The Impact of Digital Multimodal Composition on Writing Ability of Iranian EFL Learners with Respect to Their Self-Efficacy

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ABSTRACT **Article Info** Despite the increasing attention of researchers to digital multimodal **Article Type:** composition in recent years and the importance of self-efficacy beliefs in the development of writing ability, the instruction of writing skill has still Research Article remained traditional in Iran. The present mixed-methods study was conducted to examine the joint effect of digital multimodal composition and selfefficacy on the writing ability of Iranian EFL learners. In so doing, two intact groups including 59 sophomore students at a university in southeastern Iran participated in the study. The participants were assigned into two comparison groups of multimodal (n = 30) and monomodal (n = 29) compositions. The multimodal group composed five digital essays while the monomodal group produced five paper-based essays during the semester. Moreover, both groups' self-efficacy beliefs were assessed through Second Language Writer Self-Efficacy Scale after they finished composing their essays. At the final Received: stage of the research, semi-structured interviews were run to elicit the participants' perception about digital multimodal composition. The result of two-way MANOVA revealed that the multimodal group outperformed the 30/07/2020 monomodal group in terms of content, communicative achievement, and organization, but not in language component. Additionally, self-efficacy had Accepted: a significant impact on the writing ability of both multimodal and monomodal groups regardless of the type of writing they produced. Besides, the thematic analysis of the interviews revealed that highly-efficacious learners had 07/11/2020 positive perception about multimodal composition. The study concludes with the necessity of reshaping educational practices for English writing instruction in Iran and fostering the learners' self-efficacy in the composition processes. Keywords: Digital Multimodal Composition, Self-Efficacy, Writing Ability

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1. Introduction

The ubiquitous impact of technology on foreign language instruction and its subsequent pedagogical practices can rarely be overlooked. The access to digital tools has entailed a great shift in written communication and resulted in transformation of meaning-making from monomodal (paper-based) composition to multimodal (screen-based) type of writing. As a breakthrough in written communication, digital multimodal composition (DMC) which incorporates textual, visual, and aural modes has received increasing attention (Ferdig & Pytash, 2014; Jewitt & Kress, 2003). Various scholars have declared the importance of multimodal composition in writing development (Cope & Kalantzis, 2000; New London Group, 1996; Shepherd, 2018).

As far as writing instruction is concerned, a bulk of research on L2 writing skill has investigated the complex process of writing development and identified two major factors, namely cognitive and affective variables contributing to the writing skill development (Ellis, 2008; Hedge, 2006). Cognitive factors of memory, attention, sequential processing, language, planning, text generation, and revision have been regarded as crucial for writing development (Hooper et al., 2009; Scardamalia et al., 1982). Similarly, English composition researchers have addressed this complexity by focusing on affective factors with equal contribution to writing outcome (Beach, 1989; McLeod, 1987). The reason why some language learners seem more successful than others with similar cognitive abilities can be accounted for by affective variables such as personality traits, learners' beliefs, anxiety, and motivation which have been recognized responsible for different rates of language skills development (Dörnvei, 2005; Harmer, 2015; Hedge, 2006). Among all, an impressive research effort has been directed toward learners' beliefs in their abilities to perform a task, known as self-efficacy (SE) beliefs (Bandura, 1997; Schunk, 2003). Self-efficacy was defined by Bandura (1997) as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3). Bandura (1997) believed knowledge about a topic is necessary but not sufficient; as a result, in addition to the cognitive ability, SE seems crucial as it provides support for the learners to put their skills into use. The supportive impact of self-efficacy on writing ability has also been pointed out by many researchers in the field (Pajares, 2003; Prat-Salsa & Redford, 2012; Raoofi et al., 2012).

Imposed by the irresistible pressure of globalization, Iran has faced ever-increasing number of English language learners who wish to learn it via updated methods; however, language teaching policy rarely seems congruent with the needs of today's learners (Hayati & Mashhadi, 2010). Generally speaking, foreign language education is fairly traditional in Iran and this has entailed the absence of innovative techniques for the instruction of English

writing at educational centers (Mohiti Asli, 2019). Thanks to the importance of English writing skill in foreign language situations like Iran and the growing number of Iranian students attending in language education programs, there is a critical need to reshape pedagogical practices and to adjust them to today's learners' needs (Naghdipour, 2016; Naghdipour & Koc, 2015). Moreover, the identification of the judgement of Iranian learners of English as a foreign language (EFL) about their capability seems essential to their writing success. Although a wealth of research demonstrated the significant impact of multimodal composition (Cope & Kalantzis, 2000; New London Group, 1996) and self-efficacy (Garcia & de Caso, 2006; Klassen, 2002; Pajares, 2003; Prat-Salsa & Redford, 2012) on writing outcome, empirical studies devoted to examine the simultaneous effect of digital multimodal composition (especially photo-essay type) and self-efficacy beliefs on English writing have received scant attention in the related literature. To fill the gap, the present study was undertaken to throw light on the role of digital multimodal composition (as a cognitive factor) and selfefficacy (as an affective factor) in Iranian EFL learners' writing outcome. Accordingly, two research questions motivated the present study:

- 1. Does digital multimodal composition affect Iranian EFL learners' writing ability in terms of content, communicative achievement, organization, and language and, if so, does this effect vary with their self-efficacy?
- 2. To what extent does the perception of the highly-efficacious learners about digital multimodal composition differ from that of the learners with low self-efficacy?

2. Literature Review

2.1. Digital Multimodal Composition (DMC)

At the turn of the twenty-first century, the multiplicity of communication channels to express meaning entailed enormous shifts in communication. Multimodality was introduced to describe the sort of communication which incorporated a variety of modes comprising visual, audio, gestural, and spatial modes beyond the linguistic representation (Kress & Van Leeuwen, 2006). The New London Group (1996) proposed ways to change teaching and learning paradigms in response to the emerging forms of communication. They introduced multiliteracies framework which emphasized that the inevitable changes in our daily communication influence educational practices and this implied the need to integrate digital tools to adjust the teaching practices to the learners' needs and expectations (New London Group, 1996). This framework which stresses the necessity of rethinking the pedagogical practices in response to the changing forms of

communication in society serves as the theoretical framework of the present study.

In the related literature, a substantial body of research has discovered the enhancing role of multimodality in the development of writing skill and the necessity of the integration of DMC into writing classes (Bourelle et al., 2016; Huang & Archer, 2017; Kimmons et al., 2017; Shepherd, 2018; Vandommele et al., 2017). On the other hand, some researchers voiced reservations about the mere contribution of multimodal composition to the improvement of writing outcome (Agee & Altarriba, 2009; Collins & Pascarella, 2003; Jiang, 2018; Mehlenbacher et al., 2000; Neuhauser, 2002; Sapp & Simon, 2005). Furthermore, some other scholars doubted over the appropriate design and assessment in the previous multimodal studies (Anderson & Kachorsky, 2019; Kimber & Wyatt-Smith, 2010). For instance, they claimed that most studies were quantitatively conducted based on a correlational design. Moreover, the implementation of an elaborate and a standard rubric for writing ability assessment has seldom been reported in the related literature.

2.2. Self-Efficacy (SE)

Writing as a complicated and multifaceted skill has always been investigated by numerous researchers who sought to figure out the factors which may influence its development. These factors have been identified as cognitive abilities such as relevant knowledge, skills, intelligence, and writing competence (Hooper et al., 2009; Scardamalia et al., 1982) as well as affective factors like personality traits, learners' beliefs, anxiety, attitude, and motivation (Beach, 1989; McLeod, 1987). Although SE has been investigated in relation to a few variables such as learning strategies, performance, interest level, and writing apprehension, several scholars have called for addressing self-efficacy in relation to writing performance (Banzato & Coin, 2019; Fazilatfar et al., 2020; Ghahari & Farokhnia, 2017). As a result, research on second/foreign language writing has revealed that writing is linked to learners' beliefs about themselves, known as self-efficacy beliefs (Bandura, 1997). Self-efficacy (SE), as defined by Bandura (1977), refers to "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3).

According to Bandura's (1977) self-efficacy theory which serves as another theoretical framework of the study, individuals' beliefs in their capability to accomplish a given task (self-efficacy beliefs) seem to influence their performance. Consequently, it is expected that individuals with high SE show a better performance at a certain task than those with low SE (Zimmerman, 2000). Since Bandura (1997) first introduced self-efficacy, its role in writing performance has received extensive support from a growing

body of findings. Research into SE has demonstrated it as a strong predictor of writing performance (Bruning & Horn, 2000; Chea & Shumow, 2014; Khojasteh et al., 2016; Klassen 2002; Kormos, 2012; Pajares & Valiante, 1997; Prat-Salsa & Redford, 2012; Raoofi et al., 2012). Since SE is a domain-specific construct, writing SE is defined as writers' judgement about their capabilities to successfully complete a writing task and writers with high SE take advantage of stronger confidence and are more likely to challenge the writing tasks by putting more effort than those with low SE (Lavell, 2006).

Summarizing the previous research, it can be inferred that self-efficacy plays a significant role in the development of writing ability; however, studies which concluded that self-efficacy was not a significant predictor of the writing ability have seldom been reported (Eggleston, 2017; Hashemnejad et al., 2014). Although independent studies have recently been conducted to shed light on how DMC enhances writing outcome and how SE improves the writing ability, research on the joint effect of DMC and SE on writing ability has only scratched the surface in understanding how Iranian EFL learners utilize multiple modes in DMC, how efficacious they find themselves in producing DMC, and what their perception is about multimodality. Motivated by the inconsistency in the literature concerning the effectiveness of DMC (as a cognitive variable) and SE (as an affective variable) on the writing performance, the researchers of the present study sought to investigate their simultaneous impact on the writing ability of Iranian EFL learners.

3. Method

3.1. Participants

A cohort of 59 undergraduate students of English as a foreign language (EFL) at a university in southeastern Iran participated in the study. Convenience sampling was used for the study because the participants were readily available to researcher 1. As the learners had already passed Writing I course and were familiar with developing English paragraphs, they perfectly matched the research purpose. The participants who had already enrolled in Writing II course in EFL curriculum and had been divided into two groups by the English department, were assigned into two comparison groups, namely multimodal (n = 30) and monomodal (n = 29). Participants (male = 37.2 %) and (female = 62.8 %) were Persian native speakers, aged between 19 to 26, (M = 20.4, SD = 2.1) and were at an intermediate level of English proficiency based on their test results on the University of Michigan Examination for the Certificate of Competency in English (ECCE). For Iranian undergraduate EFL learners, Writing II course is a compulsory course administered in the

second year of the four-year undergraduate program in which they learn how to develop English essays. It is to be noted that the participants had not been exposed to multimodal instruction of writing in their curriculum prior to the study.

3.2. Materials and Instruments

3.2.1. University of Michigan Examination

The first instrument used in the present study was University of Michigan Examination for the Certificate of Competency in English (ECCE) as an index of proficiency level of the participants. It was a 100-item paper-based examination consisting of grammar, vocabulary, and reading (GVR) sections with each item having one score (max= 100). The allotted time for this exam was 80 minutes. Participants sat for this test at the outset of the term and prior to the experimentation.

3.2.2. The Second Language Writer Self-Efficacy Scale (L2 WSS)

The next instrument was the Second Language Writer Self-Efficacy Scale (L2WSS) assessing the participants' writing self-efficacy through three linguistic self-efficacy, self-regulatory efficacy, subcategories: performance self-efficacy developed and validated by Teng et al. (2017) and the reported Cronbach's alpha coefficient value of the scale was 0.87. This scale consisted of 20 items each of which having one score and the sum of scores at different subscales constituted the total self-efficacy score of the participants ranging from 20 as the lowest to 140 as the highest scores (Appendix 1). Each statement demonstrated learners' confidence in their capability in the writing process. The participants were required to complete this Likert-type scale with seven response options ranging from 1 (Never true of me) to 7 (Always true of me). Before the administration of the questionnaire to the participants under the study, it was piloted on 20 nonparticipant EFL students who had already passed their writing courses in EFL curriculum and the Cronbach's alpha of the scale yielded a reliability index of 0.81.

3.2.3. Microsoft Photo Story 3/Photo Story Video Maker

The participants' digital writing ability in multimodal group was measured through Microsoft Photo Story 3 for Windows or Photo Story Video Maker for mobile phones depending on the participants' preference for producing their multimodal projects by laptops or cell phones; no matter which one they used, the steps for making projects were the same. These two pieces of software were selected since they could be easily and freely downloaded. They are fast and easy applications for generating video stories. These applications allow users to create a visual story (show and tell presentation) from their digital photos and provide users with the possibility

of adding text, effects, transitions, and background music to produce photo essays.

3.2.4. Paper-Based Essay Writing Template

Another instrument to measure the writing ability in monomodal group was a paper-based essay writing template through which the participants produced their essays (Bailey & Powell, 2008). Based on this template, the monomodal group participants composed their essays using only the text mode.

3.2.5. Writing Assessment Scale

The participants' compositions were scored by Writing Assessment Scale developed by reference to Common European Framework of Reference for Languages (CEFR) which is divided into four subscales: Content, communicative achievement, organization, and language. Content refers to how well the learners have accomplished the task; communicative achievement is defined as how appropriate the writing is for the task; organization means the way the learner puts the parts of the writing together in a logical order; and finally language subscale refers to the appropriate use of vocabulary and grammar (Cambridge English Language Assessment, 2016) (Appendix 2). The scores at each subscale ranged from 0 as the lowest to 5 as the highest the sum of which (four subscales) could range from 0 to 20. In order to ensure the interrater reliability for composition scores of both multimodal and monomodal groups, a university professor who had been teaching English writing for 14 years was invited to score the compositions after the researcher 1 had scored them and the interrater reliabilities calculated for the multimodal and monomodal compositions were 0.83 and 0.79 respectively.

3.2.6. Semi-Structured Interviews

In order to identify the participants' perception about DMC and how efficacious they found themselves in producing multimodal essays, the researchers selected eight interviewees with the lowest and highest SE based on their scores on Second Language Writer Self-Efficacy Scale. Semi-structured interviews were used to elicit in-depth information about the participants' DMC experience and their self-efficacy. Although the interview sessions were guided by a set of pre-planned questions, the participants were invited to add their subjective viewpoints pertinent to the topic.

3.3. Procedure

The present mixed-methods research used a sequential explanatory design for data collection and analysis. Type of writing (i.e. multimodal & monomodal) served as the independent variable and SE was considered as

the moderator variable whereas writing ability was the dependent variable which included four subscales: Content, communicative achievement, organization, and language.

First of all, the participants signed informed consent forms to take part in the study and were ensured that their anonymity would be strictly protected. They were informed that they could withdraw from the study at any stage with no academic consequences. Prior to this quasi-experimental study, University of Michigan Examination for the Certificate of Competency in English (ECCE) was administered to the participants to ensure their English proficiency level. Based on the scoring rubric of this test, the participants' scores fell within the B1 and B2 levels which represent the intermediate level of English proficiency. Afterwards, the students in both groups sat for a semester-long experimentation for 12 sessions of 90 minutes. Both multimodal (n = 30) and monomodal (n = 29) groups were instructed by the researcher 1 who also served as the data collector. Attempts were made to provide the two groups with equal instruction opportunities in terms of class time (90-minute sessions) per a 12-session semester.

The participants in both groups were instructed on how to make their multimodal or monomodal compositions during the first two sessions of the term. Multimodal group used Microsoft Photo Story 3 or Photo Story Video Maker to produce their photo essays with the time interval of every other week during the term; however, monomodal group used paper-based essay template to compose their essays. The participants could monitor their peer's compositions in the classroom and felt free to give comments on each other's writings. Totally, each participant in the multimodal group produced five digital multimodal writings; on the other hand, each learner in the monomodal group produced five paper-based compositions. To clarify, each participant had a portfolio consisting of five writing scores for either multimodal or monomodal essays assigned to them throughout the term. At the second phase of collecting the quantitative data, the Second Language Writer Self-Efficacy Scale (Teng et al., 2017) was administered to all the participants to measure their level of writing SE. Based on the SE scores of the multimodal and monomodal groups on this scale, the participants' SE was assessed across two groups: Learners with high SE and leaners with low SE. Depending on the multimodal group participants' scores on self-efficacy scale, the researchers selected eight interviewees for the semi-structured interviews. The interviewees were invited to respond the pre-planned questions regarding their DMC experience and SE during 20-minute face-toface interview sessions. Separate interview sessions were run for individual students with semi-structured interview protocol being designed in advance to address the second research question. During the interviews, the participants were asked to respond the following questions:

Question 1: How would you describe your experience of producing multimodal compositions?

Question 2: What is your opinion about the effect of DMC on your writing ability?

Question 3: How efficacious do you find yourself in composing digitally?

Semi-structured interviews provided the opportunity to the learners to add their viewpoints pertinent to the topic in addition to the responses guided by the pre-planned questions. To receive the reliable data, the interviews were recorded, transcribed, and then analyzed manually following thematic analysis approach. Afterwards, the responses were coded based on their similarities, differences, and relationships and then core categories and subthemes were developed to specifically answer the second research question.

3.4. Data Analysis

In an attempt to respond the first research question, the researchers used a two-way MANOVA to investigate the impact of the type of writing (multimodal/monomodal) on the EFL learners' writing ability in terms of content, communicative achievement, language, and organization while taking SE as a moderator variable into account. Moreover, the participants' semi-structured interviews were analyzed through thematic coding in order to address the second research question: identifying the perception of the students with high SE and those with low SE about DMC.

4. Results and Discussion

4.1. Results

4.1.1. Quantitative Results

The first research question was concerned with whether there was a difference in the effect of DMC on writing ability of the students with high SE and low SE. Table 1 shows the descriptive statistics of writing ability components of multimodal and monomodal groups with respect to their SE. The mean of content scores in multimodal group was higher among highly-efficacious students than that of the participants with low SE (M2 = 4.85, SD = 0.37 > M1 = 4, SD = 0.82). In multimodal group, the mean of communicative achievement among highly efficacious participants was also greater than that of the students with low SE (M2 = 4.30, SD = 0.57 > M1 = 3.30, SD = 0.48). Furthermore, in multimodal group highly-efficacious learners achieved a higher mean for organization subscale than the students with low SE (M2 = 4.75, SD = 0.44 > M1 = 3.80, SD = 0.63). And finally, the

mean for language subscale in the multimodal group was greater among high SE students than the mean of language for low SE participants (M2 = 4.20, SD = 0.70 > M1 = 3.70, SD = 0.68).

In much the same way, in monomodal group the mean of content for participants with high SE was greater than the mean of the students with low SE (M2 = 4.15, SD = 0.56 > M1 = 3.44, SD = 0.63) and the mean of communicative achievement was greater in highly-efficacious participants than the mean of the students with low SE (M2 = 3.54, SD = 0.78 > M1 = 3, SD = 0.73). In addition, highly-efficacious students could achieve a higher mean in organization subscale (M2 = 3.85, SD = 0.99 > M1 = 3.38, SD = 0.72) and highly self-efficacious participants could gain a higher mean in language component than participants with low SE (M2 = 3.92, SD = 0.76 > M1 = 3.44, SD = 0.73).

Table 1Descriptive Statistics of Writing Ability Subscales of Multimodal and Monomodal Groups in Terms of Their SE

Variable	Group	SE	N	Mean	Std. Deviation
Content	Multi	Low	10	4	.82
		High	20	4.85	.37
	Mono	Low	16	3.44	.63
		High	13	4.15	.56
Communicative Achievement	Multi	Low	10	3.30	.48
		High	20	4.30	.57
	Mono	Low	16	3	.73
		High	13	3.54	.78
Organization	Multi	Low	10	3.80	.63
		High	20	4.75	.44
	Mono	Low	16	3.38	.72
		High	13	3.85	.99
Language	Multi	Low	10	3.70	.68
		High	20	4.20	.70
	Mono	Low	16	3.44	.73
		High	13	3.92	.76

Note. Multi = Multimodal; Mono = Monomodal.

In order to understand if digital writing had an impact on components of writing ability (content, communicative achievement, organization, and language) of the participants with high and low SE, a two-way MANOVA was run. Preliminary assumptions of Box's M test and Levene's test for homogeneity of error variance were conducted with no violation noted.

According to Tables 2 and 3, no interaction effect was found between group and self-efficacy in terms of content, Wilks' Lambda = .97, F (4, 52) = .04, p = .8, communicative achievement, Wilks' Lambda = .97, F (4, 52) = .72, p = .4, organization, Wilks' Lambda = .97, F (4, 52) = .35, p = .6, and language, Wilks' Lambda = .97, F (4, 52) = .20, p = .7.

Table 2

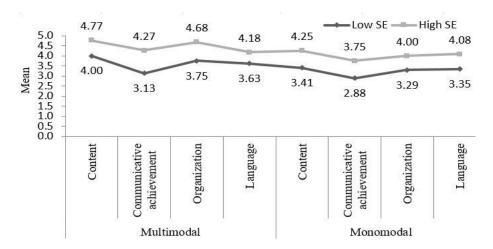
Two-way MANOVA for Writing Ability Components with Respect to Group and SE

Source	Dependent Variable	Sum of Squares	df	Mean Square	F	<i>p</i> -Value	Partial Eta Squared
Group	Content	3.95	1	3.95	11.91	.001	.18
	Communicative Achievement	1.87	1	1.87	5.35	.02	.09
	Organization	4.14	1	4.14	8.83	.004	.14
	Language	.44	1	.44	.93	.3	-
Self-efficacy	Content	8.30	1	8.30	25.04	.000	.31
	Communicative Achievement	12.99	1	12.99	37.12	.000	.40
	Organization	8.58	1	8.58	18.29	.000	.25
	Language	5.30	1	5.30	11.24	.001	.17
Group × Self- efficacy	Content	.01	1	.01	.04	.8	-
	Communicative Achievement	.25	1	.25	.72	.4	-
	Organization	.16	1	.16	.35	.6	-
	Language	.10	1	.10	.20	.7	-
Error	Content	18.23	55	.33	-	_	-
	Communicative Achievement	19.25	55	.35	-	-	-
	Organization	25.80	55	.47	-	-	-
	Language	25.95	55	.47	-	-	-
Total	Content	1062	59	-	-	-	-
	Communicative Achievement	809	59	-	-	-	-
	Organization	997	59	-	-	_	-
	Language	907	59	-	-	_	-

Figure 1 also illustrates the lack of interaction effect between group and SE in terms of content, communicative achievement, organization, and language.

Figure 1

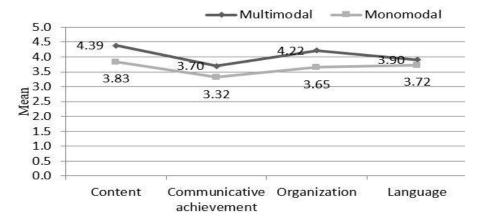
Means for Writing Ability Subscales with Respect to Group and SE



As Tables 2 and 3 demonstrate, a significant difference was found between multimodal and monomodal groups in terms of content, Wilks' Lambda = .75, F (4, 52) = 11.91, p = .001, partial eta squared = .18 which indicates a large effect size, communicative achievement, Wilks' Lambda = .75, F (4, 52) = 5.35, p = .02, partial eta squared = .09, showing a medium effect size, and organization, Wilks' Lambda = .75, F (4, 52) = 8.83, p = .004, partial eta squared = .14 which is an indicator of a large effect size. On the other hand, no significant difference was observed between the two groups in terms of language component F (4, 52) = .93, p = .3.

Figure 2

Means for Writing Ability Subscales with Respect to Group



The inspection of the mean scores through Post Hoc analyses revealed that multimodal group showed higher scores of content (M1 = 4.39, SD = 0.32 > M2 = 3.83, SD = 0.54), a better performance on communicative

achievement (M1 = 3.70, SD = 0.72 > M2 = 3.32, SD = 0.46), and higher scores on organization (M1 = 4.22, SD = 0.38 > M2 = 3.65, SD = 0.58) than monomodal group (Figure 2).

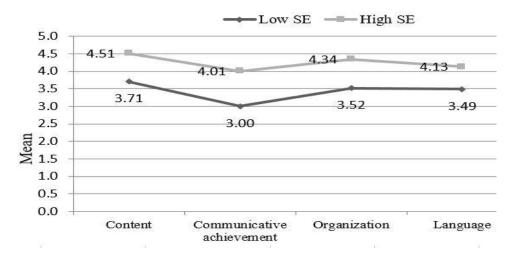
Table 3Multivariate Tests for Group and SE

Effect	Multivariate Test	Value	F	Hypothesis <i>df</i>	Error <i>df</i>	<i>p</i> -Value
Group	Pillai's Trace	.25	4.27	4	52	.005
	Wilks' Lambda	.75	4.27	4	52	.005
	Hotelling's Trace	.33	4.27	4	52	.005
	Roy's Largest Root	.33	4.27	4	52	.005
Self-efficacy	Pillai's Trace	.49	12.23	4	52	.000
	Wilks' Lambda	.52	12.23	4	52	.000
	Hotelling's Trace	.94	12.23	4	52	.000
	Roy's Largest Root	.94	12.23	4	52	.000
Group × Self- efficacy	Pillai's Trace	.03	.41	4	52	.8
	Wilks' Lambda	.97	.41	4	52	.8
	Hotelling's Trace	.03	.41	4	52	.8
	Roy's Largest Root	.03	.41	4	52	.8

Likewise, as Tables 2 and 3 show, SE had a significant impact on writing content Wilks' Lambda = .52, F(4, 52) = 25.04, p < .001, partial eta squared = .31 which shows a large effect size, on communicative achievement, Wilks' Lambda = .52, F(4, 52) = 37.12, p < .001, partial eta squared = .40, indicating a large effect size, and on organization, Wilks' Lambda= .52, F(4, 52) = 18.29, p < .001, partial eta squared = .25, demonstrating a large effect size, and ultimately on language, Wilks' Lambda = .52, F (4, 52) = 11.24, p = .001, partial eta-squared = .17, a large effectsize. The post-hoc analyses showed that highly-efficacious students outscored on content component (M2 = 4.51, SD = 0.32 > M1 = 3.71, SD = 0.32 > M1 = 3.710.68). Similarly, students with high SE could get higher scores in communicative achievement (M2 = 4.01, SD = 0.52 > M1 = 3, SD = 0.69). Highly-efficacious learners could also outscore in organization (M2 = 4.34, SD = 0.47 > M1 = 3.52, SD = 0.76). And finally, in language component, these were students with higher SE who could achieve a better result (M2 =4.13, SD = 0.62 > M1 = 3.49, SD = 0.76) (Figure 3).

Figure 3

Means for Writing Ability Subscales with Respect to Self-Efficacy



4.1.2. Qualitative Results

In order to identify the perception of learners with high and low SE about DMC and to understand how multimodal composition could influence their writing performance, the researcher 1 conducted semi-structured interviews. Eight participants took part in one-to-one half-an-hour interviews with three main questions. The data elicited through interviews were subjected to thematic coding to develop core categories (themes) and subthemes to identify patterns and relationships. Sample excerpts from the students' interviews have been reproduced below (In order to avoid any ambiguity in the interviewees' responses, grammatical and lexical errors have been corrected). Six categories emerged from the responses of highly-efficacious interviewees from their face-to-face interviews. Overall, highly-efficacious participants considered DMC as an effective way to improve their writing outcome. The first category focused on expanding world knowledge. The following two excerpts are the instances of this category.

DMC provided me with an opportunity to increase my knowledge about different topics (interviewee 3).

As I was making my own project, I learned a lot. It was also interesting to watch my classmates' projects and to learn from them (interviewee 1).

The next category centered on expanding linguistic knowledge. The following is the example of a student's response.

I feel an overall improvement in my English while making my own project as well as watching my classmates' projects. Changing long clauses to short and concise phrases, I learned how to express the same meaning as briefly as possible (interviewee 2).

The third category suggested learners could incidentally improve their English through DMC while their focus was primarily on video-making process.

To be honest, I could notice I made a great progress in English while I was working on my projects (interviewee 2).

As highly-efficacious learners confirmed, the next category placed an emphasis on boosting confidence and motivation. The following excerpts from the interviews with the participants 4 and 2 illustrated how capable they found themselves in making DMC projects.

I felt quite confident because I knew I could accomplish this sort of writing. I really loved the experience (interviewee 4).

DMC could increase my interest in English writing. In fact, I did not know English essays could be written this way (interviewee 2).

The fifth category focused on how enjoyable participants found multimodality. The following excerpts reveal the subthemes as expressed by the interviewees.

I got very excited when I found the photos which matched my text. Sometimes it took time, but the result was quite rewarding (interviewee 4).

I loved the effects and transitions available to me by photo story 3. They made my project more appealing (interviewee 3).

I really enjoyed DMC because I found it easier to express my ideas through a variety of modes (interviewee 1).

The sixth category put an emphasis on learner-centered rather than teacher-oriented type of learning. The following excerpt from one of the highly-efficacious participants is illustrative of this benefit of DMC.

I really enjoyed this type of practicing English writing. It is quite new and rarely happens in our education system. I think everyone can make a progress in his/her own pace and style (interviewee 4).

Although highly-efficacious learners believed that DMC had several potentials as an effective technique for their writing improvement, the students with low SE stated they faced several challenges one of which was technical difficulty. The following excerpts describe the challenges the interviewees had while making their projects.

Sometimes low internet speed made the production of videos longer than what I expected (interviewee 8).

I had problems with sending my video because of its big file size. I had to be careful about the pauses between each photo and adjust everything twice or three times to get it done (interviewee 5).

Time issue was the next category perceived as an obstacle by the low SE learners. One participant asserted that he had much concern about time. The following excerpt is what he and another interviewee reported.

Sometimes I could not complete my project on time. Making DMC was not that easy to me and took a lot of time and the result was not satisfying (interviewee 7).

I prefer paper-based composition because I need to use just one mode (text) and it certainly takes less time (interviewee 6).

Another difficulty the students with low SE pointed out was related to the textual, visual, and aural modes.

I could not easily change long sentences into short and concise phrases. I needed to explain everything in details but the space was so limited. No matter how hard I tried, what I produced was ungrammatical (interviewee 7).

This type of writing was very limited as far as photos were concerned. I had problems with placing my text on the photos. Even worse was that I found the relevant photos and I liked to use them but they already had texts and I could not add my own text, unfortunately (interviewee 8).

If Photo Story 3 provided more colors for texts, I would do it more comfortably. I could not always make a good contrast between the photo and the text color I needed to add to it (interviewee 6).

Finding the appropriate music was challenging because I needed to search a lot for the music which matched my topic and it was very time-consuming (interviewee 5).

Generally speaking, students with low SE perceived DMC as a demanding rather than rewarding experience which could rarely contribute to their writing performance.

4.2. Discussion

This mixed-methods study set out to examine the simultaneous effect of DMC and SE on the writing ability of Iranian EFL learners. Following the sequential-explanatory design, the researchers collected the qualitative data after the quantitative data and found out that the qualitative results verified and supported the quantitative ones. In an attempt to triangulate the data, the researchers inferred that DMC had a significant impact on the development of writing ability and highly efficacious learners outperformed in their writing ability. The thematic analysis of interviews also explained and supported the quantitative results in that the highly-efficacious participants had positive perception about DMC and this led to the effort they exert on learning. Moreover, the qualitative and quantitative results both confirmed that the novelty and appeal of DMC could motivate the learners to achieve an improved writing ability. The first research hypothesis was whether DMC could affect the EFL learners' writing ability in terms of content, communicative achievement, organization, and language and whether this effect would vary with the learners' SE. As results revealed, no interaction effect was found between DMC and SE. Although the performance of DMC group improved in terms of content, communicative achievement, and organization, their language component did not show any improvement. Briefly, the participants of the multimodal group outperformed the monomodal group in their writing ability. Concerning DMC, the first research hypothesis is confirmed; that is, the multimodal group achieved a better output than monomodal group. Considering the DMC group outperformance, the result seems congruent with the studies by Bourelle et al. (2016) and Vandommele et al. (2017) who concluded that DMC was beneficial to the learners' writing outcome. The rationale behind the improvement of writing ability through DMC could be looked for in the novelty and appeal created by the technologically-laden presentation as compared to the traditional instruction of writing skill. In other words, the participants' experience with DMC could encourage them to be more interested and involved in the activity. The possible reason for the lack of difference between multimodal and monomodal groups in terms of language component may be due to the gradual development of their interlanguage that students achieve over the course of time. Simply put, language component can hardly be improved by short-time instruction. As learners' interlanguage is transitional and its development is based on the kind of input they are exposed to, DMC as an innovative technique can assist the learners to achieve a more native like writing competence at a much higher rate.

Additionally, as far as SE is concerned, the main effect of SE on writing ability was significant; in other words, highly-efficacious learners were superior in their writing ability than students with low SE regardless of the type of writing they were exposed to. Consequently, with respect to SE, the first research hypothesis was confirmed and the findings pointed to the critical role of SE in developing both types of writing. This finding is in line with the results of the studies by Lavelle (2006), Teng et al. (2017), and Zimmerman (2000) who inferred the superiority of highly-efficacious learners in writing performance. One possible explanation for such a finding may be attributed to the effort that highly-efficacious learners exert on accomplishing a given task. Such an effort makes the learners with high SE distinguished from the ones with low SE. While suggestive, these findings should be interpreted with caution because some factors other than the ones under investigation may have contributed to the reported results.

Concerning the perception of the participants, as the findings revealed, highly efficacious learners had positive ideas about DMC. They believed DMC could contribute to the expansion of their world knowledge, improvement of their linguistic knowledge, development of their confidence and motivation, encouragement of student-centered learning, promotion of incidental learning, and fascinating presentation through multiple modes. They emphasized that DMC was beneficial to their writing improvement and preferred DMC integration as a supplement or even a substitute to monomodal compositions. The improvement of the participants' writing ability can also be pertinent to the novelty of DMC and the interest this generation has to screen-based rather than paper-based activities. Overall, participants viewed DMC as a privileged technique which seemed encouraging, appealing, and productive to them. In fact, EFL learners perceived DMC as more relevant to their out-of-class experiences than outdated and boring monomodal type of composition. While students with high SE enjoyed the variety of modes and perceived it as a new experience, students with low SE complained that the combination of modes added to their problems. The difference between individuals with low SE and the ones with high SE is easy to perceive as highly-efficacious learners value the new experience and take advantage of every opportunity to further their knowledge and skills; however, participants with low SE seem reluctant to experience new ideas and techniques and are less likely to change their learning strategies. As another difference, participants with high SE perceived time issue quite differently from those with low SE. Interestingly, students with high SE believed that making DMC projects might take time but it was worth experiencing because they believed such projects were informative and eventually satisfying; on the other hand, students with low SE asserted that dealing with different modes wasted their time and the outcome was not fulfilling. More surprisingly, students with high SE enjoyed the variety of modes for meaning-making while learners with low SE expressed their dissatisfaction about multiple modes because they believed each mode caused problems for them. It is noteworthy to mention that students with low SE voiced reservations that DMC could enhance their linguistic and world knowledge due to their lack of interest in the activity whereas highly-efficacious learners seemed more motivated to improve their linguistic as well as world knowledge. In sum, students with low SE rarely evaluated DMC as a positive experience; on the other hand, highly-efficacious learners took advantage of every opportunity to enjoy and learn through DMC.

5. Conclusion and Implications

Generally speaking, the upshots of the current study suggested the merits of DMC over traditional monomodal writing and emphasized the necessity of rethinking SE in the development of writing skill. In today's digital world where technology has changed not only written communication but also writing instruction, new considerations need to be taken into account. It is worth bearing in mind that DMC per se can never substitute academic writing but it can be implemented as an innovative and enhancing supplement in writing classes particularly to help the EFL learners to overcome their writing apprehension. An impressive statement by Schetzer and Warschauer (2000) implies the necessity of equipping the twenty first century learners with sufficient expertise. They state "literacy is a shifting target, and we have to prepare our students for their future rather than our past" (P. 172). As a result, it seems essential to recognize that technology has brought affordances that need to be effectively addressed. Another important point is that nurturing and sustaining the SE of the learners should carefully be taken into account since its presence or absence can have facilitating or hindering impacts on their writing outcome.

This study was a significant endeavor which may contribute to a better understanding of the technologically-laden instruction of writing while taking EFL learners' SE into account. From a practical point of view, there is a need to reshape educational practices used so far to teach writing skill in Iran. The findings of the study may have beneficial implications for the inservice teachers/professors of English writing to update their instruction techniques and to pay closer attention to fostering learners' SE. The integration of technological advances for pedagogical purposes seems an unquestionable skill which can be developed and maintained via continuing professional development programs for teachers of the twenty-first century to

adapt their teaching practices to the needs of today's learners. Teachers may also assist the learners by encouraging them to enhance their beliefs about their own ability in writing and to make them aware of setting goals, making plans, and checking the progress of their writing. Furthermore, the study seems useful to the curriculum developers and policy makers to include the courses of technology integration for teaching writing skill into the teaching as a foreign language (TEFL) curriculum so that pre-service teachers get well-informed about emerging techniques for writing instruction so that the needs of the twenty-first century learners are met. The study also seems beneficial to the EFL learners in expanding their grasp of new literacies and multimodality to express themselves through a variety of modes. Furthermore, by taking the learners' SE into account, it is very likely that they become more autonomous and shoulder the responsibility for their own learning. And finally, the findings may enhance the body of literature in DMC and SE status in Iran context.

In the present study, several limitations need to be acknowledged. First of all, as intact groups were selected for the study, some factors such as the learners' aptitude might not have been entirely taken into account. The study may also seem limited in having a small number of participants (N = 59); as a result, the findings need to be cautiously interpreted. Another caveat of the study was that teachers' role in the implementation of DMC and enhancement of SE was not taken into consideration. As writing is a complex process and many factors may underlie its development, more research is required to explore the factors contributing to this complexity. It is suggested that future studies investigate the role of teachers in fostering the SE beliefs of the students as well as their role in implementation of multimodality in writing classrooms to create a different atmosphere. Further research is recommended to shed light on the role of multimodality and SE to develop other language skills such as reading, listening, and speaking. It is hoped that such studies will provide language teaching practitioners with new insights about the integration of DMC into the writing classes as well as the benefits of fostering the learners' SE in the writing process.

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Appendices

Appendix 1: The Second Language Writer Self-efficacy Scale (Teng, Sun, Xu, 2017)

Dear respondent: This questionnaire is part of a research project. We really appreciate if you sincerely give your personal opinion about the following items. We will guarantee your information is kept confidential and is just used for research purposes. Thanks in advance for your participation.

Name:	
Gender:	
Age:	
Choose the best alter	native

7 = Always true of me6 = Usually true of me 5 = Sometimes true of me

4 = Neutral 3 = Infrequently true of me2 = Rarely true of me

1 = Never true of me

Item				
Linguistic Self-efficacy				
1. I can correctly use parts of speech (nouns, adjectives, verbs) in writing.				
2. I can write a simple sentence with grammatical structure.				
3. I can write compound and complex sentences with grammatical structure.				
4. I can write a composition with a clear organization and structure.				
5. I can revise wordy or confusing sentences of my writing.				
6. I can revise my composition to make it better.				
7. I can revise basic grammar errors in my writing.				
Self-regulatory Efficacy				
8. I can realize my goal to improve my writing.				
9. I can think of my goals before my writing.				
10. I can think of different ways to help me plan before writing.				
11. I can evaluate I can achieve my goal in writing.				
12. I can evaluate my strength and weakness in writing.				

13. I can evaluate whether a writing is good or bad.				
Performance Efficacy				
14. I can understand the most difficult material presented in writing courses.				
15. I can understand a basic concept taught in writing course.				
16. I can understand the most difficult material presented by the instructor of writing courses,				
17. I can do an excellent job on the assignments in writing courses.				
18. I can master the writing knowledge and strategies being taught in writing courses.				
19. I can use the writing knowledge and strategies being taught in writing courses.				
20. Considering the difficulty of writing course, the teacher, and my skill, I can perform well in writing.				

Appendix 2: Writing Assessment Scale (Cambridge English Language Assessment, 2016)

2	Content	Communicati ve achievement	Organizati on	Language					
	All content is relevant to the task. Target reader is fully informed.	Uses the conventions of the communicative task effectively to hold the target reader's attention and communicate straightforward and complex ideas, as appropriate.	Text is well-organized and coherent, using a variety of cohesive devices and organizational patterns, to generally good effect.	Uses a range of vocabulary, including less common lexis appropriately. Uses a range of simple and complex grammatical forms with control and flexibility. Occasional errors may be present but do not impede communication.					
	Performance shares features of bands 3 and 5.								