

DEVELOPING EFL ELEMENTARY LEARNERS' WRITING SKILLS THROUGH MOBILE-ASSISTED LANGUAGE LEARNING (MALL)

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Abstract

This study aimed to investigate the effect of Mobile-Assisted Language Learning (MALL) as compared to paper-based instruction in the development of Iranian EFL elementary learners' writing skills. The research purpose was threefold: 1) to investigate the effect of MALL on elementary learners' writing skills; 2) to make a comparison between the obtained results of MALL and pencil-and-paper methods, and 3) to assess elementary students' attitudes about learner involvement in collaborative learning (CL) settings through mobile phone (MPH) interactions. For this purpose, 30 Iranian EFL elementary students were selected and randomly assigned to two groups: one experimental and one control. While the experimental sample received mobile-based instructions on their writing assignments, the students in the placebo group were provided with only paper-based instruction. The findings revealed that the participants in both groups showed considerable improvement on the immediate and delayed writing post-tests; however, on average, those in the experimental MALL group were shown to have outperformed the students in the control group significantly. Not surprisingly, the learners in the treatment group had made fewer errors on the targeted grammatical structures like the use of adjectives, possessives and simple present tense compared to those in the control sample. Finally, the results of the post hoc interview reflected that MALL learners felt positively about the utility of mobile technology in writing classes. Essentially, the findings could be of great help to EFL teachers, EFL learners, and course designers.

Keywords: MALL; mobile technology; m-learning; writing skills

1. Introduction

Dramatic advances in globalization and technology have not only had a great bearing on the development of written communication, but they have also affected the way people of different languages, cultures, and occupations communicate (Weigle, 2005). Notably, modern communication technologies including mobile devices have changed people's preferences significantly altering their mode of communication with other individuals through the global

network (McNeill & McNeill, 2003). Mobile-learning (m-learning) has received increased attention lately (Grunwald Associates LLC, 2013) because it offers a new approach to meeting the needs of contemporary society (Moura & Carvalho, 2009). As a new concept, m-learning bears upon learner mobility, “in the sense that learners should be able to engage in educational activities without the constraints of having to do so in a tightly delimited physical location” (Kukulska-Hulme, 2005, p. 1).

It is essential to remember that changes in pedagogical paradigms have similarly undergone a dramatic transformation in terms of both design and development, making educational materials available to anyone that wants to learn (Moura & Carvalho, 2009). Taking the above into consideration, since the principal aim of English language teachers is to relate the learners’ lives to their real language needs, thanks to certain features of mobile phones and other mobile devices, mobile learning can potentially offer practical gains, making language learning possible for everyone at their convenience (Kukulska-Hulme, Morris & Donohue, 2015).

On this basis, the present study sought to create a technology-based and collaborative learning environment to support and improve elementary learners’ writing skills in an Iranian educational context. To this end, a range of activities was used to develop elementary learners’ writing focusing on specific rules of usage such as comparative/superlative, possessive and simple present tense structures. Ultimately, a focused group interview was used to assess the learners’ attitudes about the potential benefits of mobile application in writing classes.

2. Literature review

Predetermined location and time are two essential aspects of formal instruction which inadvertently constrain the scope of learning. Devices like clay tablets, scrolls, and eventually printed books were introduced to deal with these limitations. However, it was the flexibility offered by desktop computers, laptops, notebooks and web-based applications which enhanced accessibility to language learning materials in the later part of the 20th century (Burston, 2013). The use of handheld computer-based devices such as pocket electronic dictionaries, personal digital assistants (PDAs), MP3s, MP3 players, and the most recently, ultra-portable tablet PCs serving as mobile technologies (MTs), has been one of the deciding factors affecting the m-learning programs – specifically in the domain of mobile-based initiatives concerning teaching writing skills (Burston, 2013).

Related studies addressing the application of mobile technology in developing writing in different contexts are all illustrative of the fact that writing has indeed a collaborative

nature and mobile devices can provide both teachers and learners with practical ramifications facilitating the process.

In one study, Zarei (2015) investigated the extent to which advanced L2 learners gained mastery of targeted structures after being given written corrective feedback to see whether a provision of written corrective feedback on Telegram would help advanced learners increase their level of writing accuracy. The findings revealed that the experimental group significantly outperformed the control group.

Wikis, Google Docs, and the Writing Portal were the most prevalent online technologies used in the studies conducted by Wang (2015), Abram (2016), Bikowski and Vithanage (2016), as well as Lee, Said and Tan (2016) to consider the potential effects of computer-supported collaborative tasks on learners' writing gains. The results revealed that increasing involvement in the writing processes led to a much better chance of self-reflection, confidence, and learners' linguistic knowledge simply because interaction and collaboration outside the classroom enabled learners to improve writing proficiency.

Employing collaborative learning, Amiryousefi (2017a) examined the differential effects of collaborative vs. individual prewriting planning on computer-mediated L2 writing: transferability of task-based linguistic skills in focus. Three types of prewriting planning conditions were used in this study. The results indicated that 1) promoting different dimensions of the participants' computer-mediated L2 writing was effective, 2) linguistic abilities were transferred differently to the network by the participants in different groups, and 3) teachers' monitoring and redirecting students' performance were among the factors which draw students' attention toward specific dimensions of L2 production influencing both the quality of their L2 writing and learning transfer.

Several researchers have also investigated the students' attitudes and perceptions on the development of their writing skills through social media. As an illustration, Li, Chu, Ki and Woo (2010) employed a collaborative approach to investigate students' and teachers' attitudes and perceptions toward collaborative writing with a wiki in a Chinese primary classroom. The results reflected an improvement in their writing attitudes after engaging in collaborative writing via wikis.

In a different study, Li, Chu, Ki and Woo (2011) investigated students' and teachers' attitudes and perceptions toward a wiki-based collaborative process writing pedagogy (WCPWP) in a Chinese primary classroom. The results revealed that improving motivation to write, increasing group interactions and developing writing skills were all beneficial effects of WCPWP.

Similarly, Yunus and Salehi (2012) examined students' perceptions of the effectiveness of Facebook groups in teaching writing. The findings indicated that Facebook was an effective tool that improved the students' writing skills.

In a more recent study, Akhiar, Mydin and Shaidatual (2017) studied students' perceptions and attitudes' toward the use of Instagram in English language writing. The authors claimed that Instagram was a good predictor of both promoting community-centeredness and supporting the dissemination of authentic content.

In another study conducted in Iran, Aghajani and Adloo (2018) examined the effect of online cooperative learning on students' writing skills and attitudes through the Telegram application. The results depicted that students had positive attitudes toward cooperative learning within the Telegram.

Drawing on the insights of the study carried out by Zarei (2015), an attempt was made to examine the learners' performance on the immediate and delayed writing post-tests to examine whether a noteworthy difference existed between the targeted experimental and control groups. Notably, the findings of this study were also consistent with all earlier studies mentioned in the literature. In this study, learning can be rooted in CL. Naismith, Sharples, Vavoula and Lonsdale (2004) noted that mobile devices (MDs) offer tremendous opportunities for communicating easily with others using the same devices. The ability to share data, files and messages are just a few examples of activities using mobile phones in learning. Additionally, MPhs offer enhanced possibilities for communication with connection to a shared data network.

Clearly, this study like other similar studies concerning the use of digital applications in a teaching/learning context was influenced by certain drawbacks and limitations listed below:

- The students are difficult to manage using MPhs (Clark, 2007).
- Inappropriate use of mobile devices by students may negatively impact their learning in a mobile learning environment (Kukulaska-Hulme, 2005).
- There is a suspicion about the motivation behind the students' participation in m-learning, i.e. novelty is the main reason for participation, not interaction (Jacobs & Polson, 2006).
- There will be some disruptions to the class while the work is in progress using MDs (Clark, 2007).
- The students may violate the rules of using Telegram and cheat (Roschell, 2003).

3. Study

3.1. Aims of the study

This study aims to close the existing gaps. Due to the paucity of research in implementing a mobile-based approach for teaching writing to elementary students in Iran, the present study gains significance. Thus, the following three research questions were addressed in this study:

- 1) Is there any difference between the traditional approach (pencil and paper method) and mobile-based instruction on the development of Iranian EFL elementary learners' writing skills?
- 2) To what extent does mobile-based instruction help Iranian EFL elementary students fix their errors of comparative/superlative adjectives, possessives, and Simple Present forms?
- 3) Are Iranian EFL elementary learners' attitudes towards and perceptions of developing elementary learners' writing skills positively affected by involvement in a CL setting through an MPH?

3.2. Participants

The participants of this study were two groups of 15 elementary students (6 females and 9 males in the experimental group; 11 females and 4 males in the control group) studying English at an Iranian Language Institute. The participants' age ranged between 12 and 15. To ensure homogeneity of the students before the treatment, the Oxford Solutions Placement Test was administered to the participants. At the end of the treatment (after a full semester), out of the 15 students in the experimental group, 10 students (6 males and 4 females) were interviewed in order to assess the elementary students' attitudes and perceptions about collaboration and involvement offered by mobile-based application.

3.3. Data collection

Data collection was carried out through a pre-test, an immediate test and a delayed writing post-test followed by an interview. In the pre-test, the subjects in both groups were given an in-class comparison and contrast writing task. In the post-test, to probe any significant differences and detect any improvement in the writing accuracy of the two groups, they were required to write on the same topic used in the pre-test. Subsequently, to compare the lasting

effects of mobile-based instruction with paper-based teaching, a delayed post-test was run. In this test, the participants were once again required to write on a comparison and contrast topic. An interview was also conducted to gauge the elementary students' attitudes and perceptions regarding the effects of CL through MPs. The interview aimed at asking the participants about the effects of the mobile phone on developing writing skills. The interviews conducted in Persian were recorded and then translated into English.

3.4. Data collection and analysis

In the first four sessions, the learners in experimental and control groups were provided with teaching materials that had been designed to develop new activities related to their special needs. The training sessions were organized around full and precise descriptions of punctuation, use of capital letters, word order in sentences and questions, use of contract forms, recognizing nouns, adjectives, and verbs tailored to suit the needs of each learner in both experimental and control groups. To start taking lessons, nine original texts from the *Reading and Writing* series by Thompson (2009) and Casey (2009) were used in this study. The number of texts and their difficulty levels were carefully considered. Each unit in *Reading and Writing* includes new vocabulary, a reading text along with comprehension questions as well as relevant writing assignments. Owing to the importance of reading in building up the learners' competence in a wide range of skills such as reading comprehension, writing style, vocabulary, spelling and advanced grammatical competence (Krashen, 1999), the students initially focused on a reading text to gain access to the required input. Then, the students were given a series of meaningful comprehension activities to develop writing skills. To do the English writing exercises, the students in the control group were given writing activities on paper, but those in the experimental group incorporated the Telegram application as a collaborative tool to reflect on the exercises. The students in both groups were also expected to have self-created opportunities for coping with the related activities.

Subsequently, several strategies (modelled, shared, interactive and independent writing) were utilized to help the students put their ideas into actual practice. To set up the learning goal, the students in the experimental and control groups received exposure to authentic writing input. The students were first exposed to the text model through the Telegram and the teacher explained how the model worked for everyone involved. Consequently, facts or details about the situation, a particular style or type of words, different parts of sentences were provided for the students to foster their understanding of the text.

These helped students elicit the essential information they required to write for a range of purposes.

The shared writing stage promoted discussion among the students as well as between the students and the teacher and increased massive opportunities for interaction with other language learners.

In guided writing, the teacher contributed to the learners' reconstruction of the text and provided the students with feedback related to the redirecting and expanding ideas. In this stage, the students and the teacher worked hand in hand. The students in the control group composed a text on paper and those in the experimental group did the same using Telegram.

In independent writing stage, the main intention was to encourage the students to write about a topic. It was deemed necessary that the students use their skills and ideas from the shared writing stage to finalize their production. Whereas the students in the control group agreed to present their writing tasks through pencil-and-paper in the class, those in the treatment sample used Telegram for delivering their writing assignments. To control the time on the task and access to a resource, certain restrictions were introduced:

- The students were asked to use the mobile phones under the control of their parents.
- They should avoid indulging in social networking and communicating with each other all the time.
- They were asked to send their writing compositions within a specified time and use just their skills and ideas from the shared writing stage to finish the writing tasks.

It is worth noting that the participants first discussed the writing problems with their peers prior to sending and receiving feedback on the received tasks in the Telegram group, and then the teacher provided assistance with any problems that may arise. It should be noted that specific statistical computation techniques were used considering the errors they had made in the use of comparative/superlative adjectives, possessives, and simple present tense.

These techniques were:

- 1) The total number of correct uses of the simple present;
- 2) The total number of incorrect uses of comparative/superlative adjectives and possessives;
- 3) The total number of correct uses of comparative/superlative adjectives and possessives;
- 4) The total number of errors in Simple Present forms;

- 5) The ratio of correct usage of comparative/superlative adjectives and possessives to the number of comparative/superlative adjectives and possessives used (“Ratio1”);
- 6) The ratio of correct use of the simple present to the total number of simple present forms (“Ratio2”).

The statistical calculation involved analyzing the coded data, transferring them onto the data sheets and feeding them to the computer using the SPSS package. The raw score was interpreted as the computed ratio for each student concerning the percentage of correct usage of each target variable. As such, the obtained data could be quantified and measured. In the further step, the raw score was computed for each student, in each group and for each variable separately. The means of the two groups were compared to check whether they were at the same level at the beginning of the study. Analyzing the data, the researcher computed the descriptive statistics for the two raters and their average writing scores. To compare the performance of the two groups (the experimental and the control groups) – that is, to check whether they were at the same level at the beginning of the study, the means of the two groups were compared. Two judges marked the collected scores on the pre-, immediate and delayed post-tests evaluating writing tasks. The obtained data were analyzed through a repeated measure ANOVA.

3.5. Results

The descriptive statistics concerning the mean scores belonging to the experimental and control groups in pre-, post-, and delayed post-test in terms of the eight components presented in Table 1 indicated that the mean scores were higher on the post-test than the pre-test. Additionally, the mean scores of the students regarding the topic, organization, spelling, sentences, and vocabulary in the delayed post-test were considerably higher than those on the immediate post-test. Finally, except for grammar, the mean scores on the delayed post-test were higher than those in the immediate post-test.

In the control group, despite the increase in the mean scores of the post-test in topic, organization, paragraph, sentences, vocabulary, grammar and spelling, it was almost unchanged in punctuation. Moreover, despite the decrease in topic, organization, paragraph, sentences, vocabulary, punctuation and spelling in the mean scores of the delayed post-test, it was almost unchanged in grammar.

Table 1. The mean scores gained by two groups in the pre-, post-, and delayed post-test in writing components

Component	Group	N	pre-test		Post-test		Delayed test	
			M	SD	M	SD	M	SD
Topic	Experimental	15	1.53	.52	2.13	.35	2.87	.52
	control	15	1.53	.52	1.67	.49	1.60	.63
Organization	Experimental	15	1.27	.46	2.40	.51	2.93	.70
	control	15	1.40	.51	1.73	.46	1.60	.63
Paragraphs	Experimental	15	1.33	.49	2.33	.49	2.60	.74
	control	15	1.07	.26	1.40	.51	1.53	.64
Sentences	Experimental	15	1.60	.51	2.80	.56	2.87	.74
	control	15	1.53	.52	2.00	.38	1.80	.41
Vocab	Experimental	15	1.60	.51	2.07	.26	2.80	.68
	control	15	1.87	.35	1.87	.52	1.80	.41
Grammar	Experimental	15	1.53	.52	2.87	.64	2.73	.59
	control	15	1.47	.52	2.00	.53	2.00	.38
Punctuation	Experimental	15	2.20	.56	3.20	.56	2.93	.46
	control	15	2.13	.74	2.13	.64	1.87	.74
Spelling	Experimental	15	2.27	.59	3.40	.51	3.47	.52
	control	15	2.53	.83	3.07	.88	2.47	1.06

The results of repeated-measure ANOVA (RM ANOVA) related to the writing scores of the two groups and three-time measures displayed in Table 2 indicated that the interaction of measuring time and the experimental group in the overall writing scores of the students was significant ($P < 0.05$). Therefore, the effect of Telegram on the writing skills of the experimental group had changed over time. The main effect of measuring time and the experimental group was also significant at the level of 5% error in writing scores ($P < 0.05$).

Table 2. The results of RM ANOVA in comparing writing component scores in two groups and three-time measures

Component	Source	Effect	SS	df	MS	F	p	ηp^2
topic	Within-group	Time	7.356	2	3.678	14.215	<.001	.337
		Group×Time	6.156	2	3.078	11.896	<.001	.298
		Error	14.489	56	.259			
	Between-group	Group	7.511	1	7.511	28.506	<.001	.504
		Error	7.378	28	.263			
Organization	Within-group	Time	14.489	2	7.244	26.305	<.001	.484
		Group×Time	8.089	2	4.044	14.686	<.001	.344
		Error	15.422	56	.275			
	Between-group	Group	8.711	1	8.711	23.965	<.001	.461
		Error	10.178	28	.363			
Paragraphs	Within-group	Time	12.356	2	6.178	22.240	<.001	.443
		Group×Time	2.756	2	1.378	4.960	.010	.150
		Error	15.556	56	.278			
	Between-group	Group	12.844	1	12.844	40.059	<.001	.589
		Error	8.978	28	.321			
Sentences	Within-group	Time	12.867	2	6.433	24.942	<.001	.471
		Group×Time	4.022	2	2.011	7.797	.001	.218
		Error	14.444	56	.258			

Vocab	Between-group	Group	9.344	1	9.344	27.769	<.001	.498
		Error	9.422	28	.337			
	Within-group	Time	4.867	2	2.433	12.413	<.001	.307
		Group×Time	6.156	2	3.078	15.700	<.001	.359
Grammar	Between-group	Group	2.178	1	2.178	7.795	.009	.218
		Error	7.822	28	.279			
	Within-group	Time	16.267	2	8.133	25.814	.000	.480
		Group×Time	2.756	2	1.378	4.373	.017	.135
Punctuation	Between-group	Group	6.944	1	6.944	29.966	<.001	.517
		Error	6.489	28	.232			
	Within-group	Time	3.756	2	1.878	7.940	.001	.221
		Group×Time	5.000	2	2.500	10.570	<.001	.274
Spelling	Between-group	Group	12.100	1	12.100	17.208	<.001	.381
		Error	19.689	28	.703			
	Within-group	Time	10.867	2	5.433	15.384	<.001	.355
		Group×Time	6.022	2	3.011	8.526	.001	.233
Between-group	Group	2.844	1	2.844	2.757	.108	.090	
	Error	28.889	28	1.032				

The mean scores gained by the two groups in the pre-, post-, and delayed post-test in Ratio1, as reflected in Table 3, reveal that the mean of Ratio1 had increased in the post-test in comparison to the pre-test in the experimental group but not between immediate and delayed post-tests. The mean of Ratio1 was higher in the post-test than in the pre-test and in the delayed post-test than the post-test in the control group.

Table 3. The mean scores gained by the two groups in the pre-, post-, and delayed post-test in Ratio1

Group	N	pre-test		Post-test		Delayed test	
		M	SD	M	SD	M	SD
Experimental	15	.04	.13	.74	.23	.73	.23
control	15	.14	.35	.59	.38	.61	.38

The results of RM ANOVA in comparing Ratio1 in two groups and three-time measures displayed in Table 4 indicated that the interaction of measuring time and the experimental group was not significant in the scores of Ratio1 ($P>0.05$). Therefore, the effect of the experimental group changed over time.

Table 4. The results of RM ANOVA in comparing Ratio1 in two groups and three-time measures

Source	Effect	SS	df	MS	F	p	η^2
Within-group	Time	6.643	2	3.322	49.206	.000	.637
	Group×Time	.292	2	.146	2.161	.125	.072
	Error	3.780	56	.068			
Between-	Group	.082	1	.082	.635	.432	.022

group	Error	3.627	28	.130
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Although the main effect of the experimental group in Ratio1 was also not significant at the level of 5% error ($P>0.05$), the effect of measuring time was significant at the level of 5% error ($P<0.05$).

Table 5 shows that the mean of Ratio2 increased in the post-test than the pre-test in both groups and it decreased in the delayed post-test as compared to the immediate post-test.

Table 5. The mean scores gained by the two groups in the pre-, post-, and delayed post-test in Ratio2

Group	N	pre-test		Post-test		Delayed test	
		M	SD	M	SD	M	SD
Experimental	15	.42	.27	.82	.27	.79	.33
control	15	.39	.74	.63	.30	.48	.28

The results of RM ANOVA in comparing Ratio2 in two groups and three-time measures displayed in Table 6 indicated that in Ratio2 scores the interaction of measuring time and the experimental group was not significant ($P>0.05$). Therefore, the effect of the experimental group had not changed over time. Although the main effect of the experimental group in Ratio2 at the level of 5% error was also not significant ($P>0.05$), the effect of measuring time at the level of 5% error was significant ($P<0.05$).

Table 6. The results of RM ANOVA in comparing Ratio2 in two groups and three-time measures

Source	Effect	SS	df	MS	F	p	η^2
Within-group	Time	1.617	2	.809	6.308	.003	.184
	Group×Time	.298	2	.149	1.163	.320	.040
	Error	7.179	56	.128			
Between-group	Group	.700	1	.700	3.037	.092	.098
	Error	6.454	28	.231			

4. Discussion

Having compared the mean of Ratio1 in the mobile-based group with that of the paper-based group, one can infer that there was no significant difference between Ratio1 (the ratio of correct use of possessives, comparative/superlative adjectives to the number of possessives, comparative/superlative adjectives used) and Ratio2 (the ratio of correct use of Simple Present forms to the total number of Simple Present forms used) and both groups significantly changed over time.

The findings of this research highlighted a significant difference between the experimental and the control groups. In this study, the group exposed to mobile use

experienced greater interaction and collaboration. Hence, the findings provided evidence that CL considers group work as a determining factor for the better performance of the participants in the experimental group. The findings are also in line with Vygotsky's sociocultural psychology (Naismith et al., 2004). Mobile devices (MDs) act as a practical additional communication medium and an electronic portable means of sharing information (Kukulska-Hulme, 2005). In this study, the teacher enabled and even encouraged the students to collaborate and share their information through MPhs. Thus, mobile technology (MT) is an example of conversational learning that provides a shared conversation space (Naismith et al., 2004). Furthermore, the students were positively influenced by CL in some stages of the writing process, including discussing their writing, sharing additional words and ideas and producing better texts in terms of grammatical accuracy. Alternatively, CL is highly beneficial to critical thinking and problem-solving skills since the students' involvement in various social contexts and interaction is a rich source of feedback fostering learners' progress in writing (Albeshar, 2012).

The results of the interviews conducted with 10 elementary learners to answer the third research question are as follows:

The interviewees were first asked whether they liked CL through MPhs. They were all satisfied.

In my idea, mobile devices (MDs) facilitated exchanging information in a limited time and kept getting information fresh and interesting for everyone. (Student D)

Um... MPh was a major opportunity to present a new and exciting method for developing our writing skills. Before that, learning happened within the classroom walls. (Student I)

I think CL through MPhs allowed us to access new content on demand. There was a large degree of overlap in this strategy, insofar as it helped us to improve our writing, to realize our mistakes and to correct them in our next writing. (Students B and C) ... Besides, the students were not under stress since this method generated a high level of interest and enthusiasm (Student C)

The above excerpts resonate with Kukulska-Hulme (2006), who believed that MALL paves the way for getting access to language learning material and communicating with others at anytime and anywhere. This way, the students were provided with the opportunity for social interaction and negotiation of meaning while communicating with peers outside class, regardless of time and place (Kukulska-Hulme et al., 2015).

Amiryousefi (2017b) concluded that Telegram tended to be regarded as a social technology beneficial for encouraging students in collaborative activities. The preference for this technological device lies in the fact that communication through Telegram causes less stress.

Another area investigated in this interview were the benefits of learning to write through MPs using CL strategy to increase the satisfaction of the students. Interviewees all found CL useful, satisfactory and efficient.

Yes, MPs offered a tremendous opportunity to make learning more engaging and pleasurable.
(Students A, D, and G)

Um... learning new words, getting new information, and using them in our writing was a learning experience for all students and often gave rise to opportunities to learn together
(Student D)

Um... Um... When MDs were used by the students, the opportunity also existed for them to learn new words, new sentences, and to use them. Writing about different topics became a part of any lesson involving the student which was notable. (Student J)

MPs facilitated getting new words, learning structures, and correcting mistakes. (Students B, E, and F)

The flexibility offered with MDs enabled the students to write anywhere. (Student C)

According to Kukulska-Hulme (2005), collaborative learning involves a situation in which the students intend to enhance their learning process, foster their appreciation and improve learning. Compared to conventional settings, Telegram can create a friendly, inviting, and motivating environment in which learners can work at a higher level of CL with a high quality of interaction (Amiryousefi, 2017b).

The third question considered whether completing the drafting stage collaboratively through MPs would be better. The results were in favour of completing the drafting stage collaboratively. The participants thought the students of any background might have the chance to gain information on the topic. Its impact had also been as great as we expected learners to write better in the next stage.

If we were asked to write individually about a topic without any help from others, we would not know how to write and how to start. But MDs offered huge opportunities to harvest required information about the topic. (Students E and I)

These findings are in line with Oloruntoba (2006), who remarked that m-learning provides learners with increased flexibility and interaction.

The last question concerned whether or not collaboration during revising and editing through MPhs could help learners to overcome difficulties such as correcting mistakes, restructuring ideas, finding the right vocabulary, etc.

Yes, CL through MPhs involved the constant repetition of corrections and continually refreshing the correct forms. This way, the correct forms of our mistakes stock in our minds. (Student A)

MDs brought competition among the students and improved our writing tasks (Students I and C)

By communicating through an MD, the students do not see each other anymore and this gave us excitement and made the communication more effective. (Student C)

MPhs allow exchanging language data. Transferring data and agreeing and disagreeing with someone come into sharp focus (Kukulska-Hulme et al., 2015).

By using MDs, the learners were made aware of their performance. They could also develop and improve their accuracy. Furthermore, MDs bring the practice of ‘noticing the gaps’ in their knowledge and communication skills to learners’ attention. The answers they get from the teacher or their peers help them with onward learning (Kukulska-Hulme et al., 2015). By communicating through a MPh, students do not arouse the attention of their peers as they get something to work on, and they are not under the eyes of a teacher anymore (McQuiggan, MvQuiggan, Sabourin & Kosturko, 2015)

5. Limitations of the current study and directions for further investigations

Essay scores and interviews were two instruments of data collection for the current study. No direct analysis of the essays themselves was conducted, instead, people’s judgments about them were used only. The third research question of this study was answered through an analysis of data obtained from interviews. Other functionally related instruments such as diaries and observations were not used.

Another limitation of this study was that the main focus of this research was on quantitative methodology with the addition of a small amount of qualitative research. Video and audio recording, open response questions, and questionnaires as other qualitative methods were not used in this study. Besides, the study encompassed only nine sessions to work on elementary students’ writing skills, while further research should be carried out for longer times of instruction, for example, a semester.

6. Conclusion

The present study aimed to investigate the effect of MALL as compared to paper-based instruction on the development of EFL elementary learners in the Iranian English Language Institute concerning 1) the investigation of the effect of MALL on elementary learners' writing skills; 2) the extent to which mobile-based instruction helps students fix their errors of comparative/superlative adjectives, Simple Present forms, and possessives; 3) the consideration of the elementary students' attitudes and perceptions about involvement in collaborative learning settings through a mobile phone.

When looking at the results (Table 2), it can be seen that no significant difference was reported between the experimental and the control groups in topic, organization, paragraph, sentences, grammar, and punctuation in the pre-test ($p > 0.05$), but in the post-test and the delayed post-test, the mean scores of the experimental group were significantly higher ($p < 0.05$).

This study could have important implications for teachers, students, and educators. First, since there is an inherent motivation for EFL students to use MPAs, one may need not to encourage students to use these devices or try to make them interested (Liu, Navarrete, Maradigeue & Wivagg, 2014). Moreover, it can be concluded that education has also benefited from m-learning. Mobile technologies offer a novel approach to improving communication and education. It enables tracking of educational administration growth and makes communication between schools, teachers, students and parents more effective (Kraut, 2013).

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