

The Impact of ICT Towards Saudi EFL Students' Writing Skills: A Quasi-Experimental Study

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Abstract

This study aimed to investigate the impact of using the word processor application on the writing achievement of Saudi EFL learners at Jubail Technical Institute. It used embedded-experimental mixed methods research design in which the qualitative data set provides an auxiliary role in a study that is primarily quantitative. Nested sampling technique was used to select participants for both the dominant quantitative and the auxiliary qualitative phases of the study. The participants were divided into two groups: the experimental group, which studied writing using the word processor, and the control group, which learnt writing using the traditional method. It was hypothesized that the experimental group participants would have a higher achievement in a writing performance test than those of the control group. After establishing that the two groups had homogenous writing abilities before the treatment, post-test results showed that the experimental group participants had a statistically significantly higher achievement in the writing performance test ($t(67) = 6.21, p < .001$) than the control group. The study recommended introducing computer-assisted writing programs in composition classes and training teachers on how to use such programs to help students develop their writing skills.

Keywords: *computer-assisted language learning, computer-assisted writing, paper-based writing, writing performance test, word processor.*

INTRODUCTION

This quasi-experimental study examines the effects of computer on the writing skills of some Saudi English as a Foreign Language (henceforth, EFL) learners. Specifically, it investigates how the use of the word processor in a composition class affects the immediate writing achievement of tertiary level EFL learners at a technical institute in Saudi Arabia.

Writing is an integral component of language learning (Chmarkh, 2021). It is, according to Boudjadar (2015) and Jahin and Idrees (2012), the highest level of the production skills, yet it poses a great deal of challenge to language learners in general. Faghih & Rahimpour (2009) argued that it is an uphill task even for native speakers of a language. Other researchers submit that writing is not just challenging, but is the most difficult language skill to acquire, especially for ESL/EFL learners. Graham, Harris, and Hebert (2011) underscored this difficulty by submitting that despite the various efforts being made to improve students' writing achievement, many of them "do not write well to meet grade-level demands" (p. 5).

From the preceding arguments, three issues could be identified. First, good writing skills are very important to all language learners in schools and lifelong. Second, writing is a difficult and the most frequently neglected skill in the language classroom. Third, ESL/EFL learners often perform poorly in writing tasks. From these three issues, a problem can be identified: *Although writing is a very important skill for EFL learners, it is often so challenging that many of them perform poorly in it.*

To tackle the problem of poor performance or achievement in writing, teachers and researchers are challenged to find more effective and efficient ways to teach EFL students how to write better. In response to this, Yan and Zangong (2002) suggested introducing two very important changes in the field of teaching ESL/EFL writing. The first suggestion is to re-examine the way writing is being taught. The second one is to introduce the use of computers in writing classrooms. Computer are suggested because they offer a comfortable learning environment, allow students to study at their own paces and convenience and enable them to solve their learning problems independently.

This study is based on the second solution to the EFL writing problem offered by Yan and Zangong (2002), i.e., the use of the computer to improve learners' writing skills. It is built on the assumption that computer technology is capable of yielding more positive results compared to pen-and-paper writing. Bernstein (2004) is of the view that writing on the computer is one of the things that improves writing. Boudjadar (2015) even goes to the extent of arguing that to be a competent EFL writer, there is the need to acquire some level of expertise in the use of the computer.

Results of writing tests of Saudi EFL learners at Jubail Technical Institute consistently show that a lot of them have poor writing skills. This study, therefore, investigates the impact of using a computer-assisted writing program (Microsoft Word) on the EFL writing achievement of the Saudi EFL learners at the aforementioned institute.

To arrive at more robust and well-rounded findings, embedded experimental mixed methods was used for this study. Creswell and Plano Clark (2007) advised mixed methods researchers, especially those adopting the embedded design, to clearly specify the purpose of mixing qualitative data within a largely quantitative study. This may be done by stating the primary and secondary goals of the study.

The primary goal of this study, which the quantitative component takes care of, is to examine the effects of word processing on the writing achievement of some tertiary level Saudi EFL learners. The aim is to find out if the learners, whose EFL writing activities were aided by the computer, will have a higher writing achievement than the other EFL learners whose writing activities were aided by the traditional writing tools. To achieve this, a quasi-experimental design is adopted to compare the EFL learners who used the word processor for EFL writing with other EFL learners who used the traditional pencil-and-paper for the same type of task.

The secondary goal, which is taken care of by the qualitative component of the study, is to get more in-depth firsthand information directly from the participants regarding their perceptions towards computer-assisted writing. Thus, the qualitative data, collected through semi-structured interviews, seek to complement and expand the depth and breadth of the dominant quantitative data collected through the quasi-experiment.

METHOD

This study was conceived within the embedded mixed methods research design. This design, according to Creswell and Clark (2013), “combines the collection and analysis of both quantitative and qualitative data within a traditional quantitative research design or qualitative research design” (p. 90). The variant of embedded design used in this study is classified by Creswell and Clark as embedded-experimental design. This design is visually represented in Figure 1. Grimstad (2013) describes it as “mixed methods experimentalism” (p.68). In this design, a supplemental qualitative strand is embedded in a predominant quantitative component and the research is conducted in a two-phase format. The data were analyzed using data merging technique (i.e., combining texts or images with numeric information at the discussion section of the study. This was done by reporting the statistical results first followed by qualitative quotes to support or refute the quantitative results).

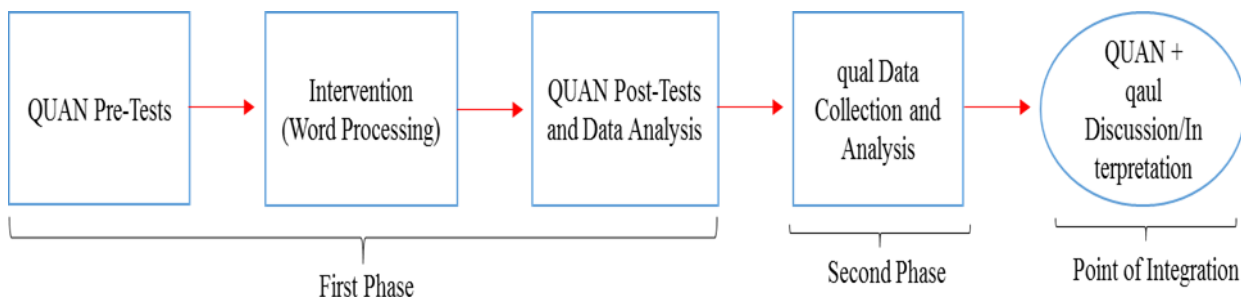


Figure 1: The embedded-experimental design. Adapted from Creswell and Clark (2013, p. 70).

The study was conducted at the English Language Unit of Jubail Technical Institute, Saudi Arabia in the second semester of the 2015/2016 academic session. Cluster sampling technique was used to select 74 participants for the dominant quantitative phase of the study, while purposive sampling was used to select 12 participants for the auxiliary qualitative component. They were divided into two groups: the experimental group, which studied writing using the word processor application, and the control group, which learnt writing using the traditional method. All the participants were between the ages of 18 and 25. One interesting characteristic of the people within this age group, according to Prensky (2001), is that they are adept at using modern technology. The participants also gave interesting responses regarding their ownership and experience of the computer. Forty (58%) said they owned a personal computer, while twenty-nine (42%) said they didn't. Perhaps this explains why up to forty-three (62%) reported that they had been using the computer for personal purposes for 1-10 years.

In mixed methods research studies, data are basically collected both quantitatively and qualitatively from the participants. The quantitative tool was the writing performance test and semi-structured interview were the qualitative tools used. The main reason for using two data collection tools was to enhance the overall design of the study and to “boost the validity and dependability of the data” (Zohrabi, 2013, p. 2). To show the relationship that exists between the research questions, the objective of the study, the data collection

tools, the methodological design as well as the data analysis techniques, Maxwell’s (2008) Integrative Model of Research Design (Table 1) was used.

Table 1. Relationship between Research Questions, Objectives, Data Collection Tools, and Data Analysis Technique

Research Questions	Why the need to know this?	What kind of data will answer this?	What type of Analysis will be used?
What is the difference between Saudi EFL learners, who were taught writing through the computer-assisted method, and their peers, who were taught writing via the traditional method, in their achievement in a writing performance test?	To investigate if word processing affects the writing performance of EFL learners.	Writing Performance Test	Quantitative: Descriptive and Inferential Statistics
How do the follow-up interview findings complement and expand the quantitative results?	To elaborate and provide deeper insights into the survey findings using interviews.	Semi-Structured Interviews	Qualitative: Descriptive Statistics/Semi-structured Interviews Analysis

Note: Adapted from R.S.K. Dzekoe (2013)

Validity and Reliability of Research Instruments

The data collection tools used in this study were subjected to validity checks before being piloted. Validation was done by presenting them to a panel of experts to establish their content and face validity. They were critiqued in relation to the research questions and objectives of the study. The trustworthiness of the qualitative tools was also established by repeating some interview questions using different wordings to ensure that the responses were valid and accurately represent participants’ perceptions.

A panel of experts, consisting of six EFL instructors of JTI, was recruited to validate all the tools used in this study. Members included an assistant professor, a Ph.D. holder, 2 Ph.D. students, who were also doing mixed methods investigations, a senior instructor with a Master’s degree in TEFL and 15 years of EFL teaching experience and a native English speaker with a Master’s degree in TEFL and several years of EFL teaching experience. They validated all the instruments and offered valuable feedback on how to improve them.

Similarly, the writing performance test was piloted twice on randomly selected sections. The interview was also piloted on 6 randomly selected students of English 2 and three EFL instructors to “detect and rectify potential problems” (Grimstad, 2013, p. 80). The piloting was done to ascertain the validity of the questions and to collect suggestions

for improvement (Al-Kahtani, 2001). Some modifications and adjustments regarding the wordings of some items were made.

FINDINGS AND DISCUSSION

Research Questions

This study attempts to answer the following two research questions. The first one is quantitative, while the second one is qualitative.

RQ1: What is the difference between Saudi EFL learners, who were taught writing through the computer-assisted method, and their peers, who were taught writing via the traditional method, in their achievement in a writing performance test?

RQ2: How do the follow-up interview findings complement and expand the quantitative results?

Descriptive Summary of Participants' Demographic Data

This part presents information about the participants' demographic characteristics collected at the beginning of the study. They include: age, region of origin, English language proficiency, years of English learning, English courses, ownership of personal computer, computer courses, word processing courses, years of using the computer for learning, daily hours of using the computer and a self-assessment of the computer experience. According to Mackey and Gass (2005), these demographic variables are reported even if they do not have a direct relation to the research questions.

The data reveal that 100% of the participants were between the ages of 18 and 25. One interesting characteristic of the people within this age group, according to Prensky (2001), is that they are adept at using modern technology. Although the participants came from different parts of Saudi Arabia, almost half (49.3%) of them were from the Eastern Region, where the institute is located. With seven (10%) participants each, the Northern and Western Regions had the least representation. Despite the obvious deficiency of their English language skills, only two (nearly 3%) participants rated themselves as beginners, but fifty-six (81%) considered themselves as intermediate or upper intermediate. However, none of them claimed to be proficient. This is an interesting finding especially since thirty-nine (56%) of them said they had not taken any English courses outside the normal school curriculum. Having just graduated from the high school and considering their age range, it is normal that nearly forty-six (67%) of them had been studying English for 6 to 10 years. Only seven (10%) said they had been studying English for a longer period (16-20 years).

The participants also gave interesting responses regarding their ownership and experience of the computer. Forty (58%) said they owned a personal computer, while twenty-nine (42%) said they didn't. Perhaps this explains why up to forty-three (62%) reported that they had been using the computer for personal purposes for 1-10 years. However, just eighteen (a little over 26%) said they had been using it for learning since the elementary school. Majority of the respondents (82%) had neither taken a formal computer nor a word processing course outside JTI, yet almost half of them (49.3%)

considered themselves average in computer skills. Regarding the number of hours of using the computer, fifty-one (nearly 74%) reported that they had been using it for two hours or less daily, while two (almost 3%) said they had been using it for more than nine hours daily.

Quantitative Results / Findings

To answer RQ1, a hypothesis, that *EFL learners, who used the word processor, will have a statistically higher achievement in a writing performance test than their peers, who used the traditional methods for learning writing*, was formulated. To test this hypothesis, independent and paired samples *t*-tests were performed. The data for these tests were collected through the writing performance test designed by the researcher. However, because the study used the non-equivalent groups design, the researcher felt there was the need to check a couple of things before conducting the test.

First, to find out if there were baseline differences between the two groups prior to the treatment, an independent samples *t*-test was conducted on their pre-test writing scores. Before doing that, however, preliminary analyses were carried out to ensure that the assumptions of normality and homogeneity of the dependent variable (writing performance) were not violated, especially because randomization was not done. Having met those assumptions, the test was carried out and the results revealed that there was no statistically significant difference between them in their pre-test writing abilities, $t(72) = 1.433$, $p = .156$, as shown on Table 2. Since the p value (.156) was greater than the predetermined Alpha value (.05), it could be argued that the groups were not significantly different prior to the treatment. This indicated that, although the experimental group ($n = 38$) had a higher pre-test mean value ($M = 21.05$, $SD = 2.741$) than the control group ($N = 36$, $M = 20.17$, $SD = 2.569$), the numerical difference was probably due to chance, as it was not statistically significant. The low standard deviations of both groups meant a low variability of the scores within each group. However, there was a higher variability around the mean within the experimental group as it had a bigger standard deviation. Therefore, due to the homogeneity of the two groups, any increase in their post-test mean scores could be attributed to the effects of the treatment, not by chance.

Table 2. Mean Scores, Standard Deviations, *t*- and *p*-values of the Writing Performance Pre-test Results

Source of Variance	Group	N	Mean	SD	SEM	T	df	Sig.
Pre_Test	Experimental	38	21.05	2.741	.445	1.433	72	.156
	Control	36	20.17	2.569	.428			

Secondly, the pre- and post-test mean scores of each of the two groups needed to be matched to see if there were gains or losses in the aftermath of the treatment. To do that, paired samples *t*-tests were conducted and their results revealed that, for the experimental group, there was a statistically significant difference between the pre- and post-test means in favor of the latter, $t(37) = -5.833 = p < .001$, as shown on Table 3. The post-test had a significantly higher mean score ($M = 23.03$, $SD = 2.007$) than the pre-test ($M = 21.05$, $SD = 2.741$). The control group also had a statistically significant difference between the pre- and post-test means, $t(32) = 3.116 = p = .004$. Quite strangely however,

descriptive statistics showed that their post-test mean ($M = 18.03$, $SD = 4.531$) was numerically lower than their pre-test mean ($M = 20.15$, $SD = 2.659$), indicating that they had a higher pre-test achievement. In summary, the paired samples t -tests showed that, while the experimental group gained (+1.98) in the post-test, the control group lost (-2.12) but, at $\alpha = 0.05$, there were statistically significant differences in both cases.

Table 3. Paired Samples Test Results

Group	Source of Variance	Mean	SD	t	df	Sig. (2-tailed)
Experimental Group	Pre_Test	21.05	2.741			
	Post_Test	23.03	2.007	5.833	37	.000
Control Group	Pre_Test	20.15	2.659			
	Post_Test	18.03	4.531	3.116	32	.004

Having established that the two groups were somewhat equivalent prior to the experiment, another independent samples t -test was run to compare their post-test mean scores in the writing performance test. Again, preliminary analyses were done to ensure that assumptions of normality and homogeneity were met. However, because of the unequal variances between the groups, as shown by Levene's Test for Equality of Variances, $F(67) = 6.15$, $p = .016$, the null hypothesis was rejected and the results adjusted for the inequality of variances were adopted.

Thus the result of the second independent samples t -test showed that the experimental group, which used the computer-assisted writing method, had a statistically significantly higher post-test mean score in the writing performance test than the control group, which used the paper-based writing method, $t(67) = 6.21$, $p < .001$, as can be seen in Table 4.

Table 4. Post-Test Independent Samples t -test Results

Group	Source of Variance	Mean	SD	t	df	Sig. (2-tailed)
Experimental Group	Post_Test	23.25	1.746	6.208	67	.000
Control Group		18.03	4.531			

An examination of the groups' means revealed that the participants in the experimental group ($N = 36$, $M = 23.25$, $SD = 1.746$) had a higher post-test mean score than their peers in the control group ($N = 33$, $M = 18.03$, $SD = 4.531$). Looking at the standard deviations, it could be understood that the scores in the experimental group were tightly concentrated around the mean, while those of the control group were relatively more widely dispersed. The bigger standard deviation in the control group indicates a higher variability around the mean. As for the effect size, Cohen's d was estimated at 1.52, which is large based on Cohen's (1992) guidelines. This means that the magnitude of the difference was large and shouldn't be ignored. Based on this finding, it could be argued that the intervention has had a positive effect on the writing ability of the participants. Therefore, the alternative hypothesis was accepted.

Qualitative Results /Findings

The responses to the interview questions gave more in-depth information about a number of issues including the advantages and disadvantages of computer-assisted writing instruction as well as the benefits of word processing in ESL/EFL composition classes. The interview gave the participants a more extended and meaningful opportunity to express their views regarding these issues. Each of the twelve (12) purposively sampled interview participants was asked a couple of questions. To avoid being incapacitated by language barrier, all the interviews, except one, were conducted in Arabic, the native language of all the respondents. In order not to trace the responses to particular individuals and to achieve the desired level of anonymity, codes were used to identify the respondents.

To analyze the interview data, they were transformed through “the process of quantitizing” or quantification so that they could be processed statistically (Dornyei, 2007, p. 269; Caracelli & Greene 1993). Quantification is used in research studies to increase reliability and decrease bias (Yildirim & Simsek, 2011). The yes/no parts of the interview questions were tabulated and analyzed using descriptive statistics. The reasons given by the participants were categorized into themes and analyzed using descriptive qualitative analysis.

Four themes associated with participants’ views on using the computer for writing were identified. They were ‘*preference for computer-assisted or paper-based writing,*’ ‘*liking the word processor,*’ ‘*benefits of computers in EFL writing classes*’ and ‘*benefits of word processors in EFL writing classes.*’ The two data types were merged at the discussion section by using direct quotations of the respondents to support or refute the quantitative statistical findings, which were presented earlier.

Table 5. *What do you prefer: paper-based writing (PBW) or computer-based writing (CBW)?*

Response	Frequency	Percentage
PBW	7	58.3
CBW	5	41.7
Total	12	100

As Table 5 illustrates, seven (58.3%) participants said that they preferred PBW to CBW, while five (41.7%) reported otherwise. This is an unexpected result especially considering the fact that almost all the participants were, by Prensky’s (2001) classification, digital natives. Nonetheless, the findings of the other interview questions contradict this as more participants said they liked using the computer for their writing activities in English classes. As such, the finding of this question should not be used singularly to pass an overall judgment about participants’ preferences, as this is just one question from the supplemental strand of the study.

Table 6. *Why do you prefer PBW/CBW?*

Reason	Frequency	Percentage
CBW makes it easy to type, edit, save documents and saves time and effort.	2	16.7

CBW is preferred by the labor market.	1	8.3
CBW is faster and better.	2	16.7
PBW is faster, easier and it's the traditional form of writing.	3	25
PBW improves handwriting and writing skills in general.	4	33.3
Total	12	100

Table 6 summarizes the reasons why participants preferred PBW to CBW or vice versa. More than half (58.3%) preferred PBW because they believed it was faster, easier and improved their handwriting. In addition, it was the traditional form writing. Conversely, five (nearly 42%) said they preferred CBW because it was easier and faster to type, edit and save documents with less time and effort. Furthermore, they submitted that it was the most preferable method writing in the modern day labor market. This result showed divided opinion as to which was better between PBW and CBW.

Table 7. *Do you like using computer-assisted writing programs (like the Microsoft Word Processor (MS Word)) for your writing activities in English classes?*

Response	Frequency	Percentage
Yes	7	58.3
No	5	41.7
Total	12	100

Table 7 shows that seven (a little over 58%) liked to use the MS Word for their writing activities, while five (nearly 42%) reported that they didn't like to use it. This suggested that MS Word was a popular writing tool, as more than half of the respondents liked to use it for their writing activities.

Table 8. *Why do you like/dislike using MS Word for your writing activities in English classes?*

Reason	Frequency	Percentage
MS Word is the most frequently used writing tool.	2	16.7
MS Word makes writing easier, clearer, and better.	2	16.7
MS Word makes writing flexible.	2	16.7
MS Word makes writing faster and improve typing skills.	3	25
Computers are boring.	1	8.3
MS Word is more difficult to use than a pen.	1	8.3
Lack of experience using MS Word.	1	8.3
Total	12	100

Table 8 presents a summary of the reasons why the respondents liked or disliked using MS Word for their English writing tasks. Nine (75%) liked it because it was the most frequently used writing tool; it was user-friendly; and it improved their typing skills.

Moreover, it was easy and flexible. On the other hand, three (25%) didn't like it because they believed that the computer was a boring and more difficult tool to use for writing than the pen. In addition, one said that using the MS Word for writing activities required a special kind of experience, which some students lacked.

Table 9. *In which other ways do you think the use MS Word can help English learners improve their writing skills?*

Response	Frequency	Percentage
MS Word makes editing and proofreading tasks easy.	3	25
MS Word makes writing a fun activity.	2	16.7
MS Word improves spelling and grammar.	2	16.7
No response	5	41.6
Total	12	100

As Table 9 shows, seven (a little over 58%) of the respondents thought that MS Word could improve EFL students' writing skills because it is capable of making editing and proofreading tasks easier, improving spelling and grammar and making the whole writing task fun. However, five (almost 42%) did not specify any reasons for their opinions.

On the whole, the qualitative data collected through the interviews helped in substantiating the quantitative findings from the surveys. Majority of the participants expressed positive attitudes towards EFL writing, word processing, computer-assisted writing and the amazing utility of the word processor in improving writing skills, boosting achievement and enhancing attitudes. By explaining and corroborating the results that emerged from the surveys, the interview data will triangulate and add credibility to the findings of the study as well as provide deeper insights into the enormous benefits of using the computer technology in EFL writing classes.

Discussion

The findings of this study showed a statistically significant difference in their mean scores of the writing performance test in favor of the experimental group, which used the word processor. Based on this finding, it could be argued that the word processing intervention seemed to have had a positive effect on the achievement of the experimental group participants.

The higher achievement of the participants in the experimental group could be attributable to many factors. Firstly, research has found that students who used the word processor in their composition classes were better (with 21% advantage) at conveying their thoughts and ideas than those who used the paper and pencil (Graham, 2016; Graham & Perin, 2007). Secondly, in accordance with the principles of constructivism, using the computer is capable of making learners be more actively engaged in the learning process, take more responsibility for their learning and, achieve better results. Thirdly, using the computer for writing tasks might have promoted EFL learners' use of the constructivist principle of autonomous or individualized learning. Tam (2000) submitted that a good

example of autonomous or individualized learning is when a student works at a computer trying to solve a problem by himself by being “both creator and critic and thus use[ing] both right-and-left-lobe powers” (p. 32). Warschauer (1995) said that computers “help foster a new teacher-student relationship in which students become more autonomous and the teacher becomes more of a facilitator” (p. 93). The fact that the experimental group learners felt that they were in control of their own learning might have promoted their desire to do more and achieve more. Dehgahi, Sadighi, and Seyari (2015) have argued that “the use of CALL may increase the motivation of EFL learners if they find it conducive to achieve self-autonomy” (p. 96).

In addition, the ease of making corrections, revisions and editing guaranteed by the computer might have helped the computer-trained learners to sharpen their editing and proofreading skills and, thus, produce error-free texts of higher quality than the paper-and-pencil trained learners, who had no access to such resources during their learning stage. Piper (1987) argued that “the word processor seems to inspire a desire for perfection which is manifested in the constant refinement of the text... and also to inspire concentration on the writing process” (pp. 123-124).

This finding is consistent with that of other researchers such as AbuSeileek (2006), Al-Mekhlafi (2006), Ghanizadeh and Razavi (2015), Bangert-Drowns (1993), Deghani et al. (2015), Goldberg, Russell, and Cook (2003), Hassan (1996), Jafarian et al. (2012), Jaradat (2014), Naba'h, Hussain, Al-Omari, and Shdeifat (2009), Owston, et al., (1992) and Zaini and Mazdayasna (2015), etc. Others include Crook (1985), who examined if there were significant differences between the growth in writing performance of seventh-grade students of an American high school, who received computer-assisted instruction (CAI), and other seventh-grade students of the same school, who didn't, and found that the former group experienced a greater growth in total writing achievement than the latter group. Also, Al-Menei (2008) did a quasi-experimental study to investigate the effects of computer-assisted writing (CAW) on Saudi university students' writing skills and found that the CAW had a significant effect ($p = 0.023$) on the experimental group participants, as they had a statistically higher mean score on the post-test than the control group, who studied writing via the traditional curriculum. Furthermore, Al-Mansour and Al-Shorman (2012) investigated the effects of computer-assisted instruction on Saudi EFL students at King Saud University (KSU) and found that the experimental group participants, who were taught through computer-assisted English language instruction, had a statistically significantly higher post-test scores than those in the control group, who were taught through the traditional method alone.

The interview responses corroborated this finding as seven (58%) of the respondents answered in the affirmative that computers helped them improve their writing skills and five (42%) gave reasons for that. For instance, Participant 3 said that the computer was capable of improving writing skills “because it helps you know your mistakes so that you can correct them.” Participant 6 also believed that computer-assisted instruction improved the achievement of learners on writing tasks because “it has the ability to correct spelling and grammar errors automatically.” Participant 1 submitted that “CBW makes it easy to type, edit, save documents and saves time and effort.” The fact that more than half of the interviewed participants believed that computer-assisted writing helped them improve their writing skills answered the mixed methods research question, which asked if the interview data complemented and expanded the quantitative findings.

Similarly, more than 83% of the respondents thought that MS Word could help them identify and correct spelling and grammatical errors/mistakes.

However, this finding does not imply that the mere existence or use of the computer in the classroom will do the magic of improving learners' writing skills. Cochran-Smith (1991) contended that "computer-assisted instruction does not, in and of itself, improve the quality of the writing of the learners" (p. 114). It is only when it is used in an appropriate way that it may bring about the desired improvement and achievement. Accordingly, Prihatin (2012) argued that the "integration of computers in second or foreign language classes does not guarantee that better learning can be automatically achieved" (p. 2). A similar submission was made by Alexander and Singer (2017) who argued that the assumption that the use of classroom technology translates to better learning is a mere fallacy.

Consequently, although most of the previous studies on CAW revealed that the computer has positive effects on the writing performance of EFL learners, there are yet other researchers who reported contrary findings. Coughlan (2015), for example, quoted the report of the OECD (Organization for Economic Co-operation and Development) on the impact of school technology on international test results that the "frequent use of computers in schools is more likely to be associated with lower results" (para. 1). Similarly, using data from the National Assessment of Educational Progress (NAEP) to determine whether the use of computers in the classroom had direct and positive effects on academic achievement, Johnson (2000) concluded that "students who use computers in the classroom at least once each week do not perform better on the NAEP reading test than do those who use computers less than once a week" (para.7). Moreover, Etchison (1989) found no significant differences in the development of overall writing quality between learners who used the word processor and those who wrote by hand. Similarly, scores of an American-based exam, Partnership for Assessment of Readiness for College and Careers (PARCC), revealed that students got lower scores when they took the test on a computer than by paper and pencil (Graham, 2016). Graham, however, believed that there are caveats in all these situations.

Despite this, it can be said that the literature overwhelmingly supports the finding that EFL learners who use the word processor achieve statistically significantly higher scores on writing tests than those who used the paper-based writing method. Yet, it is crucial to note that the computer needs to be appropriately used in a constructivist way to produce such positive effects.

CONCLUSION

As can be seen from the major findings, this study has expanded knowledge in the area of using the computer to improve the writing skills of EFL learners (by helping them achieve higher scores on a writing task). The finding shows that there was conclusive evidence to show that the students who learned writing using the word processor had higher achievement in the writing performance test than those who used the paper-based writing method. This suggests that word processing has improved the writing achievement of EFL learners, thus demonstrating that it was an effective tool for teaching writing in composition classes. This finding was corroborated by the qualitative data from the semi-structured interviews.

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