EFL Learners’ Perceptions and Attitudinal Fluctuations Toward Digital Multimodal Composition: A Longitudinal Approach

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ABSTRACT

This longitudinal study used a mixed-methods approach to investigate multiple digital multimodal composition (DMC) tasks effect on EFL learners’ attitudes toward DMC. The sample consisted of Arabic-speaking students (n = 40), enrolled in an English language program at a Saudi university. Data comprised multiple sources, including five online tasks, five questionnaires, reflections, and focus group discussions. The findings show that students maintained positive attitudes toward DMC, suggesting that such attitudes are not a consequence of the novelty effect, postulated in previous cross-sectional research. Furthermore, there is a significant attitudinal fluctuation observed in attitudes toward how DMC facilitates meaning communication. Meanwhile, major themes emerged that explain positive attitudes, including enjoyability, communication, motivation, Second language and writing development, and satisfaction. Conversely, the availability of nonlinguistic components might pose negative effects on learners. This paper sheds light on pedagogical implications and avenues for future research.

KEYWORDS

Digital Multimodal Writing, EFL Learner Attitude, L2 Writing, Multimodal Essay, Multimodality

INTRODUCTION

Newer forms of communication and knowledge representation have pervaded the digitally mediated twenty-first century, demanding broadened notions, reconceptualization, and reconsideration of what constitutes literacy. The epistemological and trending shift from literacy to multiliteracies (The New London Group, 1996), which ensued from the prevalence of recent developments of communication technologies, has accentuated the need to subsume digital multiliteracies under educational practices, including second language (L2) education. Literature has suggested that multimodal literacy is of pertinence to multiliteracies, in which the former “refers to meaning-making that occurs through the reading, viewing, understanding, responding to and producing and interacting with multimedia and
digital texts” (Walsh, 2010, p. 213). Recently, there has been a surge of research interest in digital multimodal composition (DMC) in the realm of L2 education (Hafner, 2015), as a contributory practice not only conducive to promoting language learning but improving learners’ multiliteracies due to being centered around various representational modes (Belcher, 2017). Such a burgeoning interest emanates from the need to view communication and meaning-making from the multimodality framework lenses (Kress, 2010) as well as the increasing use of meaning-making and text production technologies in L2 educational settings (Elola & Oskoz, 2017).

According to the New London Group (1996), the concept of multimodal is defined as “combining modes of meaning into a single composition” (p. 84). As a rhetorical and composition practice, DMC comprises multiple semiotic resources that integrate different modes (e.g., linguistic, visual, and audio). From an instructional strategy perspective, DMC is in harmony with a pedagogy of multiliteracies propounded by the New London Group (1996), entailing the term design that both refers to semiotic tools and the manner in which they can be employed (Tan & Matsuda, 2020). L2 writing research has therefore sanctioned DMC as an integral component of writing instruction, as it is crucial to expose L2 learners to the constituents of technology-based literacies, such as producing multimodal essays (Miller-Cochran, 2017).

In attempts to explore and elucidate the effect of DMC in L2 educational contexts, several studies have been conducted to discern the potential of DMC in L2 writing settings, including attitudinal-based studies. Investigating attitudes toward multimodal-based products is pivotal in order to understand their effects on L2 learners (Vandommele et al., 2017), and to scrutinize learners’ willingness, feelings, and satisfaction concerning DMC processes and products. Nonetheless, most previous research was cross-sectional in scope, yielding findings that might have been impacted by the novelty effect—interesting because it is a new experience—instead of actual long-lasting perceptions. Therefore, the present study utilized a longitudinal approach to explore L2 learners’ perceptions and attitudes toward successive DMC tasks.

LITERATURE REVIEW

Theoretical Background

A framework of pertinence to and which guides the present empirical study is the social semiotic theory of multimodality (Kress, 2010). It posits that language is not exclusively the primary resource through which communication can occur, as other available socially based semiotic resources can be tapped into for meaning-making. Miller (2013), accordingly, argued that complex resources for meaning representation are represented by multimodal composition (MMC). According to Smith (2017), “multimodal composition involves the fluid interweaving of visuals, sounds, movement, and text to create synergistic messages” (p. 259). Therefore, DMC tasks in this study are grounded on the multimodality-based perspective of intersemiotic complementarity that refers to producing meaningful MMC through the integration of a variety of semiotic resources that complement and relate to each other (Royce, 2002).

DMC and L2 Learning/Writing

Monomodal, text-only writing is still pervasive in EFL contexts (Lee et al., 2021). Writing instruction in such contexts, according to Manchón (2011), should be geared toward writing to learn L2 and learning to write in L2, and MMC has the potential to support these interwoven approaches (Belcher, 2017). The integrated linguistic and nonlinguistic components of DMC can support both the improvement of L2 writing and new emerging literacies, which is considered a main objective in foreign language instruction (Haffner & Miller, 2011). Previous research has investigated multiple forms of MMC including, but not limited to, video projects (Jiang, 2017, 2018; Yeh, 2018) and multimedia essays (Gunsberg, 2015). Research has shown that while involved in multimodal composition, L2 writers can
increase their semiotic awareness of the abilities of various semiotic resources (Burke & Hardware, 2015). Several studies have been carried out to examine DMC in L2 contexts (Belcher, 2017; Hafner, 2015; Jiang, 2018; Vandommele et al., 2017), suggesting fruitful outcomes pertinent to academic literacy, L2 writing, motivation, and identity. As a motivating factor, DMC can contribute to more engagement in L2 learning, providing authentic and enjoyable experiences (Jiang & Luk, 2016).

Furthermore, DMC enables struggling writers to utilize other nonlinguistic semiotic resources to communicate meaning (Sylvester & Greenidge, 2009). Having reviewed 76 studies conducted on DMC, Smith (2014) reported a number of salient themes associated with effects of DMC on writing skills, including the similarity between text-only and DMC processes, providing support for writers with lower proficiency, and increasing motivation and engagement. Reviewing research conducted from 2007 to 2017 in secondary English classes on MMC, Nash (2018) found that several studies suggested learners’ interest in this form of composing, and found that engagement levels in MMC were higher than in traditional writing. Moreover, Smith et al. (2020) reviewed 70 DMC-related studies on emergent bilinguals and reported that many studies showed that different semiotic modes can facilitate the learning process.

**Learners’ Attitudes Toward DMC in L2 Contexts**

A general tendency in previous DMC research is the exploration of L2 learners’ attitudes toward different DMC products, with a surge of interest in overall attitudes (Kim & Belcher, 2020), which might be ascribed to DMC as a novel instructional strategy in many L2 settings (Zhang et al., 2021). Research on DMC in L2 has suggested, broadly speaking, that learners have positive attitudes toward engagement in DMC. Nevertheless, Kang and Kim’s (2019) study, for instance, revealed mixed attitudes toward the potential of DMC to support L2 writing. Exploring learners’ attitudes toward text-only essays and DMC, Kim and Belcher (2020) found that learners perceived DMC as more interesting, with varying views on which task was more motivating and supportive regarding the improvement of L2 writing. Other studies found similar variations in learners’ perceptions of DMC’s potential to foster L2 writing (Jiang, 2018). Kim and Kang (2020) indicated that learners’ high level of interest in MMC projects might be interpreted through the novelty effect lens.

Moreover, Zhang et al. (2021) reviewed 60 DMC-related studies conducted from 2005 to 2020 in L2 contexts, such as Yeh (2018). The findings, interestingly enough, revealed that those studies included few DMC tasks, amounting to an average of 1.49 tasks per study. Furthermore, within the 60 studies reviewed, only 15% examined multimodal essays, and 60% of those studies explored attitudes toward DMC—69% probed into overall perceptions. Despite the fact that previous studies have reported positive findings in terms of learning gains and perceptions of DMC, such findings should be interpreted with caution, as they might have been influenced by the novelty effect (Zheng & Warschauer, 2017). Such an effect might likely be attributed to research design, implementing a very few DMC tasks (Jiang, 2018). Despite previous research endeavors, there remains no conclusive evidence associated with the landscape of L2 learners’ perceptions of DMC, and more exploration in this regard is warranted (Kim & Belcher, 2020), including L2 learners’ attitudes toward engagement in multiple DMC tasks.

**RESEARCH OBJECTIVES**

As a factor of paramount importance, attitudes might have a strong impact on learners’ involvement in writing (Chen, 2021), and in multimodal essays. Therefore, to gain a fine-grained cognizance of EFL learners’ perceptions and attitudinal fluctuations toward DMC, this study utilized a longitudinal recursive research design by using multiple digital multimodal essay tasks. In so doing, it provides insight into long-term effects of DMC tasks on learners’ perceptions, thus probing into the feasibility of multimodal-based L2 writing pedagogy. Kim and Kang (2020) argued that for multimodal projects
to be integrated into writing curricula, longitudinal research that systematically utilizes several multimodal tasks is warranted.

Although many previous studies have explored L2 learners’ attitudes toward DMC, few have examined attitudes from a longitudinal perspective. Moreover, the past two decades have been replete with studies that only employed a few DMC tasks in their research designs, with a small number of multimodal essay tasks investigated (Zhang et al., 2021). Instead of students’ actual positive attitudes toward MMC, some previous findings might be ascribed to the novelty effect (Jiang, 2018) found in new experiences and the engaging environment of technology-based multimodal composition, for example the findings of Kim and Kang (2020). Addressing this gap, this study employs a longitudinal approach to obtain attitudinal data on an extended DMC practice, with multiple data sources and the same participants in five recursive DMC tasks, thus controlling for the individual differences variable effect on the findings. To that end, this study seeks to answer two pertinent questions:

1. What are EFL learners’ perceptions of DMC?
2. Do EFL learners’ attitudes toward DMC change over time as a result of successive tasks?

METHODS

Participants and Research Context

The participants were Arabic-speaking students (n = 40) enrolled in an English language and translation undergraduate program at a Saudi public university, with three or more years of university education (M = 3.87), whose ages ranged from 21 to 26 (Mage = 22.42 years, SD = 1.375). The participants had taken English courses in prior education, with a mean of eight years of English learning. They attended a class that met once a week for three hours and was taught by the researcher in a language lab—equipped with computers and internet access. The participants voluntarily took part in this study, given that informed consent was obtained before commencing the procedures.

Data Collection and Analysis

Multiple data sources were utilized in a mixed-methods (within-subjects) design to collect and analyze data, as triangulation enhances the robustness of the findings (Creswell & Miller, 2000). Using a longitudinal recursive approach, procedures (Figure 1), conducted in the lab, took ten weeks and consisted of two workshops; five in-class, online-based L2 DMC tasks; five online questionnaires; concluding written reflections; and focus group discussions. For quantitative analysis, SPSS v.24 was utilized to obtain descriptive and inferential statistics, whereas thematic analysis was used for qualitative data. The researcher took a number of measures to ensure credibility of findings. First, to ensure honesty of responses, students were informed and assured that participation was optional and would not affect course assessment. Second, the teacher-researcher was not present in the lab when students took the questionnaires. Third, the qualitative data were coded by two researchers independently (the author and an expert researcher), and inter-rater reliability analysis was performed on emergent codes.

Blogger and DMC Workshops

Blogger (www.blogger.com) is a free, user-friendly online tool that enables posting to blogs by multiple users. It provides a platform for producing, formatting, structuring, organizing, and inserting text and nonlinguistic components, either self-designed or from the internet (e.g., audiovisual materials). The procedures commenced with two workshops: (1) using Blogger (45 minutes), and (2) employing Blogger for DMC (60 minutes). Subsequently, the researcher invited each student, as an author, to a blog prepared for this study. The second workshop was intended as careful scaffolding to acquaint students with Blogger features in order to integrate different semiotic resources into one multimodal
ensemble. Multiple samples of online DMC were displayed on a large white board that showed how different modes in DMC are combined to convey particular meanings.

**DMC Sessions**

Students, utilizing Blogger, engaged in five online-based L2 multimodal essay tasks. Each took 60 to 80 minutes. Essay topics were based on different writing genres usually encountered by English majors (ecological validity) as follows—descriptive writing: (1) *the best future job for you*; expository writing: (2) *online vs. traditional classes*; argumentative writing: (3) *children and video games*; and narrative writing: (4) *my English learning journey*, and (5) *narration of a self-selected story*. The purpose of selecting these topics was to control for background knowledge. To make DMC tasks more convenient, considering the nature and scope of this longitudinal study, students were instructed to compose by including self-written text and utilizing the internet to search for suitable visuals/audiovisuals, provided that students were trained to properly cite nonlinguistic components.

**Questionnaires**

Data were recursively collected at intervals. Following each task, students were asked to fill out a questionnaire, utilizing the Google Forms platform, which could be completed in five or six minutes. The recurrent questionnaire consisted of ten items developed by the researcher, having extensively reviewed relevant literature, and investigated attitudes toward DMC tasks (Table 1) with a five-point Likert scale (strongly disagree = 1 – strongly agree = 5). The items were pertinent to DMC effects on task enjoyment, conveying ideas, L2 and writing improvement, and motivation, among others. To confirm the items’ validity, two experienced researchers reviewed the questionnaire, and all necessary modifications were made. Subsequently, the questionnaire was piloted to a small sample to test items’ reliability; the Cronbach’s internal consistency coefficient (α = .75) indicated the suitability of the questionnaire. To explore students’ perceptions of multiple DMC tasks (the first research question), the data drawn from the five questionnaires were analyzed (Table 1) using descriptive statistics (means and standard deviations), given that the same number of participants participated in all the questionnaires. The scale analysis procedures were as follows: means ranging
from 1.00 to 2.60 pointed to **negative** attitudes, from 2.61 to 3.40 were considered **neutral**, and from 3.41 to 5 indicated **positive** attitudes. To answer the second research question (possible significant attitudinal fluctuations toward successive DMC tasks in a repeated design), all the questionnaires and individual items were compared in all five observations to examine any significant differences in attitudes. Therefore, the data obtained from the five questionnaires were first tested to examine the assumptions of normality of data distribution utilizing the Shapiro-Wilk test. The results, however, indicated violations of normal distribution ($p < .05$), suggesting that the parametric test of one-way repeated measures ANOVA was not suitable for the data. Consequently, the non-parametric test of Friedman’s ANOVA was used to compare the mean ranks of the related samples. In case any significant differences were indicated by the Friedman’s ANOVA, a Wilcoxon signed-rank test was employed in order to identify the specific questionnaire items that have significant differences in mean scores. Additionally, Bonferroni correction was employed to adjust significant values by dividing $p$-value(s) by the number of questionnaires.

**Concluding Written Reflections and Focus Group Discussions**

Following the final composing session, students ($n = 38$) engaged in concluding reflections, given that two students did not provide their reflections. The reflections allowed an open-ended opportunity for students to express their opinions (Alrajhi, 2022) on the DMC tasks. In week ten, a focus group discussion session was conducted by the researcher. The purpose of the reflections and discussions was to explain, validate, and increase the robustness of the quantitative findings. Six students (15%) were invited to the group discussions that took around 1 hour and 35 minutes, provided that their consent was obtained for audio-recording. The discussion included open-ended questions, such as: What are some similarities and differences between text-based writing and DMC? How does DMC communicate meaning? What do you think in terms of DMC and writing motivation? All data were transcribed and prepared for analysis. Utilizing an inductive approach to theme-based analysis (Clarke et al., 2019), the reflections and focus group discussions were coded by two researchers independently, given that no existing scheme was predetermined for coding. Analysis of inter-coder reliability indicated a substantial agreement (Cohen's Kappa = 0.80). Disagreements on the remaining codes were discussed until the two coders reached a consensus. Initial codes comprised words and phrases, such as *enjoy, actual writing, ease, express, difficulty with visuals, motivate, experience, and achieve*. Subsequently, the codes were intensively examined and combined in subcategories, and the emerged categories represented the major themes reported in this study.

**FINDINGS**

**Students’ Perceptions of DMC**

The results obtained from descriptive statistics (Table 1) suggest that perceptions were positive throughout all five tasks, with a relative gradual increase in the total means (overall $M = 4.04 – 4.24$) from the first to final task. Analysis of the individual items in all questionnaires reveals that items 1 ($M = 4.10 – 4.45$), 4 ($M = 4.33 – 4.60$), 9 ($M = 4.20 – 4.40$), and 10 ($M = 4.23 – 4.53$) received high means in all tasks, suggesting positive perceptions of DMC effects on task enjoyment, L2 writing improvement, L2 writing motivation, and awareness raising of DMC’s communicative ability. Moreover, items 2 ($M = 4.33 – 4.43$) and 3 ($M = 4.20 – 4.38$) had high means in four tasks (from 2 – 5), indicating positive perceptions of DMC regarding clear communication of meaning and effects on L2 improvement.

**Students’ Attitudinal Fluctuations Toward DMC**

Comparing the first two tasks with the final two tasks, analysis shows a trending pattern that suggests a stable or increased level of positive attitudes toward DMC in 60% of the items, except for items 5, 6,
Concerning individual items in the questionnaires, the results obtained from Friedman’s test (comparing means of individual items in all questionnaires) suggest that there are no statistically significant differences among nine individual items in all five questionnaires \( (p > .050) \), indicating no significant fluctuation trends. The only item that has a significant difference in mean scores is item 2.

That is, comparing attitudes toward the ability of DMC to clearly convey ideas in all questionnaires, Friedman’s test suggests that there is a significant difference between item 2 scores in two of the five questionnaires, \( \chi^2(4) = 9.914, p = .042 \). Post hoc analysis utilizing a Wilcoxon signed-rank test with a Bonferroni corrected alpha level of .010 \((.05/5)\) shows that learners’ attitudes (Table 2) toward DMC’s ability to clearly convey ideas following task 5 were more positive \( (Mdn = 5.00) \), as compared to their attitudes following task 1 \( (Mdn = 4.00) \), revealing a significant fluctuation in attitudes \( (z = −2.583, p = .010) \).

Item 6 reveals positive attitudes in the first task \( (M = 3.93) \). However, less positive attitudes appear in tasks 2, 3, and 4 \( (M = 3.44 – 3.55) \), and neutral attitudes in the final task \( (M = 3.33) \). This finding suggests that students in the first task perceived their DMC products to have less text, as compared to text-based writing. Nonetheless, such perceptions had relatively declined throughout the following tasks. Moreover, although item 8 reveals positive attitudes toward willingness to engage in more DMC tasks in the future, it shows less positive attitude in task 3 as compared to task 2.

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Table 1. Students’ perceptions of DMC in five tasks \((n = 40)\)

<table>
<thead>
<tr>
<th>Item</th>
<th>DMC 1</th>
<th>DMC 2</th>
<th>DMC 3</th>
<th>DMC 4</th>
<th>DMC 5</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. DMC is interesting and fun.</td>
<td>( M = 4.10, SD = .672 )</td>
<td>( M = 4.28, SD = .554 )</td>
<td>( M = 4.30, SD = .608 )</td>
<td>( M = 4.45, SD = .597 )</td>
<td>( M = 4.40, SD = .632 )</td>
<td>( M = 4.31, SD = .620 )</td>
</tr>
<tr>
<td>2. DMC helps to communicate my ideas clearly.</td>
<td>( M = 3.98, SD = .832 )</td>
<td>( M = 4.33, SD = .694 )</td>
<td>( M = 4.33, SD = .572 )</td>
<td>( M = 4.43, SD = .636 )</td>
<td>( 4.43 ) ((p &lt; .05))</td>
<td>( M = 4.30, SD = .700 )</td>
</tr>
<tr>
<td>3. DMC can improve my L2</td>
<td>( M = 4.03, SD = .698 )</td>
<td>( M = 4.20, SD = .758 )</td>
<td>( M = 4.28, SD = .816 )</td>
<td>( M = 4.33, SD = .616 )</td>
<td>( M = 4.38, SD = .628 )</td>
<td>( M = 4.24, SD = .711 )</td>
</tr>
<tr>
<td>4. DMC can improve L2 writing</td>
<td>( M = 4.33, SD = .944 )</td>
<td>( M = 4.50, SD = .599 )</td>
<td>( M = 4.50, SD = .751 )</td>
<td>( M = 4.60, SD = .545 )</td>
<td>( M = 4.58, SD = .675 )</td>
<td>( M = 4.50, SD = .716 )</td>
</tr>
<tr>
<td>5. I feel confident in my DMC products</td>
<td>( M = 3.75, SD = 1.056 )</td>
<td>( M = 4.15, SD = .802 )</td>
<td>( M = 4.10, SD = .744 )</td>
<td>( M = 4.08, SD = .730 )</td>
<td>( M = 4.15, SD = .736 )</td>
<td>( M = 4.05, SD = .828 )</td>
</tr>
<tr>
<td>6. In DMC, I tend to write less text than in text-based writing</td>
<td>( M = 3.90, SD = 1.008 )</td>
<td>( M = 3.43, SD = 1.259 )</td>
<td>( M = 3.55, SD = 1.300 )</td>
<td>( M = 3.55, SD = 1.280 )</td>
<td>( M = 3.33, SD = 1.289 )</td>
<td>( M = 3.55, SD = 1.235 )</td>
</tr>
<tr>
<td>7. DMC can reflect my identity as a writer.</td>
<td>( M = 3.88, SD = .883 )</td>
<td>( M = 3.93, SD = .797 )</td>
<td>( M = 3.93, SD = .797 )</td>
<td>( M = 3.93, SD = .917 )</td>
<td>( M = 4.13, SD = .723 )</td>
<td>( M = 3.96, SD = .822 )</td>
</tr>
<tr>
<td>8. I want to do more DMC tasks in the future.</td>
<td>( M = 3.93, SD = .694 )</td>
<td>( M = 4.08, SD = .616 )</td>
<td>( M = 3.93, SD = .829 )</td>
<td>( M = 4.05, SD = .714 )</td>
<td>( M = 4.10, SD = .744 )</td>
<td>( M = 4.02, SD = .719 )</td>
</tr>
<tr>
<td>9. DMC motivates me to write in L2.</td>
<td>( M = 4.20, SD = .648 )</td>
<td>( M = 4.33, SD = .797 )</td>
<td>( M = 4.40, SD = .810 )</td>
<td>( M = 4.25, SD = .870 )</td>
<td>( M = 4.40, SD = .744 )</td>
<td>( M = 4.32, SD = .774 )</td>
</tr>
<tr>
<td>10. DMC helps me to realize and learn how meaning can be conveyed in different modes.</td>
<td>( M = 4.30, SD = .823 )</td>
<td>( M = 4.23, SD = .768 )</td>
<td>( M = 4.45, SD = .597 )</td>
<td>( M = 4.48, SD = .599 )</td>
<td>( M = 4.53, SD = .679 )</td>
<td>( M = 4.40, SD = .701 )</td>
</tr>
<tr>
<td>Total Mean</td>
<td>( M = 4.04, SD = .14 )</td>
<td>( M = 4.17, SD = .17 )</td>
<td>( M = 4.21, SD = .24 )</td>
<td>( M = 4.24, SD = .16 )</td>
<td>( M = 4.16 )</td>
<td>( M = 4.16 )</td>
</tr>
</tbody>
</table>
Concluding Written Reflections and Focus Group Discussions

Analysis of reflections indicates that there are 211 instances (comments) about students’ experiences and attitudes toward DMC, with 179 (85%) instances indicating views on advantages and positive attitudes. Conversely, there are 32 (15%) instances revealing views on disadvantages and negative attitudes. As shown in Table 3, seven themes emerged from the analysis, and are in harmony with the results of the questionnaires. The themes speak to six positive factors and one negative factor. The positive factors are represented by enjoyability (item 1, $M = 4.31$, in the questionnaire) in DMC inherent in the integration of multiple modes to convey meaning, and as an effective educational experience and potentially conducive to L2 improvement (item 3, $M = 4.24$) and L2 writing development (item 4, $M = 4.50$). Moreover, writing efficiency in DMC was reported as an important factor that can expedite completion of writing tasks due to integrating visuals that can convey meaning, hence compensating for words. Additionally, DMC can contribute to producing more expressive written products as it helps to clarify meaning by integrating visuals with text (item 10, $M = 4.40$; item 2, $M$...
= 4.30), and can be a motivating factor for L2 writing (item 9, $M = 4.32$). On the other hand, some concerns pertinent to DMC were reported and centered around searching for and finding appropriate nonlinguistic components to integrate into DMC, which was perceived, to some extent, as time-consuming. Such a negative factor was, relatively speaking, suggested by the results of item 8 in the questionnaire in tasks 1 and 3 ($M = 3.93$).

Analysis of focus group discussions provides more explanation and elaboration on students’ perceptions of DMC, reported in both the questionnaires and concluding reflections. Analysis of the discussions reveals that L2 writing, as a daunting task for learners, seems to be mitigated by the incorporation of nonlinguistic components in DMC, especially for students with lower L2 proficiency. Many students considered DMC an actual and entertaining form of writing. Being exposed to a less commonly experienced writing task and an appealing learning experience were two reasons accounting for enjoyability in DMC.

*S1*: If a writer feels that writing is difficult, DMC could be a gate to start with easier work. DMC can motivate because writing at the beginning can be less and visuals can be used and they are clarifying.

*S2*: Writing tasks are not interesting to many people, so if I am to write, I would want to do DMC instead of just writing text. I believe DMC is a much more fun way of actual writing. I think DMC tasks were enjoyable more than other tasks in other classes. It is a new and very nice way.

Motivation for DMC emanated from different sources, including the need to ensure that different integrated components adequately represent and complete ideas in the final product.

*S3*: DMC encourages you to write because you have to make sure that images go along with the text. If the text is very short, images are not useful. So, you have to write more so there would be harmony among all elements, so the product is balanced.

DMC helped students to realize that meaning can be conveyed in different modes, affecting how the final product is convenient for readers. It, furthermore, seemed to increase writers’ confidence in their final products, as they are in line with current online composition practices.

*S4*: DMC showed me how I can provide the meaning in different ways. For example, for a writer, instead of writing all details in words, visuals can be used to make readers feel good when viewing the DMC.

*S5*: I think DMC makes me confident because in DMC you feel your writing is modern. This is how we write now, on the internet. I think all writing should be DMC; if it is just text, it is going to be boring.

Approaching DMC tasks differently, half of the students had a tendency to produce text followed by visuals, while others commenced with visuals followed by text writing. More than half of the students noted that text is the most effective component of DMC, whereas others considered images the most important. Furthermore, the majority of students acknowledged that visuals in DMC can help to signal writers’ attitudes and feelings.

*S4*: I start with the introduction, then I insert a suitable image, then I start with the body paragraph. In the middle of the paragraph, I insert a video or image, then the conclusion... The most important element of DMC is images, then text, then videos. Because basically, what would interest you is the images.

*S1*: Text only does not easily show your emotions. Images provide a theme, and images can do that.
As writers write, search for, and view visuals, they encounter many recourses that expose them to L2, thus DMC seems to simulate L2 learning and practice in general.

*S5: DMC improves L2 very much. First, you write. Second, when you use videos such as YouTube, you start listening, and listening improves. The whole thing like searching and other things can improve L2.*

Students were not on the same page regarding whether DMC should replace traditional writing in writing classes, and whether DMC assessment should focus on components other than text. Different perspectives are associated with the online pervasiveness of DMC and the roles of visuals in its design.

*S4: I think DMC should be used instead of just text writing in the writing class, because DMC clarifies more, and DMC is on social media and everywhere, you find DMC, you find images, text, and videos. DMC is better than text writing...When teachers check DMC, they should check both text and visuals.*

Successive DMC tasks in a short period of time did not seem to provoke anxiety or boredom. When students are aware of DMC requirements, and are supported with knowledge and skills to engage in DMC, tasks become more convenient.

*S6: I felt comfortable doing DMC. Maybe at the beginning, you might feel it is difficult, but if you know how to do DMC and where to find images and visuals...and strategies to save time, it is going to be easier.*

Technological skills are an integral requirement for L2 writers to successfully produce DMC. Given that, teachers should prepare students for DMC by providing guidance, assistance, and feedback.

*S2: If you do not have skills in technology, DMC is going to be almost impossible to do. You need these skills very much...Teachers should design their own DMCs and show students each step. I think if teachers provide students with monthly feedback on DMC, it is going to be very nice and help students to improve their DMCs.*

**DISCUSSION**

DMC was a new learning experience demanding the integration of other semiotic resources, as compared with text-only writing, which can cause difficulties and more effort on tasks (Benson, 2008). However, a synthesis of the findings suggests students’ positive attitudes toward multiple successive DMC tasks. Students positively perceived DMC from the outset, with a slight gradual increase in positive attitudes from the first to final tasks. This finding provides robust empirical evidence that positive attitudes toward DMC in the present study are not a consequence of the novelty effect associated with involvement in a new technology-based form of writing activity.

Based on the social semiotic theory of multimodality (Kress, 2010) and intersemiotic complementarity (Royce, 2002), students utilized different semiotic resources to engage in written communication through organizing intermodal relationships, where each semiotic resource had a particular function and purpose in their products. Although the same components were required in all tasks, learners approached DMC differently, dividing attention between text and nonlinguistic components, with intersemiotic complementarity as the guiding principle. In line with Smith’s (2017) findings, learners had distinct preferences regarding modes. Nonetheless, as learners were already familiar with traditional writing, the nonlinguistic component was the only new constituent causing curiosity. Learners considered nonlinguistic components an essential constituent of DMC, which thus significantly complemented text in revealing writer identity and attitude as well as explicating
intended messages. Therefore, learners did not merely enjoy the processes and products of DMC as a novel writing task, but might have gradually increased awareness and developed appreciation of the potential of the affordances of different semiotic resources while engaged in DMC tasks (Burke & Hardware, 2015). Raised awareness contributed to perceiving DMC as a means for fruitful communicative outcomes, lending support to previous studies suggesting effects of DMC on L2 writing (Vandommele et al., 2017). Such awareness and appreciation translated into long-term and increased positive perceptions and attitudes toward DMC in all tasks. Furthermore, students’ engagement in various DMC tasks is potentially conducive to nurturing such awareness and appreciation of the role and merits of multimodality in L2 writing. This is evidenced by the only significant attitudinal difference, pointing to how learners had become, toward final tasks, more cognizant of DMC’s ability to communicate ideas clearly. This finding resonates with previous research on DMC, indicating the potential of DMC to enhance L2 students’ production of meaning through various semiotic resources (Hafner, 2015). Moreover, this finding is in line with Chen (2021) who found that learners considered MMC more revealing of intended ideas.

Attributed to multimodality, such promoted awareness of novel ways to convey meaning might have triggered more engagement in DMC tasks (Nash, 2018). The lack of statistical significance in differences among the majority of the items in the five questionnaires can be explained by students' stable positive attitudes toward DMC. Such relatively homogeneous attitudes can be interpreted bearing in mind several factors, reported in the quantitative and qualitative findings, associated with DMC regardless of task order, number, and genre. These factors (enjoyment, clear communication of meaning, L2 and writing improvement, motivation, and realization of the utility of different modes to convey meaning) might have influenced learners’ engagement in DMC, and hence progressively influenced their views on all tasks. In addition, the relative increase in positive attitudes in later tasks might have emanated from accumulated acquaintance with the process of DMC and a greater growing interest than in the former sessions. Furthermore, learners had the opportunity to decide on nonlinguistic components to integrate into their products, resulting in more engagement (Nash, 2018). Nevertheless, the tasks topics used in this study were general in scope and convenient to tackle, yielding the assumption that more technical, analytical, or science-based DMC might affect levels of engagement and enjoyability, and hence attitudes toward DMC.

Delving into the quantitative and qualitative findings, task enjoyability appears to be a defining factor in DMC. The fact that attitudes remained positive alludes to the DMC process as inherently interesting and engaging (Nash, 2018). Enjoyability in DMC, as a unique written product encompassing more than a mere text, is associated, to a large extent, with the nonlinguistic component (e.g., visuals), supporting Hafner and Miller’s (2011) findings that suggested learners’ interest in DMC. The integrated components and overall outcome of DMC is conducive to considering the final product a creative achievement (Kim & Belcher, 2020). Inherent in DMC’s motivational properties is readers’ impression of the products, as visuals can enhance how these products are viewed and appreciated. Therefore, students might have been inclined to attend more to visuals in DMC (Gunsberg, 2015), which culminated in more engagement in tasks.

Concerning L2 and writing development, as a new interesting writing activity, DMC increased learners’ effort in different tasks. Resonating with Hafner and Miller’s (2011) findings, the reflections indicate how engagement in enjoyable DMC tasks led to increasing motivation (Smith, 2014) for L2 writing. Higher levels of motivation and engagement might be attributed to many other inherent factors, including the authenticity of DMC (Jiang & Luk, 2016). That is, DMC, as an authentic product, is in harmony with current composition practices encountered frequently in online spaces (Hafner & Miller, 2011), which increases satisfaction with final products. Additionally, DMC seems to mitigate writing difficulty by tapping into its affordances that can provide support for students at different levels, including those with lower L2 proficiency (Smith, 2014; Vandommele et al., 2017), as it is a motivational force comprising various resources to compensate for gaps in linguistic knowledge (Sylvester & Greenidge, 2009). Therefore, one of the strengths of DMC seems to be associated with
the overall effort in designing and producing this form of communication, extending the fruitful outcomes to harness gains at different levels (Kim & Kang, 2020). Put another way, while engaged in DMC, students were involved in different processes and were exposed to recourses conducive to L2 learning, such as L2 writing, online searching, surfing websites, watching audiovisual materials, and reading online content, hence extending their linguistic repertoire in the process.

Among reported hinderances associated with DMC is finding suitable nonlinguistic components (e.g., audiovisuals) to integrate, which might be reflected in students’ attitudes toward engagement in more DMC tasks in the future. Thus, a plausible assumption is that learners’ self-designed materials would be even more challenging, labor-intensive, and time-consuming (Kim & Belcher, 2020). Therefore, as nonlinguistic components play a significant role in learners’ interest, they might also diminish the potential of DMC as a motivating writing task. Learners in this study were prepared effectively using two workshops as scaffolding strategies before commencing with DMC (Jiang & Luk, 2016). As a result, they managed to overcome hindrances caused by visuals’ accessibility. However, the mere fact that learners reported such a difficulty, regardless of the workshops, calls for attention to this factor when utilizing DMC tasks. In line with previous research, mixed views were found regarding the place of DMC in the writing classroom (Jiang, 2018), and whether other components of DMC should be integrated into writing assessment. Mixed attitudes, emphasized in previous research (Jiang, 2018; Kang & Kim, 2019; Kim & Belcher, 2020), emanate from different views on the role of nonlinguistic constituents in students’ DMC products.

CONCLUSION

This study, from a longitudinal perspective, found that EFL learners had positive attitudes toward DMC in five successive tasks, providing evidence that such attitudes are not associated with the novelty effect. The findings suggest noteworthy pedagogical implications. First, many EFL learners have a disposition to attempt innovative means for EFL learning (Alrajhi, 2020), including new literacy-based practices in the classroom. Such inclination should encourage language teachers to consider a shift of pedagogic practice through integrating DMC into their instructional routine (Elola & Oskoz, 2017). The affordances of DMC seem promising in terms of both fostering multiliteracies and L2 learning (Belcher, 2017), as DMC components provide learners with a range of possibilities for meaning-making (Jiang, 2017). Integrating DMC into writing curricula does not merely enable L2 learners to produce L2, but rather facilitates the process of writing to learn L2 (Manchón, 2011). With digital technology permeating tertiary educational settings, a ground has already been established to promote both learners and instructors’ multimodal knowledge and skills (O’Halloran et al., 2016). In the current technologically mediated era, there is a need to reconsider the concept of written communication and view DMC as an integral part of such a concept (Belcher, 2017). Second, DMC appears to be inherently motivating, engaging, and interesting. As a motivational force, it can increase learners’ engagement in L2 learning, providing authentic and enjoyable experiences (Jiang & Luk, 2016). Third, DMC has the potential to alleviate L2 writing difficulties and stimulate L2 writers to exert more efforts and spend more time on writing tasks. Fourth, it is pivotal for L2 learners to acquire relevant technological knowledge and skills prior to engaging in DMC (Jiang & Luk, 2016), as a new learning experience in mainstream EFL classes.

A few limitations of this study and suggestions for research merit clarification. First, the sample draws on English majors and their attitudes toward DMC, hence different findings might emerge with other EFL learners. Second, the findings were generated from self-reported data, and future studies can employ other measures (e.g., observation, examining cognitive gains) to provide more validation of learners’ perceptions. Third, as visuals/audiovisuals in DMC draw learners’ attention
to nonlinguistic components, it would be interesting to empirically investigate the effect of DMC on learners’ attention to the linguistic component. Fourth, when examining learners’ attitudes toward DMC, it is crucial to gear their attention to writing more than designing nonlinguistic constituents. Otherwise, a possible negative effect on attitudes might ensue from attending more to nonlinguistic materials design and a lack of focus on L2 writing.

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**CONFLICT OF INTEREST**

The author of this publication declares there is no conflict of interest.
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