Tabaran Institute of Higher Education
Journal of Research in Techno-based Language Education
Vol. 4, No. 2, June 2024
ISSN 2821 - 0301

The Effects of Massive Open Online Courses and Mobile Instant Messaging on EFL Learners' Reading Comprehension: A Comparative Study

Servat Shirkhani[1]*, Fatemeh Poorhadian[2]

Received: February 2024 Accepted: June 2024

Abstract

The present study was an attempt to explore the comparative effects of using Massive Open Online Courses (MOOC) and Mobile Instant Messaging (MIM) on reading comprehension skills of Iranian English as a foreign/second language (EFL) learners. To achieve this objective, 100 Iranian learners studying English at Tehran Language Institute in Khorramabad were selected based on convenience sampling. They took the Oxford Placement Test and based on the results, 40 intermediate-level learners were selected and assigned to two groups in intact classes. Then, both groups were given the reading section of the Preliminary English Test (PET) before the treatment to determine the participants' reading comprehension level at the beginning of the research. During the treatment, both groups were taught the same teaching materials, but the materials were presented through two different online tools: Skyroom application as the MOOC platform and WhatsApp as the MIM. After the treatment, a reading posttest was administered to both groups. The data were analyzed through a series of independent and paired samples t-tests. The results indicated a significant difference between the post-test reading comprehension performance of the two groups. It was revealed that using the MOOC platform had a statistically significant effect on learners' reading comprehension performance, while the effect of using MIM was not significant. The findings imply that online language teaching platforms might have differential effects on language learning and that language teachers need to consider the differences among the tools in making decisions as to when and where to use which online tools.

Keywords: Massive Open Online Courses (MOOCS); Mobile Instant Messaging (MIM); Reading Comprehension; Skyroom; WhatsApp.

1. Introduction

The role of technology in language education is getting considerable attention mostly because of the fact that technology is increasingly contributing to the modernization of education. With the widespread availability of mobile phones, many studies on technology-assisted language learning have considered the effectiveness of mobile-assisted language learning (MALL) in language education. Numerous people are trying MALL due to the

[1] English Department, Khorram Abad Branch, Islamic Azad University, Khorram Abad, Iran, Email:servatshirkhani@gmail.com
[2] English Department, Khorram Abad Branch, Islamic Azad University, Khorram Abad, Iran, Email:porhadiyanfatemeh@gmail.com

movability and connectivity of its learning tools and the fact that everybody owns a smartmobile phone (Samsiah & Azidah, 2013). Mobile phone devices and technologies which are extensively used in our lives, have engrossed the attention of English as a foreign/second language (EFL) teacher by letting them provide learners with anytime-anywhere learning opportunities (Alhadiah, 2020). Language learners spend more time on learning activities when they are learning through mobiles (Stockwell, 2008). Moreover, mobile learning reduces the psychological distance that learners may experience in more formal face-to-face learning contexts (Bax, 2003). A further and more important use of mobile phones is that they can increase social interaction among learners from different parts of the world. As Vygotsky (1978) stated, cognitive development occurs as a result of social interaction. Therefore, MALL can help the cognitive development of language learners.

Despite the various benefits of MALL, as Cavus and Ibrahim (2009) have stated, the incorporation of mobile technologies into education has been slow. However, they believe, this mobile incorporation has been sure, as teachers have wanted to understand how to use the tools to support different kinds of learning. Some researchers (Alhadiah, 2020; Estarki & Bazyar, 2016; Hashemifardnia et al., 2018; Liu et al., 2024; Mustiah et al., 2024; Shirkhani & Shiran, 2023; Zhang & Pérez-Paredes, 2024) have focused on the importance MALL and its role in foreign/second language (L2) learning. Despite what has been mentioned, no documented study has yet explored the comparative effects of using Massive Open Online Courses **(**MOOC) and Mobile Instant Messaging (MIM) on L2 learning. Given the importance of reading comprehension as a major language skill which can contribute to the development of both general knowledge and L2 competence, the present paper has embarked on comparing the effects of these two online platforms on developing reading comprehension skills of Iranian learners. To achieve the stated purpose, the following research questions were posed:

Q1. Does using the MOOC platform have any statistically significant effect on EFL learners' reading comprehension skill?

Q2. Does using the MIM platform have any statistically significant effect on EFL learners' reading comprehension skill?

Q3. Is there any significant difference between the effects of using MOOC and MIM platforms on EFL learners' reading comprehension skill?

2. Review of Literature

The widespread use of technology in almost every aspect of our lives has made the application of technology in language instruction an interesting area of research in applied linguistics. Numerous studies (Alanazi & Walker-Gleaves, 2019; Çetinkaya, 2020; Cremades et al., 2021; Hashemifardnia et al., 2021; Shirkhani & Shiran, 2023; Soria et al., 2020) have addressed the usefulness of MOOCs and/or MIM among other online platforms in teaching and learning an L2.

2.1.MOOC in Language Education

MOOC is an online phenomenon which allows learners to attend sessions all over the world in order to have social interaction and negotiate information. It "integrates the connectivity of social networking, the facilitation of an acknowledged expert in a field of study,

and a collection of freely accessible online resources" (McAuley et al., 2010, p. 4). MOOC helps scaffold individual participation in learning through interaction over social networks (McAuley et al., 2010). In their analysis of language learning MOOCs, Rai et al. (2023) reported that in addition to language, these MOOCs focus on developing five soft skills in learners that include language learning, cultural development, communication, entrepreneurship, and career development skills.

The few state-of-the-art articles on the subject (Martín-Monje, 2023; Palacios Hidalgo et al., 2020) provide information about various aspects of MOOCs in language education. Palacios Hidalgo et al. (2020) review the origin of MOOCs, different types of MOOC platforms, and the pros and cons of MOOCs in addition to elaborating on the specialization of MOOC courses. Martín-Monje (2023), in a comprehensive study, not only discusses the theoretical bases of MOOC in language education and current issues in MOOC research but also functions as a guide that introduces various types of open online courses and provides insights for those interested in creating language learning MOOCs.

In addition, empirical studies on the use of MOOC in L2 instruction have focused on its effects on L2 proficiency (e.g., Mellati & Khademi, 2020), vocabulary instruction (e.g., Ventura & Martín-Monje, 2016), writing development (e.g., Ashton & Davies, 2015), the speaking skill (e.g., Li, 2024), motivation in language learning (e.g., Ullah Khan et al., 2016), and learner self-efficacy (e.g., Padilla Rodriguez & Armellini, 2017), and learners' attitudes (e.g., Alanazi & Walker-Gleaves, 2019; Wang et al., 2018) or comparing teachers' and learners' attitudes (e.g., Mellati & Khademi, 2019) toward integrating MOOC in language instruction. Wang et al. (2018) studied the effect of MOOC-based flipped classrooms on Chinese beginner L2 learners' oral proficiency. It was revealed that using MOOC had a positively significant effect on learners' oral proficiency, especially in terms of fluency, and helped increase learners' rate of progress through the syllabus and time investment in learning. Moreover, the study showed that learners in the MOOC group had high attitudes toward using MOOC in language learning. Jung and Lee (2020) conducted a study to see how learner factors might influence the effect of MOOC on learners' growth which was identified as involving knowledge, attitudes, skills, and aspirations (KASA). The results were indicative of the effectiveness of using MOOC on learners' growth in terms of KASA. In addition, Hashemifardnia et al. (2021) examined the effect of using MOOC through Skype on Iranian learners' speaking ability. They found the treatment significantly effective in increasing learners' speaking complexity, accuracy, and fluency. The results further showed that learners had positive attitudes about using MOOC in L2 speaking instruction. Chang (2023) studied the impact of MOOCs and data-driven learning on Taiwanese learners' development in listening to academic content in English. The study reported a positive impact of the 4-week treatment on learners' improvement of listening to academic materials.

2.2. MIM in Language Education

Learning through MIM involves the educational use of technology for learning in line with related theoretical principles and is realized through the implementation of various educational methods and techniques using any electronic tool (Anohina, 2005). As both a synchronous and an asynchronous medium of communication, MIM increases learners'

involvement by giving them opportunities for creating social networks, interacting with new information, sharing information and ideas, and enhancing mutual understanding; nonetheless, it is one of the least explored potentials of mobile applications (Andujar, 2016). Various studies have investigated using MIM in relation to language education with different foci, including its effects on learners' writing ability (e.g., Andujar, 2016; Çetinkaya, 2020), speaking skill (e.g., Kartal, 2022), teacher perceptions (e.g., Doering et al., 2008), learner perceptions (e.g., Mistar & Embi, 2016), comparison of teacher and learner perceptions about the integration of MIM in language instruction (e.g., Cremades et al., 2021), and the usefulness of MIM in providing feedback (e.g., Soria et al., 2020).

Andujar (2016) studied the effect of using MIM on Spanish students' four aspects of writing ability, that is, syntactic complexity and grammatical, lexical, and mechanical accuracy. The results of using WhatsApp over six months as the treatment in the pretest-posttest control group study indicated the significant effect of MIM on developing students' accuracy; however, no significant effect was found on their syntactic complexity.

Estarki and Bazyar (2016) explored the effect of using Viber as a MIM platform on pre-intermediate learners' writing performance. The results showed a significantly better performance on the writing posttest for the learners in the experimental group. In another study, Hashemifardnia et al. (2018) investigated the effects of using WhatsApp on 50 Iranian female EFL learners' vocabulary learning. The results indicated a significant impact of WhatsApp on the vocabulary development of the participants.

Sivabalan and Ali (2019) conducted a systematic review of 40 journal articles published from 2016 to 2018 to examine the efficacy of MIM in collaborative language learning in higher education. They reported that the most frequently used MIM application was WhatsApp and that this application was effective in increasing student participation, enhancing collaboration between students and lecturers, and creating distant instructional opportunities. In addition, Cremades et al. (2021) showed that both teachers and learners agreed on the usefulness of MIM in language education.

2.3. MOOC and MIM in Language Education

In addition to the studies separately investigating the effects of MOOC (in this study the Skyroom platform) and MIM (in this study the WhatsApp application) on language learning, some studies (Ahmed et al., 2022; Pan et al., 2022) have compared the effects of the two platforms. Ahmed et al. (2022), for instance, compared the effects of MOOC and flipped education on Iranian learners' reading comprehension. They used Skyroom as the MOOC platform and WhatsApp application as the flipped instruction platform. The results indicated the superiority of the Skyroom and WhatsApp groups over the control group but showed no difference between the effects of the two online instructional platforms.

Moreover, Pan et al. (2022) studied the effects of MOOC and flipped instruction on L2 learners' speaking anxiety, L2 motivation, and attitudes toward technology-based English learning. They used Skype as the MOOC platform and WhatsApp as the tool for flipped instruction. The results showed that both groups outperformed the control group in anxiety reduction and motivation increase and that both experimental groups had high attitudes toward using technology in language teaching.

As stated earlier, some researchers (e.g., Adibfar, 2022; Alhadiah, 2020; Chwo et al., 2018; Estarki & Bazyar, 2016; Khanahmadi & Nasiri, 2022; Lam et al., 2018; Maruf et al., 2024; Nurmahanani, 2024; Samir & Tabatabaee-Yazdi, 2023; Rostami & Kargozari, 2023; Stockwell, 2008; Zhu et al., 2024) have focused on the role of MALL in L2 education. Most of the researchers in the field of study found that MALL did have positive effects on L2 development. Specifically related to the focus of the present study, some research (e.g., Liu et al., 2024; Maruf et al., 2024; Mustiah et al., 2024; Nurmahanani, 2024; Zhang & Pérez-Paredes, 2024; Zhu et al., 2024) has studied MALL uses in L2 reading instruction. However, to the best of the researchers' knowledge, no study has explored the effect of using MOOC in comparison with MIM on developing the reading comprehension skills of Iranian learners. Thus, the present study was designed to investigate the comparative effects of Skyroom as a MOOC platform and WhatsApp as a MIM platform on Iranian students' reading comprehension.

3. Method

Give adequate information to allow the experiment to be reproduced. This section will include sub-sections.

3.1. Participants and Setting

This comparative study followed a pretest-posttest quasi-experimental design. The initial participants in this study were 100 female intermediate EFL learners attending classes at Tehran Language Institute in Khorramabad in the academic year 2022/2023. These learners were selected based on convenience sampling; they were from five intermediate-level classes and the selection of the classes was based on the decision by the head of the institute. To select a homogeneous sample, the Oxford Placement Test (OPT) was administered to the learners and 40 EFL learners who got the band score of OPT (i.e., between 30 and 46) were considered as the main participants in this study. Then, the homogenized EFL learners were studied in two experimental groups in intact classes, one as the MOOC group and the other as the MIM group.

3.2. Instrumentation

Describe the materials, measures, or equipment used in the experiment. Provide readers with detailed information on the instruments' reliability and validity. You may need to provide an illustration of the item that can be included in your appendix and then referred to in your method section.

3.2.1. Oxford Placement Test (OPT). A version of OPT was used in the study for selecting the most homogenous learners as the participants of the study. It was used to choose the intermediate-level learners based on the scores on this test rather than just relying on the placement of the learners in intermediate classes in the institute. OPT is a reliable test of language proficiency by Oxford University Press. It consists of two parts, one on language use and the other on listening. The scores on the test range from zero to 120. This study used only the first part because of the impracticality of presenting the listening section to 100 learners in the institute. This part in itself involves two sections with 40 and 20 multiple-choice items, respectively and the score range for this section is 0 to 60. The version of the test used in this

study was piloted with a group of 35 intermediate-level learners from the same institute and the reliability was calculated which showed the test was reliable for the sample of the study (rel. = 0.81).

3.2.2. Reading Comprehension Pretest and Posttest. In order to measure the EFL learners' ability in reading skill before and after the treatment, the researchers used two parallel-form reading comprehension tests as a pretest and a posttest. The tests were the reading sections of two versions of the Preliminary English Test (PET). The reading section of PET consists of six parts and 32 items. Each item scores one mark; therefore, the score range for this section of the test is 1 to 32. Each of the two tests was piloted with the same group used for piloting the OPT. The results showed high reliability for both the pretest and posttest (pretest rel. = 0.78; posttest rel. = 0.80).

3.3. Procedures

To conduct the quasi-experimental study with two experimental groups, the first step was to select the sample. After getting the acceptance from the head of Tehran Language Institute in Khorram Abad, OPT was administered to 100 EFL learners in five classes of the institute which had been introduced to the researchers by the head of the institute. Based on the results of the test and its band scores, 40 learners whose scores were within the band score for the intermediate level (i.e., 36 to 41) were selected to participate in the study. These participants were then non-randomly divided into two groups and the groups were randomly assigned into MOOC and MIM groups. Next, the reading comprehension pretest which was the reading section of PET was administered to both groups. After the pretest, the 7-week treatment began. One of the groups was taught reading materials through Skyroom as the MOOC platform and the other through WhatsApp as the MIM platform. It is worth mentioning that during the treatment sessions, both groups were taught the same teaching materials by the same teacher, and the reading instruction in both groups included pre-reading, reading, and post-reading activities similar to the ones teachers usually use in face-to-face classes. However, the presentation of materials differed in the two groups. Although the class time was fixed for both groups, the WhatsApp group enjoyed the opportunity to check the group messages and add points after the class while the Skyroom classes closed after each session so that the students could check the recorded classes without being able to react anymore. Finally, to get an account of learners' achievement during the treatment period, the posttest, which was a parallel form of the pretest, was administered to both groups. The whole procedure of data collection lasted for 10 weeks. The first two sessions were devoted to the administration of the OPT and pretest, then the treatment was carried out for seven weeks. Finally, in the 10^{th} session, they took the posttest.

3.4. Data Analysis Method

Analysis of data was carried out through the Statistical Package for Social Sciences (SPSS 20) software. After using descriptive statistics for OPT scores to select the true intermediate-level learners, an independent samples t-test was run to compare the mean scores of the two groups on the pretest to see whether the groups were at the same level of reading

comprehension. Next, two paired samples t-tests were run to compare the mean scores of pretest and posttest for each of the groups in order to answer the first two questions which were concerned with the effects of the treatment procedures on any of the groups. In the end, an independent samples t-test was used to compare the mean scores of the two experimental groups on the post-test to compare the effects of the two treatment situations on learners' reading ability.

4. Results

This study was an attempt to investigate the effects of two online platforms, that is, MOOC and MIM on EFL learners' reading comprehension and then to compare the effects of these two platforms on the learners' reading skills. To achieve the objectives of the study, two independent samples t-tests were run to compare the mean scores of the two groups on pretest and posttest, and a pair of paired samples t-tests were run to compare the pretest and posttest scores of each group.

4.1. Comparison of the Groups for Checking Sample Homogeneity

In order to check the homogeneity of the two experimental groups at the onset of the study, an independent samples t-test was used to compare the mean scores of the MOOC and MIM groups on the pretest. The results are shown in Table 1 and Table 2.

Table 1
Descriptive Statistics for Pretest Scores of MOOC and MIM Groups

Groups	N	M	SD	SEM
MOOC	20	9.8423	2.96512	0.55735
MIM	20	10.0500	1.83829	0.38562

Table 1 shows the mean score for MOOC and MIM groups (MOOC mean= 9.84 & MIM mean = 10.05), and Table 2 indicates that there was no significant difference between the MOOC and MIM groups at the beginning of the study, $t(38) = 0.921$, $p<0.05$ (two-tailed). Therefore, the two groups could be considered at the same level of reading comprehension, and thus, any significant difference between them after the treatment could be assigned to the treatment effect.

Table 2
Independent Samples t-test for Pretest Scores of MOOC and MIM Groups

	Levene's Test for Equality of Variances		*t*-test for Equality of Means						
MOOC vs. MIM								95% CID	
	F	Sig.	*t*	df	Sig. (2-tailed)	MD	SED	L	U
Equal variances assumed	6.045	0.020	0.921	38	0.324	0.633	0.636	-0.677	1.915
Equal variances not assumed			0.921	28.5	0.325	0.633	0.636	-0.677	1.915

4.2. The Effects of Using MOOC and MIM on Reading Comprehension

The first question was concerned with the effect of using the MOOC platform on learners' reading comprehension and the second question dealt with the effect of the MIM platform on their reading skill. To answer these two questions, two paired samples t-tests were run to compare the pretest and posttest mean scores for each of the groups. To save space, the results of the two t-tests are merged and shown in Table 3 and Table 4.

Table 3
Descriptive Statistics for the Pretest and Posttest scores of MOOC and MIM groups

		M	N	SD	SEM
Pair 1	MOOC (Pretest)	9.84	20	2.96	0.55
	MOOC (Posttest)	16.03	20	2.1	0.39
Pair 2	MIM (Pretest)	10.05	20	1.83	0.38
	MIM (Posttest)	11.16	20	2.11	0.38

As shown in Table 3, the mean score for the MOOC group which was 9.84 in the pretests increased to 16.03 in the posttest and that for the MIM group had a slight increase from 10.05 in the pretest to 11.16 in the posttest.

Table 4
Paired Samples t-tests for the Pretest and Posttest Scores of MOOC and MIM Groups

		Paired Differences							
					95% CID				
		M	SD	SEM	L	U	*t*	df	Sig. (2-tailed)
Pair 1	MOOC (Pre & Posttest)	-2.35	2.42	0.55	-3.208	-1.39	8. 994	19	0.000
Pair 2	MIM (Pre & Posttest)	-0.66	2.16	0.41	-1.37	0.24	-1.423	19	0.172

Table 4 shows that the difference in means of pretest and posttest was significant for the MOOC group at 0.05 level of significance, $t(19) = 8.99$, $p<0.05$ (two-tailed); however, it was not significant for the MIM group, $t(19) = -1.423$, $p>0.05$ (two-tailed). The findings, therefore, show that the answer to the first question is positive since it is indicated that using the MOOC platform has a significantly positive effect on learners' reading comprehension. Nevertheless, the second question has got a negative answer; the results show that using the MIM platform does not significantly influence the reading scores of the learners.

4.3. Comparison of the Effects of MOOC and MIM on Reading Comprehension

The last question focused on comparing the effects of MOOC and MIM on learners' reading comprehension. To answer the question, an independent samples t-test was used to compare the mean post-test scores of the two groups. The results of the analysis are presented in Table 5 and Table 6.

Table 5
Descriptive Statistics for the Posttest Scores of MOOC and MIM Groups

Groups	N	M	SD	SEM
MOOC	20	16.0323	2.18037	0.39808
MIM	20	11.1617	2.11209	0.38561

As indicated in Table 5, the mean score for the MOOC group (M= 16.03) is noticeably higher than that for the MIM group (M= 11.16). Moreover, the results in Table 6 show that this difference between the two groups is statistically significant at 0.05 level of significance, t(38) = 8.17, p<0.05 (two-tailed). Therefore, the findings indicate that the effect of MOOC is significantly higher than that of MIM.

Table 6
Independent Samples t-test for the Post-test Scores of MOOC and MIM Groups

	Levene's Test for Equality of Variances		*t*-test for Equality of Means						
								95% CID	
MOOC vs. MIM	F	Sig.	*t*	df	Sig. (2-tailed)	MD	SED	L	U
Equal variances assumed	0.524	0.506	8.171	38	0.000	2.264	0.554	1.33	3.74
Equal variances not assumed			8.171	37.249	0.000	2.264	0.554	1.33	3.74

5. Discussion

The objective of the study was to compare the impacts of MOOC and MIM online platforms on the reading comprehension of EFL learners. The results showed a significant difference between the effects of the two platforms, indicating that while MOOC significantly increased learners' reading comprehension, MIM had no significant effect on their reading skills. Before the spread of the Covid-19 pandemic, language education in Iran was based on face-to-face instruction. During the pandemic, however, the turn to online instruction, especially through Shaad, Skyroom, WhatsApp, and Eitaa applications in Iran, motivated research studies on online language education and more effective ways of implementing online learning and teaching. The present study has sought the same objective, showing the effectiveness of one online platform (i.e., MOOC through Skyroom) over the other (i.e., MIM through WhatsApp).

The findings indicated the significant effectiveness of MOOC on L2 learners' reading comprehension. Social interaction has a major role in higher-level mental processing (Vygotsky, 1978) and this higher-level processing facilitates language learning. Therefore, teachers are expected to look for ways in which learners can have more social interaction. Using MOOCs, as shown effective in reading development in this study, is one fruitful option. As McAuley et al. (2010) maintained that MOOCs "support multiple modes of induction and

engagement, and … can draw prospective participants into increasingly rich and sophisticated levels of contribution" (p. 55). This can be specifically important in Iran, where English is taught as a foreign language and authentic data is not commonly interacted with. Online platforms, such as MOOCs, provide teachers and learners with opportunities to have social interaction with English speakers around the world. Especially in the case of reading which is very important in academic contexts, in countries in which English is the foreign language, the learners' engagement with the activities can be enhanced through negotiation of topics and meanings. Moreover, MOOCs can help learners set goals and benefit from social interaction to get support from other learners and the teacher to achieve the goals; therefore, using MOOCs is in line with one of the main objectives of education which is helping learners become autonomous. MOOCs can have positive influences on learners' self-regulation of learning by helping learners take responsibility for the choice of materials and how and when to use them (Conde Gafaro, 2019). The results of the analysis related to the first question indicated the significant positive effect of using MOOC on learners' reading comprehension. This finding confirms the ones by Wang et al. (2018) and Hashemifardnia et al. (2021) which reported the positive impact of the MOOC environment on learners' language learning.

A second finding of the study was that MIM had no significant effect on learners' L2 reading ability. The ineffectiveness of MIM might be attributed to psychological barriers learners may face when experiencing online education. In the case of WhatsApp, for instance, one of the problems might be the one mentioned by Stockwell (2008) who believed that learners may have difficulty differentiating between private time and study time. Otherwise, studies comparing synchronous and asynchronous teaching of reading comprehension (e.g., Shirkhani & Shiran, 2023) have shown effectiveness for both modes even with a more significant effect for asynchronous education. The results of this section are in line with the one by Andujar (2016) who found no significant effect of MIM on language learning by Spanish learners of English. However, this finding of the present study contradicts the results by Estarki and Bazyar (2016) and Hashemifardnia et al. (2018) which indicated the positive influence of using MIM on EFL learners' progress.

The last finding of the study was that the MOOC platform was significantly different from MIM in helping EFL learners' L2 reading comprehension progress. The implication is that learners benefit more from platforms like Skyroom that provide educational opportunities which are in some ways similar to face-to-face classes than those like WhatsApp which seems more informal in nature giving them everyday chatting possibilities. The Skyroom application allows the teacher to share screens and use an online whiteboard. In addition, it makes it possible for the teacher to lead the class and control the interactions by giving limited permissions to individuals at any time which makes the environment look more like the physical classes. In WhatsApp, however, although the teacher and any of the learners can share materials, there is no possibility of screen sharing and using whiteboards. Furthermore, anyone can post at any time which causes some chaos and sometimes the learners cannot follow the topic because the posts are not sent in a clear order. In this sense, WhatsApp might be better for asynchronous communication while Skyroom as the MOOC platform is mostly used for synchronous interaction during a specified class time. The results showed the priority of MOOC over MIM in improving learners' reading comprehension. This finding contradicts the results

by Ahmed et al. (2022) and Pan et al. (2022). In both of these studies, a MOOC platform and the WhatsApp application were compared concerning their impacts on learners' language development; Ahmed et al. studied the impacts on learners' reading comprehension while Pan et al. focused on the comparative effects of the two platforms on L2 learners' speaking anxiety and motivation. None of the studies found a significant difference between the two platforms though in both studies the two experimental groups outperformed the control groups.

6. Conclusion

The research inquired into the comparative effects of MOOC and MIM tools on Iranian EFL learners' reading comprehension. The findings showed a significant difference between the two online platforms revealing that MOOC had a statistically significant effect on the learners' improvement in reading comprehension while MIM had no significant effect. The study has a number of implications for language learners and teachers. Despite the great attention drawn these days to the usefulness and effectiveness of online tools in education, the findings imply that not all online platforms are necessarily helpful in language education. This means that teachers must always make wise decisions about whether to use online or face-to-face language instruction and when deciding to teach online, to choose the effective platform for each particular instructional objective and context. Various online platforms offer different sets of options which must be meticulously analyzed by teachers who embark on online education. For instance, Skyroom as a MOOC platform not only allows learners to communicate with each other and discuss reading topics, just as WhatsApp as a MIM platform does but also provides the teacher with the screen sharing option and defining a specific classroom time which requires the learners to attend the discussion synchronously. This can be an advantage for those learners who prefer having their study time separate from their free time. On the other hand, some learners may like tools such as WhatsApp which lets them check and respond the group messages at their convenience.

This study has some drawbacks which must be admitted. Firstly, the current study was conducted on Iranian intermediate EFL learners in language institutes. Therefore, the results cannot be generalized to learners of other nationalities, language proficiency levels, and educational contexts. Second, the study was carried out with two small groups since the researchers did not have access to more institutes from which to select participants with the same characteristics as those of the present study and to use the two platforms for teaching them. Third, due to the previous limitation, that is a limited number of participants, only one app was studied for each of the two platforms of concern.

The study has a number of recommendations for future studies. Considering the limited number of participants and their being limited to intermediate EFL learners in language institutes, other studies are suggested to do similar studies with students of other levels and in other educational contexts. In addition, it is recommended that future research use both female and male participants in larger numbers so that the findings can be generalized to EFL learners of both genders. Larger samples including both male and female learners also let the researchers compare the results across genders. Analyzing Scopus online journal articles on MOOCs for language learning published from 2009 to 2018, Fang et al. (2022) found speaking and vocabulary in MOOCs as undermined in related research and they found no relevant study on

grammar and pronunciation. Thus, other language skills and language components, such as speaking, writing, listening, grammar, and vocabulary, can be the focus of other comparative studies on the effects of online platforms on learners' progress in these areas of language. Moreover, future studies can focus on online platforms other than MOOC and MIM or on comparing any of these two with other platforms. In addition, some studies can address the psychological issues, including psychological obstacles which according to Stockwell (2008), learners need to overcome to help mobile learning come more into the mainstream. Fang et al. (2022) reported that motivation was one of the most explored topics while research on learning styles, self-confidence, self-efficacy, technology evaluation, and technology acceptance was rare. Thus, other studies can examine the effectiveness of incorporating online education into language teaching in relation to learner psychological factors, such as learning styles, self-efficacy, and perceptions about the implementation of technology in language learning. Furthermore, given the significant impacts of personality on learners' language learning in face-to-face classes, future research is suggested to investigate the effect of blended language education on the development of learners with certain learning styles. Last but not least, the role of digital literacy of both learners and teachers in the effectiveness of technology-assisted language teaching could be investigated in future studies.

Acknowledgments
We express gratitude to all the teachers and students who contributed to this research. In addition, we are thankful to the reviewers for their insightful comments that helped improve the quality of this paper.

Declaration of Conflicting Interests
The authors have no conflict of interest to disclose.

Funding
This research received no external funding.

References
Adibfar, E. (2022). English reading comprehension achievement as a result of Iranian EFL online flipped classrooms. *Journal of Research in Techno-based Language Education, 2*(4), 29-43. https://dx.doi.org/10.22034/jrtle.2022.362416.1036

Ahmed, A. A. A., Kumar, T., Iksan, M., Subrahmanyam, S., Kokhichko, A. N., Hussein Ali, M., Mhaibes Tuama, H. & Sadat Mousavi, M. (2022). Comparing the effectiveness of massive open online course (MOOC) and flipped instruction on EFL learners' reading comprehension. *Education Research International*, *2022*, 1-9. http://dx.doi.org/10.1155/2022/6543920

Alanazi, H., & Walker-Gleaves, C. (2019). Investigating student attitudes towards using Hybrid MOOCs in the higher education of Saudi Arabia. *Literacy Information and Computer Education Journal (LICEJ), 10*(1), 3140-3146. http://dx.doi.org/10.20533/licej.2040.2589.2019.0412

Alhadiah, A. (2020). EFL learners' experience of a MALL-based vocabulary learning tool. *Indonesian Journal of Applied Linguistics, 10*(2), 283-291. http://dx.doi.org/10.17509/ijal.v10i2.28590

Andujar, A. (2016). Benefits of mobile instant messaging to develop ESL writing. *System*, *62*, 63-76. http://dx.doi.org/10.1016/j.system.2016.07.004

Anohina, A. (2005). Analysis of the terminology used in the field of virtual learning. *Educational Technology & Society, 8*(3), 91-102. http://www.jstor.org/stable/jeductechsoci.8.3.91

Ashton, S., & Davies, R. S. (2015). Using scaffolded rubrics to improve peer assessment in a MOOC writing course. *Distance Education, 36*(3), 312-334. http://dx.doi.org/10.1080/01587919.2015.1081733

Bax, S. (2003). The end of CLT: A context approach to language teaching. *ELT Journal, 57*(3), 278-287. http://dx.doi.org/10.1093/elt/57.3.278

Cavus, N., & Ibrahim, D. (2009). M-Learning: An experiment in using SMS to support learning new English language words. *British Journal of Educational Technology, 40*(1), 78-91. https:// dx.doi.org /10.1111/j.1467-8535.2007.00801.x

Çetinkaya, Ş. E. (2020). Bringing classroom and outside world together: Mobile Instant Messaging via WhatsApp for extracurricular writing. *Qualitative Report*, *25*(12), 4319-4351. https:// dx.doi.org /10.46743/2160-3715/2020.4326

Chang, C. C. (2023). Enhancing EFL university students' readiness for learning academic content in English: The effectiveness of combining MOOCs with data-driven learning activities in an English language classroom. *English Teaching & Learning,* 1-26. https:// dx.doi.org /10.1007/s42321-023-00139-8

Chwo, G. S. M., Marek, M. W., & Wu, W. C. V. (2018). Meta-analysis of MALL research and design. *System*, *74*, 62-72. http://dx.doi.org/10.1016/j.system.2018.02.009

Conde Gafaro, B. (2019). Exploring self-regulated language learning with MOOCs. *Journal of Interactive Media in Education, 1*(14), 1-5. http://dx.doi.org/10.5334/jime.527

Cremades, R., Onieva-López, J. L., Maqueda-Cuenca, E., & Ramírez-Leiton, J. J. (2021). The influence of mobile instant messaging in language education: perceptions of current and future teachers. *Interactive learning environments*, *29*(5), 733-742. http://dx.doi.org/10.1080/10494820.2019.1612451

Doering, A., Cynthia, L., George, V., & Nichols-Besel, K. (2008). Preservice teachers' perceptions of instant messaging in two educational contexts. *Journal of Computing in Teacher Education*, *25*(1), 5-12. https:// dx.doi.org /10.1080/10402454.2008.10784603

Estarki, N. K., & Bazyar, M. (2016). The effect of MALL on pre-intermediate EFL learners' writing performance. *European Online Journal of Natural and Social Sciences*, *5*(2), 406-420.

Fang, J. W., Hwang, G. J., & Chang, C. Y. (2022). Advancement and the foci of investigation of MOOCs and open online courses for language learning: A review of journal publications from 2009 to 2018. *Interactive Learning Environments*, *30*(7), 1351-1369. http://dx.doi.org/10.1080/10494820.2019.1703011

Hashemifardnia, A., Namaziandost, E., & Rahimi Esfahani, F. (2018). The effect of using WhatsApp on Iranian EFL learners' vocabulary learning. *Journal of Applied Linguistics and Language Research, 5*(3), 256-267.

Hashemifardnia, A., Shafiee, S., Esfahani, F. R., & Sepehri, M. (2021). Effects of massive open online course (MOOC) on Iranian EFL learners' speaking complexity, accuracy, and fluency. *Computer-Assisted Language Learning Electronic Journal (CALL-EJ)*, *22*(1), 56-79.

Jung, I., & Lee, J. (2020). The effects of learner factors on MOOC learning outcomes and their pathways. *Innovations in Education and Teaching International, 57*(5), 565-576. http://dx.doi.org/10.1080/14703297.2019.1628800

Kartal, G. (2022). Evaluating a mobile instant messaging tool for efficient large-class speaking instruction. *Computer Assisted Language Learning*. http://dx.doi.org/10.1080/09588221.2022.2074463

Khanahmadi, A., & Nasiri, S. (2022). The effect of flipped classroom approach on the Iranian high school EFL learners' performance. *Journal of Research in Techno-based Language Education, 2*(2), 49-61. http://dx.doi.org/10.22034/jrtle.2022.150880

Lam, E. T., Wang, L. C. C., & Zhao, X. W. (2018). Students' perception of Quizlet as a Chinese learning tool: A preliminary study. *International Journal of Technology Enhanced Learning*, *10*(1-2), 128-136. http://dx.doi.org/10.1504/IJTEL.2018.088342

Li, R. (2024). Effects of mobile-assisted language learning on foreign language learners' speaking skill development. *Language, Learning and Technology, 1*(28), 1-26.

Liu, C. C., Guo, F. N., Wang, H. J., & Wang, Y. (2024). Research tendencies and designs of mobile technology-supported reading education: A systematic review of journal publication from 2005 to 2020. *International Journal of Mobile Learning and Organisation*, *18*(2), 215-238. http://dx.doi.org/10.1504/IJMLO.2024.137629

Martín-Monje, E. (2023). Language MOOCs as an emerging field of research: From theory to practice. In M. d. M. Suárez, & W. M. El-Henawy (Eds), *Optimizing online English language learning and teaching. English Language Education, vol 31* (pp. 109-127). Springer, Cham. http://dx.doi.org/10.1007/978-3-031-27825-9_6

Maruf, N., Husain, D., & Arifin, S. (2024). Cognitive processes in EFL learners' reading comprehension: A comparative analysis of WhatsApp and traditional group-driven reading. *Indonesian Journal of Applied Linguistics*, *13*(3), 623-635. http://dx.doi.org/10.17509/ijal.v13i3.66945

McAuley, A., Stewart, B., Siemens, G., & Cormier, D. (2010). The MOOC model for digital practice. https://scholar.google.com/scholar_lookup?title=The%20MOOC%20model%20for%20digital%20practice&author=A.%20McAuley&author=B.%20Stewart&author=G.%20Siemens&author=D.%20Cormier&publication_year=2010

Mellati, M., & Khademi, M. (2019). MOOC-based learning environments: A comparison of conventional, synchronous and flipped classrooms. In S. Jeong-Bae (Ed.), *Context-Specific Computer-Assisted Language Learning*, (pp. 50-74). Contributors and APACALL.

Mellati, M., & Khademi, M. (2020). MOOC-based educational program and interaction in distance education: Long life mode of teaching. *Interactive Learning Environments, 28*(8), 1022-1035. http://dx.doi.org/10.1080/10494820.2018.1553188

Mistar, I., & Embi, M. A. (2016). Students' perception on the use of WhatsApp as a learning tool in ESL classroom. *Journal of Education and Social Sciences, 4*, 96-104.

Mustiah, M., Dayat, D., & Sadek, N. (2024). The impact of Mobile-Assisted hybrid dynamic assessment on Arabic language leaners' reading comprehension performance. *Journal of Languages and Language Teaching*, *12*(1), 524-534. http://dx.doi.org/10.33394/jollt.v12i1.9158

Nurmahanani, I. (2024). The effect of text display in mobile reading to reading comprehension, attention, and cognitive. *International Journal of Instruction*, *17*(2), 29-48. http://dx.doi.org/10.29333/iji.2024.1723a

Padilla Rodriguez, B.C., & Armellini, A. (2017). Developing self-efficacy through a massive open online course on study skills. *Open Praxis, 9*(3), 335-343. http://dx.doi.org/10.5944/openpraxis.9.3.659

Palacios Hidalgo, F. J., Huertas Abril, C. A., & Gómez Parra, M. E. (2020). MOOCs: Origins, concept and didactic applications: A systematic review of the literature (2012–2019). *Technology, Knowledge and Learning, 25*(4), 853-879. http://dx.doi.org/10.1007/s10758-019-09433-6

Pan, H., Xia, F., Kumar, T., Li, X., & Shamsy, A. (2022). Massive open online course versus flipped instruction: Impacts on foreign language speaking anxiety, foreign language learning motivation, and learning attitude. *Frontiers in Psychology*, *13*. http://dx.doi.org/10.3389/fpsyg.2022.833616

Rai, L., Deng, C., Lin, S., & Fan, L. (2023). Massive Open Online Courses and intercultural competence: analysis of courses fostering soft skills through language learning. *Frontiers in Psychology, 14*. http://dx.doi.org/10.3389%2Ffpsyg.2023.1219478

Rostami, Z., & Kargozari, H. R. (2023). The Effects of Iranian EFL Learners' Individual Characteristics on their Perceptions toward Mobile Affordances. *Journal of Research in Techno-based Language Education*, *3*(2), 1-18. doi: 10.22034/jrtle.2022.333972.1025

Samir, A., & Tabatabaee-Yazdi, M. (2023). EFL Learners' Mobile Affordances: A Focus on Technophobia and Technophilia. *Journal of Contemporary Language Research*, *2*(3), 129-138.

Samsiah, B., & Azidah, A. Z. (2013). Adoption and application of mobile learning in the education industry. *Procedia-Social and Behavioral Sciences*, *90*, 720-729.

Shirkhani, S., & Shiran, S. (2023). The impacts of vocabulary instruction via synchronous and asynchronous social networks on Iranian EFL learners' reading comprehension. *Research in English Language Pedagogy*, *11*(2), 151-168. http://dx.doi.org/ 10.30486/relp.2022.1959756.1380

Sivabalan, K., & Ali, Z. (2019). Mobile instant messaging as collaborative tool for language learning. *International Journal of Language Education and Applied Linguistics, 9*(1) 99-109. http://dx.doi.org/10.15282/ijleal.v9.297

Soria, S., Gutiérrez-Colón, M., & Frumuselu, A. D. (2020). Feedback and Mobile Instant Messaging: Using WhatsApp as a feedback tool in EFL. *International Journal of Instruction*, *13*(1), 797-812. http://dx.doi.org/10.29333/iji.2020.13151a

Stockwell, G. (2008). Vocabulary on the move: Investigating an intelligent mobile phone-based vocabulary tutor. *Computer Assisted Language Learning, 20* (4), 365-83. http://dx.doi.org/10.1080/09588220701745817

Ullah Khan, I., Ayaz, M., & Khan, S. (2016). Using skype to develop English learners' speaking motivation. *Sci.Int. (Lahore), 28*(5), 41-48.

Ventura, P., & Martín-Monje, E. (2016). Learning specialized vocabulary through Facebook in a massive open online course. In A. Pareja-Lora, C. Calle-Martínez, P. Rodríguez-Arancón (Eds), *New perspectives on teaching and working with languages in the digital era* (pp. 117-128). Dublin: Research-publishing.net. http://dx.doi.org/10.14705/rpnet.2016.tislid2014.

Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes.* Harvard University Press.

Wang, J., An, N., & Wright, C. (2018). Enhancing beginner learners' oral proficiency in a flipped Chinese foreign language classroom. *Computer Assisted Language Learning*, *31*(5-6), 490-521. http://dx.doi.org/10.1080/09588221.2017.1417872

Zhang, D., & Pérez-Paredes, P. (2024). Chinese EFL learners' use of mobile dictionaries in reading comprehension tasks. *System*, *121*, 103221. http://dx.doi.org/10.1016/j.system.2024.103221

Zhu, T., Zhang, Y., & Irwin, D. (2024). Second and foreign language vocabulary learning through digital reading: A meta-analysis. *Education and Information Technologies*, *29*(4), 4531-4563. http://dx.doi.org/10.1007/s10639-023-11969-1