implications and research direction as informed by the research. They had similar findings on the type of DMC tasks implemented in the class, that was, video projects, and added that other than for language learning, DMC projects afforded the students the ability to express their voice and develop new identities. They also reviewed the challenges and constraints of DMC seen through twenty empirical studies. Both studies from Zhang, Akoto, and Li (2021) and Li and Akoto (2021) pointed out that DMC research has not yet much cover on students' and teachers' experiences in using DMC and the assessment of the DMC product. In a broader review on the DMC studies, Li (2022) noted the themes across DMC research foci within the past ten years, that are DMC process (identity, voice, and multiple semiotic resources orchestration), students' perspective (on DMC benefits, challenges, and mediating factors), teachers' perspective (investment and assessment), and learning outcome and development (language/metalanguage development and other learning-related development).

Building on the previous reviews on digital multimodal composing and the utilization of multimodal forms of communication in digital media (Hafner, 2020), this review aims to examine recent studies in which these practices are integrated into English learning as a foreign language (EFL). This particular context is chosen as EFL programs often segregate their curriculum and learning activities according to students' English language proficiency. This segregation separates students into different levels that limit the types of learning activities for the students. For instance, beginner students will mostly focus on language form, while intermediate and advanced students focus on developing communicative competence, often with emphasis on culture and content (Paesani, Allen, & Dupuy, 2016). Consequently, this teaching practice disconnects the "form from meaning and communication from content (i.e., texts) and contexts (Swaffar & Arrens, 2005, cited in Paesani, Allen, & Dupuy, 2016, p. 2). With the affordances of DMC, which facilitate students learning, its incorporation into the EFL context may accommodate students' learning at all levels. The article, therefore, will lay out the general trends of DMC and language learning specifically within the context of learning English as foreign language.

To guide the data collection and review on the empirical studies, the research questions are formulated as follows:

1. What DMC tasks are implemented in the post-secondary EFL setting?

2. What implications are inferred from the implementation of the DMC tasks in the post-secondary EFL setting?

2. METHOD

To answer the research questions, the author conducted three layers of article search. The initial search focused on empirical studies on DMC from four databases that were Academic Search Complete, APA PsycInfo, Education Research Complete, and ERIC databases. The keywords used to limit the search were (“digital multimodal composing” OR “multimodal”) AND (EFL OR “English as a Foreign Language” OR ELL OR “English Language Learner” OR ESL or “English as a Second Language”) AND (tertiary OR university OR “higher education” OR “post-secondary”). In addition, the author limited the search by adding limiters in the database search that were peer-reviewed, published between 2015-2020, published in English, and were journal articles. This time range is used as a response to a special issue on multimodal and literacy published by TESOL Quarterly in the respective year.

This initial search resulted in 355 articles with various types of study, research contexts, and education level. These articles were then selected through the inclusion criteria, that were empirical studies, research employing qualitative and mixed-method, research focusing on post-secondary EFL participants, and research which described the composing activities. This selection process resulted in 20 studies.

During the second selection process, the author annotated the abstract, the method section, and the discussion and/or implication section to find patterns of DMC tasks and the discussion and/or implication section to find patterns of implications across the studies. The annotation was then coded using open coding and recorded in excel spreadsheets. The author used the first coding system as an anchor to develop the themes. In addition to addressing the research questions, the author coded the student's background (the courses and students' English proficiency level) and the nature of the DMC project (individual or collaborative work). This information was needed to provide a general trend of what courses in an EFL setting in which DMC was incorporated and how the activities were generally approached to see what can be implied from the trend for future research direction. The coding process for DMC tasks, implications of the study, and additional background information was conducted twice to verify the codes. It was done by continuously referencing the codes to the annotation made during the initial open coding process.

3. RESULTS AND DISCUSSION

This review aims to reveal what DMC tasks that have been practiced in post-secondary EFL classes and to find what implications can be drawn from the results of the implementation. Therefore, a brief overview of the research results is needed to lay out how DMC has facilitated the learning process and what challenges emerged. In the studies, DMC was implemented to leverage students' English language skills, such as improving writing proficiency (e.g., Yeh, 2021; Balaman, 2018; Xu, 2021), oral presentation skills (e.g., Seau, Azamn, & Noor, 2018; Lee, 2019), and communicative competence (e.g., Greenblatt & Donald, 2022). Through DMC, the students also practiced their digital literacy skills by employing various multimodal resources (e.g., Jiang, 2022), which expanded their multiliteracies practice (e.g., Hung, 2019; Lo, Lee, & Tien, 2020; Yeh, 2018; Yeh, Heng, & Tseng, 2021). In addition, DMC was also used to advocate students' voices, such as minority students' investment in learning English (e.g., Jiang, Yang, & Yu, 2020), to understand students' composition process (e.g., Hafner, 2015), to build students' engagement

(Hung, 2019) and digital empathy (e.g., Chen, 2018; Christopher, 2021), and increase students' participation in collaborative projects (e.g., Cheung, 2022).

The DMC tasks that were described in the studies incorporated the use of various multimodal resources to create videos (e.g., Kim & Belcher, 2020; Chen, 2018; Jiang, 2018), to develop presentation materials (e.g., Li, 2022; Seau, Azamn, & Noor, 2018; Shen, Hao, & Peng, 2022), to write collaboratively (e.g., Zenouzagh, 2022), and to create memes (e.g., Smith, 2021). In addition, there was one study focusing on students' DMC tasks within the researcher's developed application (Lin et al., 2021) and one study focusing on the resemiotization of one type of text into another one (Lo, Lee, & Tien, 2020). Through the discussion of the studies, the implications of the DMC tasks showed that students required teacher support to successfully compose texts (e.g., Seau, Azamn, & Noor, 2018; Xu, 2021; Cheung, 2022) and that DMC tasks afford to expand students' meaning-making (e.g., Yu & Zadorozhnyy, 2022; Kim & Belcher, 2020; Hafner, 2015).

3.1. DMC tasks

In a review of research on L2 DMC in ESL/EFL context, Li and Akoto (2021) found that within 2010-2020 the DMC tasks fell under three research strands of DMC process that were appropriating multi-modes, remixing/code-meshing process, and expressing voice/identity/attitude. This strand is strongly relevant to the DMC tasks reviewed in this article, where students used multiple types of texts to create a new meaning that majorly involved script writing (e.g., Christopher, 2021; Jiang, Yang, & Yu, 2020), remixed semiotic (cultural) resources (e.g., Hung, 2019; Jiang, 2022; Yeh, 2021), and expressed voice/identity/attitude as reflected in their composition or in the process of composing (e.g., Jiang, 2018; Jiang, Yang, & Yu, 2020; Cheung, 2022). However, it needs to be acknowledged that the categorization of the studies may overlap among the strands. In addition to the strands, the review also found that the studies described the steps in the DMC projects but not necessarily the orchestration process of the multimodal resource.

For instance, Hung (2019) conducted a mixed-method study to analyze a story development process in students' digital story orchestration to explore their cognitive and metacognitive skills and to examine if there were changes in the engagement level with respect to the utilization of these skills. Hung (2019) exhibited the scaffolded DMC tasks through the stages of production that were pre-producing (topic brainstorming, preliminary research, script co-writing and giving feedback, oral storytelling practice, and story map and storyboard development), production (orchestrating various multimodal resources such as audio effects, images, animations or video), post-production (content editing), and distribution (online publishing and sharing). The author concluded that the students practiced skills such as analysis, information gathering, evaluating, and appraisal, which contributed to students' cognitive skills. Their metacognitive skills were also practiced because the students were trained "to understand and monitor their creating process and modify their products" (p. 34). In addition to developing these skills, the study found that engaged students tended to use both skills as multimedia designers, adding to their skills in digital literacies. However, Hung (2019) mentioned that the short period of DMC tasks implementation might not capture a rich description of the process and effect of DMC as compared to a longer implementation. The study also did not conduct a product evaluation to compare the survey results on cognitive, metacognitive, and engagement levels to the quality of the DMC product.

In the other study, Kim and Belcher (2020) compared multimodal composing and traditional essays to investigate students' linguistic performance. The students were assigned to write an argumentative essay with a predetermined prompt. In both types of orchestration (the traditional and digital mediated ensemble), the students were required to include two or three arguments for their chosen topic and add at least their outside sources. For the DMC project, the students especially complete a storyboard to plan out the multiple semiotic tools they would like to incorporate into their presentation. Moreover, the students wrote a script for their oral narration. Through their exploratory study, Kim and Belcher (2020) found that students' complexity and accuracy in writing argumentative text in both types of writing modes did not have a significant difference. Seven out of nine students participating in the study benefited from traditional writing in terms of its helpfulness to concentrate on writing within the time frame given compared to writing in digitally mediated tools. Although the students' text analysis showed that their syntactic complexity was higher in traditional writing, their accuracy level had no significant difference in their writing for the traditional essay and DMC task. This finding contributed to the field that DMC facilitated students' language learning despite some concerns about the lack of language focus in DMC, as proposed by some scholars. Kim and Belcher (2020) also reported that the students were engaged in DMC and found it more interesting and effective in attracting the audience. Similar to Hung (2019), Kim and Belcher (2020) pointed out that their study focused on the products of students' writing and did not address the composing process. It was also conducted within a short period of time that a more longitudinal study may yield insights into students' language learning development when DMC is incorporated.

3.2. **Implications of DMC**

This present article reviewed the implications of DMC implemented in EFL classrooms in post-secondary schools. The implications are to inform what resulted from the tasks and which direction of future research. Based on the review, there are three major implications. First, students required teacher's support (e.g., Yu & Zadorozhnyy, 2022, Seau, Azamn, & Noor, 2018) and institutional support (e.g., Shen, Hao, & Peng, 2022; Jiang, Yang, & Yu, 2020). Second, DMC was used to expand student's meaning-making through critically assessing and choosing the available semiotic resource (e.g., Yeh, 2018) and through students' involvement in the iterative process of DMC, such as allowing the students to revisit their work and revision respectively (e.g., Balaman, 2018; Christopher, 2021). Students' expansion of meaning-making through DMC was also apparent when they considered their audience (e.g., Kim & Belcher, 2020; Hafner, 2015). Third, teachers' digital literacy had a crucial role in supporting students' multimodal orchestrations (e.g., Jiang, Yang, & Yu, 2020).

The need for teacher support was seen in Lee's (2019) study where the students were asked to create a multimodal video presentation. The quantitative measurements of students' showed a moderate improvement in students' oral presentation scores and an overall positive perception of the multimodal approach the teachers designed. However, the students were also reported to encounter a psychological barrier, such as the embarrassment of "watching their own images and listening to their voices" (p.26) in the recorded presentation, regardless of the DMC affordance to their presentation skills. The other barrier was the technological challenge which the students sometimes found problematic. In addition to the teacher's scaffolding design, extra support was consequently needed with regard to psychological and technological support in producing the digital presentations. The need for institutional support was seen as a policy implication by Jiang, Yang, and Yu (2020). In a longitudinal case study to explore a Chinese

ethnic minority student's participation in a DMC project and her investment in learning English. The student was observed to benefit from the peer interaction and collaborative learning community in doing the DMC project. The student, accordingly, was empowered to incorporate her cultural capital to participate in class and to share her cultural identity through her individual DMC project. The study exemplified the benefits of incorporating DMC into students' learning investment and the construction of positive ethnic identity. The result of the study added to the existing policy on trilingual education in which DMC could be utilized as "a strategy to curricularize Culturally Sustaining Pedagogy (CSP) in ESL/EFL classrooms for the empowerment of ethnic minority students" (p.973).

The second theme of the observed implication from the reviewed studies was the affordances of DMC to expand students' meaning-making. For instance, Shen, Hao, and Peng, (2022) investigated students' willingness to participate (WTC) during the DMC project and compared the quantity of participation in pre- and post-script writing as part of the project. Besides, findings reflected that students participated more during the post-script writing process as the students became more reflective, leading to "expanded experience, deepened perception, and evoked emotion" (p.14). Moreover, the shift allowed for more experimentation with various multimodal resources that allowed students to produce compelling stories for the audiences; thus, promoting their language skills and learning abilities. In addition, Shen, Hao, and Peng's (2022) interview with the student found that the student considered the target audience as part of their composing process. Even though it was not part that was highlighted in the implication of the study, it was worth noting the students were critical in their purpose of DMC. In a similar vein, Hafner (2015) conducted a qualitative interpretive approach to explore the process of multimodal resource remixing by students in a science course at a university in Hong Kong. The final product of the composition was shared publicly through YouTube in order to reach a broader authentic audience. This sharing mode was designed to engage the students to use the full range of the available multimodal resources to build what Hafner called an effective rhetorical hook (2014, as cited in Hafner, 2015). His study, moreover, showed that by considering the target audience, the students became more aware of their own voice as the designer and selected what identity they would enact in the production in order to attract the audience's attention.

4. CONCLUSION

This article reviewed 20 empirical studies on digital multimodal composing, especially to examine the DMC tasks implemented in the post-secondary EFL context and what implications are yielded from the implementations. Borrowing from the research strands found in Li and Akoto (2021), the findings showed that the DMC projects practiced in the post-secondary EFL context involved multimodal appropriating such as meme creation (Smith, 2021) and multimodal presentation (Seau, Azamn, & Noor, 2018), multimodal remixing and code-meshing such as mixing cultural resources (Jiang, 2022), and voice/identity/attitude expression such as learning investment and identity development of EFL learner from ethnic Chinese minority group (Jiang, Yang, & Yu, 2020) and students' willingness to participate (Shen, Hao, & Peng, 2022). The results on DMC tasks in the studies were reported to afford students' improvement on digital literacy skills, English language skills, engagement and investment, critical thinking and creativity, and overall attitude in composing. However, the studies centered more on the composition products compared to the process. While the scaffolded steps of the project were described, students progression and process on composing texts which could provide insight on how they negotiated meaning through the construction were not thoroughly presented. This gap

could be seen as a focus that can be pursued by future DMC research because students' experiences in appropriating, remixing, and designing multimodal texts could shed light on what difficulties and challenges they encounter as well as give valuable understanding on what strategies the students used in making meaning through the composition (Yeh, 2021; Kim & Belcher, 2020). The understanding of students' experiences will inform teacher's pedagogical strategies when incorporating DMC in their teaching practice, thus making the strategies responsive to the actual students' practice of composing multimodal digital texts.

Further, the reviews of the recent studies' implications showed that the DMC project instruction was carefully designed and scaffolded by the teacher, enabling the students to use their abilities in constructing digital multimodal texts to negotiate meaning. In addition to giving support for DMC quality such as giving corrective feedback and guiding through the creation process (Lee, 2019; Xu, 2021), teacher's support in encouraging students and creating a safe space for the students to explore the creation process (Jiang, Yang, & Yu, 2020), as well as providing technical support (Lee, 2019) was reported as a contributing factor to students' success in the DMC project. Therefore, teachers' own digital literacy and innovative teaching instructions are crucial to facilitate learning embedding DMC. While understanding students' experience in the composing process would be valuable as discussed above, teachers' experience in designing and implementing DMC would also give an insight to what supports the teacher would need to develop their teaching and facilitating practices. Studies have been conducted to focus on teacher's perspective in implementing DMC in EFL context (e.g., Jiang, Yu, & Zhao, 2022; Schmidt, 2019; Yi & Angay-Crowder, 2016), but DMC studies focusing on teachers' professional development are an area which needs more attention.

The implications of the studies reviewed in this article, moreover, provided more evidence that DMC expanded students' negotiation of meaning. It especially expanded when the project was intended for targeted audience or authentic audience (e.g., Hafner, 2015; Yeh, 2018). The students were reported to negotiate their role of designer and use more available resources to create a message that could come through to their audience. The available resources included the use of cultural resources that match with the targeted audiences; therefore the outreach of the message became broader and more acceptable. It means that the involvement of targeted audience or authentic audience will leverage the practice of DMC in language learning. Not only that students would get encouraged to be aware of, explore, and try to ensemble various semiotic resources, they would also practice their language skills and presentation skills to make their design accepted in the real context of the world. It needs to be noted, however, that the studies reviewed in this article are qualitative or mixed method studies. Yet, it reflected that the major trend for research methodology in examining students' practice in DMC in post-secondary EFL contexts was generally explorative and was conducted within short period of time. More experimental and longitudinal research is needed to test into what extent do students benefit from DMC in terms of their English language development. Empirical longitudinal research may also inform how students retain and develop the skills they have developed during the DMC projects.

The review of DMC implemented in the post-secondary EFL context and its implication to the teaching and learning incorporating DMC have provided a general sense of the major tasks designed by the teacher. The implications inform that students could reap more benefits when DMC is part of the learning and that DMC should be part of the curriculum. In addition, the review points out that more research on teachers' practice with DMC and more experimental and longitudinal research is needed to develop this field. Nevertheless, it should be noted that the empirical research examined here is limited to twenty articles which is a considerably small

number to draw a representative trend to the field. The coding process, though done in layers, was managed by one coder, that is, the author, which may cause biases and overlaps among the data. Future review of empirical studies on DMC tasks in post-secondary can involve more studies from various databases such as national-wide journals which may provide more contextual analysis on the DMC implementation. Moreover, having more coders is desirable to establish reliability of coding and analysis.

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