The Effect of Mobile-Assisted Teaching of Collocations on Reading Ability of Iranian EFL Learners

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Abstract

This study aimed to discover the effect of mobile-assisted teaching of collocations on Iranian EFL learners’ reading achievement. For this purpose, a PET test was given to 85 intermediate EFL learners as the proficiency test. After homogenization, 30 female and male students within the age range of 16 to 30 years old from an institute in Alborz Province were selected as the participants in the experimental group and 30 female and male students within the age range of 14 to 25 years old from another institute in Alborz province were selected as the participants in the control group, as well. A reading test was utilized as the pre-test to measure the participants’ reading achievement. The participants in the experimental group received mobile-assisted teaching of collocations through Flax Completing Collocation game while the participants in the control group received teacher instruction of the collocations existing in the game inside the classroom. To discover the effect of mobile-assisted teaching of collocations, a post-test, the same as the pre-test was given to the participants after the treatment. An independent t-test was run to compare the experimental and control groups’ means on the pre and posttest of reading achievement. The results indicated that the experimental group, after receiving mobile-assisted teaching of collocations, significantly outperformed the control group on the posttest of reading achievement. Regarding the findings of the study, the achieved results would help EFL teachers, learners, and material developers to be informed about the effect of mobile-assisted teaching of collocations on reading ability. Furthermore, this study presents some recommendations in future studies.

Keywords: Mobile-Assisted Teaching, Collocation Learning, Reading Ability
Introduction

It is believed that reading is a unique accomplishment which may be the most important acquired skill for any given person and directly has effect on all other achievements (Shepherd, 1980). According to Wagner, Schatschneider, and Phythian-Sence (2009), it requires the coordinated orchestration of just about every perceptual, linguistic, and cognitive process that has been identified. Because of its relatively recent origin in the timeline of human history, we know that reading has emerged without the direct benefit of evolutionary pressure. It has done so by conscripting the services of organs and functions related to vision, speech, and language that have proved beneficial to human existence over the years. Yet, unlike walking or the ability to vocalize, reading simply is not possible unless one is taught (or teaches oneself) how to do it.

The only purpose for reading is to comprehend the author’s message so Barnes (2015) believed that reading achievement is the most identified aim of students’ entering at language institutes. The individualized concern and thorough reading program end in greater reading success. The past three decades have seen considerable effort to improve reading instruction and reading outcomes for students. After reviewing these efforts, five crucial factors which are phonological awareness, phonics or word recognition, fluency, comprehension, and vocabulary were identified that students must develop competency in and the teachers should focus on in instruction (Strucker & Davidson, 2003).

As mentioned above, vocabulary knowledge is instrumental in reading achievement. Laufer and Goldstein (2004) described vocabulary knowledge as the sum of interrelated sub-knowledges: knowledge of spoken and written form, morphological knowledge, collocational and grammatical knowledge, connotative and associational knowledge, and the knowledge of social or other constraints to be observed in the use of words. Among these subknowledges, collocational knowledge and teaching collocations are the concerns of this study.

Research on collocations has been common for decades and aims to discuss the theoretical and pedagogical perspectives of collocations. The theoretical studies of collocations can be viewed from three perspectives: lexical, syntactic, and semantic. Linguists studying collocations at the lexical level regard collocations as the linear and syntagmatic co-occurrence of lexical items. Collocations are also discussed in terms of their syntactic restrictions and semantic restrictions (Nation, 2001).

On the pedagogical level, linguists and language educators have carried out empirical studies on measuring collocational knowledge (Hsu, 2010), detecting development of collocational knowledge at different levels (Gitsaki, 1999), and discovering the common collocational errors that the second language learners make.
(Howarth, 1998). Language educators also provide methods of teaching collocations in classrooms (Lewis, 2000).

Most of the experimental research on collocations explores the use of collocations on productive language (Attar & Allami, 2013; Ashouri & Mashhadi Heidar, 2015; Mousavi & Darani, 2018) especially in writing, but few empirical studies discuss collocations with respect to receptive skills (reading and listening) and how collocation instruction may specifically benefit language learners’ reading comprehension. However, no previous studies have examined the effect of collocation learning through mobile-based games on reading ability of EFL learners. Therefore, the purpose of this study was to set up a mobile-assisted language teaching (MALT) and learning (MALL) model to teach collocations and investigate whether mobile-assisted teaching of collocations has any significant effect on improving reading comprehension of Iranian EFL learners.

Review of the Related Literature

Mobile-Assisted Language Learning (MALL)

In recent years, because of the fast development and popularity, mobile technology has become an essential element of our daily life. It has changed our lifestyle, and more importantly, our learning style. The way students communicate and gather information relies heavily on the use of mobile devices. Mobile technologies provide plentiful efficient uses in language teaching and learning. Rather than preventing students from using their cell phones in the classroom, teachers should find a way to accommodate mobile devices in class, and to make students ready for real world learning experiences (Gangaiamaran & Pasupathi, 2017).

Chinnery (2006) defined MALL as the sub-area of m-learning which refers to teaching and learning with the use of mobile devices. However, Bezircilioğlu (2016) believed that it is not easy to define MALL in one way as it has been one of the most complicated fields which is growing at a very fast rate. In broad terms, MALL is the integration of mobile devices into language learning process. Another factor which should be taken into account is that in today’s world, language learning cannot be bounded to the walls of the classroom with limited hours. Actually, that must be the situation if we are trying to form learner autonomy in our classes. According to Ahmadi and Reza (2018), since knowledge is achievable through the internet, the continuity of language learning is easier.

Many scholars (Bezircilioğlu, 2016; Dağdeler, K. onca, & Demiroz, 2020; Gangaiamaran & Pasupathi, 2017; Yurdagul & Oz, 2018) identified and reviewed mobile learning, the use of mobile devices, and its effective applications in a language learning environment. However, Kukulska-Hulme (2005) pointed out that MALL is different from computer-assisted language learning in its use of personal,
portable devices that enable new ways of learning, emphasizing continuity or spontaneity of access and interaction across different contexts of use. From that perspective, it can be said that MALL is different from computer-assisted language learning (CALL) in that mobile learning is learner-led rather than teacher-led.

Chinnery (2006) provided a perception about mobile-assisted language learning as a personalized activity which is flexible and adaptable to the learner’s needs. Considering the flexible nature of MALL, we can see that learners get more free and autonomous in their learning process. There is a fact that videos or cassettes are already available in language learning classrooms, however MALL has a different and unique characteristic that is, mobility (Kukulska-Hulme, 2005).

According to Bezirciologlu (2016), among the most noted affordances for MALL is ubiquitous access to learning anytime at any place that the user has reception. Mobile-assisted language learning (MALL) provides the advantages that students can learn anywhere and anytime with their mobile devices. The idea of learning English anytime, anywhere with the use of mobile devices can motivate the students because of the fact that they feel that they have the responsibility of their own learning process, which makes them feel that they have the authority over the process.

Polakova and Klimova (2019) also tried to discover if the students using mobile devices in the class got higher scores in tests than the students using traditional methods. The methods of this study included pre- and post-tests, as well as a questionnaire survey. The results of this study show that the use of a mobile application had a positive effect on students’ achievement results as far as the vocabulary learning was concerned. The students using the app seemed to maintain more words than the students in the control group. Furthermore, the results of the questionnaire revealed that using the app was more enjoyable for students than the traditional teaching methods.

In a more recent study, Dagdeler, Konca, and Demiroz (2020) tried to find out the effectiveness of mobile applications in collocation learning of EFL learners. This study used a quasi-experimental research design involving an experimental and a control group with 73 participants studying at two state universities in Turkey. The findings showed that there was a significant difference between the experimental group and control group in terms of receptive vocabulary knowledge in the post-test. However, any difference between groups in retention tests was found. At the dimension of productive vocabulary knowledge, no difference between the use of mobile applications and worksheets in terms of productive vocabulary knowledge was seen. Thus, it was concluded that using mobile applications was an effective way of improving vocabulary knowledge receptively for only short-term memory.

Collocations
Altawairesh (2017) defined collocation as “a pair or group of words that are often used together. These combinations sound natural to native speakers, but students of English have to make a special effort to learn them because they are often difficult to guess” (p. 6). According to Hill (2000), collocations explain the connection between words that often appear together. They are native speakers to predict the non-native’s message. When learners write and speak, if they use collocations central to their topic, their readers or listeners are more probable to understand what they are saying.

According to Lackman (2011), teaching collocations is very important and useful in English because of two main reasons. First, 90% of native speaker speech is made up of just 2000 words which is the vocabulary knowledge of an intermediate learner. What makes an intermediate learner different from a native speaker is not the knowledge of those 2000 words but the knowledge of how to join them together. So, the best way to bring learners up to native speaker level is teaching them to join words they already know. Second, the way a word collocates can explain the meaning of that word.

Nation (2001) stated that the use of collocations helps decrease processing time, and hence leads to speed when communicating and this point has been claimed to be the main advantage of chunking. Nattinger and DeCarrico (1992) have further described collocations as pre-packaged building blocks. This analogy throws light on two important characteristics of collocations; one is that they are packed up, stored in the mind as single units and ready for the language user to use whenever needed. They are also building blocks which gives a sense that they provide the language user with a solid base to stand on when using the language, therefore they increase his/her confidence and fluency.

Nattinger and DeCarrico (1992) explained that with the use of collocations, students would not have to go about reconstructing the language each time they want to say something. Furthermore, collocations empower the interlocutors to conduct their attention to the larger structure of the discourse. Learners need collocations and idiomatic expressions mainly for communication and lack of them can disrupt communication. As Altuwairesh (2017) argued that collocations and chunks take up an intermediate zone between vocabulary and grammar, these building blocks can be said to link the gap between grammar and vocabulary.

Another important fact is that language is full of collocations and collocational knowledge is part of the native-speakers’ competence. This accounts for what Nesselhauf (2003) called “collocational mismatches,” which, according to him, are frequent in the language production of second language learners. This problem L2 learners deal with might be because of the element of unpredictability, whether grammatical or lexical, which is characteristic of collocations.

Having such a high status in the language, language teachers can no longer ignore this essential part of language learning. The teaching of chunks advances
motivation which is a good reason to focus on them in language classroom (Nattinger & DeCarrico, 1992).

Learning Collocations with FLAX Apps

FLAX is a system that was primarily developed to support collocation learning through web-and mobile-based games that imitate popular language activities in classroom. The games are created from a massive collocation database that is automatically built from Wikipedia text. The value of Wikipedia’s data has long been clear, with its articles being continually refreshed, but nonetheless frequent. According to Nothman, Ringland, Radford, Murphy, and Curran (2013), many efforts have been done to use Wikipedia not just as source of information but also as extensive and contemporary corpus for language learning recently. FLAX extracts Wikipedia texts and provides language teachers with options to set particular parameters when designing games. In such a way, the games are controlled by the teacher both in terms of content, form, and level of difficulty or complexity.

FLAX Collocation Learning Games

Some collocation games have been designed and implemented that incorporate the common learning strategies that promote raising awareness (e.g., help students notice language patterns), improving precision (e.g., help students express ideas more precisely) and improving motivation (e.g., help students maintain high motivation) (Yu, Wu, Witten, & König, 2016).

- Collocation Guessing lets learners try their hand at recognizing words from the company they keep and allows the teacher to select a target word and a number of associated collocations. The target word is removed and the associated collocations are revealed one by one; players must guess the target word as fast as possible. For example, given this list: plain, dark, white, bitter, milk, bar of, learners guess the word that collocates with all of them. (The answer is clear to chocolate lovers!). Figure 1 illustrates how the game works on an Android mobile phone.

![Figure 1. FLAX Collocation Guessing Mobile Interface (Yu, Wu, Witten, & König, 2016)]
Collocation Dominoes imitates the traditional game of dominoes where the last word of the previous collocation becomes the first word of the next collocation.

family life – life cycle – cycle time – time period...

English word classes are extremely flexible: many verbs can be used as nouns and many nouns can be used as adjectives. This game is designed to help learners observe these language features and collocates of particular words. In this case, the starting word “family” and the ending word “period” are given; the learner goes on by dragging a collocate listed at the top and dropping it into an empty box to form a collocation. Figure 2 illustrates how the game works on an Android mobile phone.

- Related Words is a popular practice in language classrooms; the goal is to help learners recognize words with similar meanings, or words that have the same usage (e.g. reserve vs. preserve, effective vs. efficient and identify vs. recognize) by examining their common collocates. Teachers choose two or three related words that they wish to target, and FLAX retrieves a list of collocates of these target words from the collocation database. The player drags a target word and drops it into the appropriate box to form valid collocations. Figure 3 illustrates how the game works on an Android mobile phone.
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- **Collocation Matching** is similar to Related Words; the difference is that Collocation Matching is planned for use with several words with typically just one collocation for each, whereas Related Words is planned to focus on two (or three) words, with several collocations of each. Teachers choose a set of collocations with the same syntactic pattern, splits each into its left and right component, and shuffles the two sets of components. For example, *slice of toast, part of the progress, drop of water, piece of information* might be presented as: *slice of information, part of toast, drop of the progress, piece of water*. Player must rematch them. Figure 4 illustrates how the game works on an Android mobile phone.

![Figure 4. FLAX Collocation Matching Mobile Interface (Yu, Wu, Witten, & König, 2016)](image)

- **Collocation Completing** is a free software application from the Kids subcategory, part of the Games and Entertainment category. The app is currently available in English. The program can be installed on Android. In this game, there is a word missing from a collocation. The collocation is shown in green. A selection of words is supplied at the top of the screen. One of the words will fit the collocation. Player must drag and drop one of the supplied words into the empty space to complete the collocation. Figure 5 illustrates how the game works on an Android mobile phone.

![Figure 5. FLAX Collocation Completing Mobile Interface (Yu, Wu, Witten, & König, 2016)](image)
Reading

Reading is a mental process. It is also an interactive process between the reader and the writer. There are many definitions of reading. According to Longman Dictionary of Applied Linguistic (Richards & Schmidt, 2010), reading is a) Noticing a written text in order to understand its contexts. The understanding that result is called reading comprehension, b) Saying a written text aloud. It can be done with or without understanding of the content. Barnes (2015) defined reading as a two way interaction in which information is interchanged between the reader and the author. However, Baker and Brown (1984) defined reading as a process of building meaning by interacting with text; as individuals read, they use their former knowledge along with signs from the text to build meaning. There are two main components in reading: word decoding and language comprehension. Word decoding (or reading) refers to the ability to read single words out of context. Language comprehension refers to our ability to understand words, sentences, and texts (Gough & Tunmer, 1986).

Kintsch (1988) states that reading comprehension is the product of processes that run during reading to produce a mental representation of the situation explained by the text, referred to as a situation model. The resulting mental representation contains information presented by the propositional content of the text that is integrated with the reader’s knowledge to provide an increasing understanding of what is read. In addition, Kruidenier (2002) expands that reading comprehension is an active process and the reader must interact and be involved with the text for it to work well. During the time that comprehension happens, words are decoded and joined with their meaning in the reader’s memory and phrases and sentences are processed rapidly and fluently enough to that the meanings derived from one world, phrase, or sentence are not lost before the next is processed.

According to Barnes (2015), there are two approaches to understanding and modeling reading comprehension: Process models such as the Construction-Integration model, the Landscape model, and the Structure-Building Framework explain the iterative and dynamic processes used to build representations of the text during reading. In these models, cognitive processes are involved to keep both local and general textual coherence through the joining of pronouns with their referents, the integration of information between sentences both beside in the text and across larger text distances, and the retrieval and integration of information from the text with one’s store of general world knowledge or certain topic knowledge. In component skills models, the hypothesized component skills function as sources of variance in describing performance on reading comprehension tasks. As Gough and Tunmer (1986) proposed in their model (the Simple View of Reading (SVR), reading comprehension is the product of decoding and language comprehension. The original SVR neither indicates what features of language are subsumed under
the language comprehension component nor the relative importance of any component skills for comprehension.

**Research Question**

In this study one research question was proposed to serve the objectives of the study:

RQ1. Does the mobile-assisted teaching of collocations have any effect on EFL learners’ reading achievement?

According to the only research question of this study, the research hypothesis was:

HO1. The mobile-assisted teaching of collocations has no significant effect on EFL learners’ reading achievement.

**Method**

This experimental research conducted to discover and find the possible effect of mobile-assisted teaching of collocation on Iranian EFL students’ reading comprehension. Therefore, this section provides the information about participants, materials, instruments, procedure, and design of the study. In addition, at the end of the section, the way research data was analyzed is presented.

**Participants**

The researcher selected 60 intermediate EFL learners out of 85, randomly assigned into 2 groups of mixed-gender. The participants’ age in the control group was between the range of 14 to 25 years old who were mostly high school and university students enrolled in an institute in Alborz province. The participants’ age in the experimental group was between the range of 16 to 30 who were enrolled in another institute in Alborz province. The participants were selected with a convenience sampling method. The researcher assigned the participants into two groups, one experimental group (n = 30) and one control group (n = 30). The demographic information of the experimental group and the control is presented in Table 1 and Table 2.

**Table 1. The Participants’ Demographic Information in Experimental Group**

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>23</td>
</tr>
<tr>
<td>Male</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
</tr>
</tbody>
</table>
Table 2. The Participants’ Demographic Information in Control Group

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>17</td>
</tr>
<tr>
<td>Male</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
</tr>
</tbody>
</table>

As can be seen in Table 1 and Table 2, the participants in both experimental and control groups were mixed regarding their gender. According to these tables, 77 percent of the participants in the experimental group were women and 23 percent were men. While 57 percent of the participants in the control group were women and 43 percent were men.

Instruments

In this quantitative research, a proficiency test was used to check the participants’ proficiency in English who were passing the intermediate levels. A reading test was also used as pre and post-tests to collect the required data of this study. In addition, Flax Completing Collocations was used as the treatment in this study. Furthermore, WhatsApp Messenger which is a freeware and cross-platform messaging service was employed, as well. Each instrument will be discussed below.

Proficiency Test

The reading paper of PET test (Cambridge University Press, 2010) was given to the examinees of this study as the proficiency test to check their proficiency in English. This test was made up of four parts (35 questions) developed to test the examinees’ English knowledge and the examinees had 60 minutes to answer all of the questions (Appendix A).

For the first part of this test (questions 1-5), the examinees looked at the text in each question and then marked the correct answer. For the second part (questions 6-10), the examinees read about some people’s favorite TV programs and then descriptions of eight TV programs on the next page. Finally, they decided which program would be the most suitable for those people. For the third part (questions 11-20), the examinees looked at ten sentences about a hotel. Then they read a text on the next page to decide if each sentence is correct or incorrect. For the fourth part (questions 21-25), the examinees read a text and five questions below the text and then marked the correct answer for each question. Finally, for the fifth part (questions 26-35), the examinees read a text with ten spaces and chose the correct word for each space.

In Cambridge tests, candidates receive an individual score for each of the four skills- reading, writing, listening, speaking, and use of English. In the live exams,
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each of the skills and Use of English are equally weighted, and a candidate’s overall score is calculated by adding all of the individual scores together and dividing by five. Table 3 was used in this study as guidance to convert practice test scores to Cambridge English Scale Scores (www.Cambridge Assessment English).

Table 3. The Guidance to Convert Practice Test Scores to Cambridge English Scale Scores (www.Cambridge Assessment English)

<table>
<thead>
<tr>
<th>Practice Test Score</th>
<th>Cambridge English Scale Score</th>
<th>CEFR Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>170</td>
<td>Level C1</td>
</tr>
<tr>
<td>32</td>
<td>160</td>
<td>Level B2</td>
</tr>
<tr>
<td>25</td>
<td>140</td>
<td>Level B1</td>
</tr>
<tr>
<td>15</td>
<td>120</td>
<td>Level A2</td>
</tr>
<tr>
<td>7</td>
<td>102</td>
<td>Level A1</td>
</tr>
</tbody>
</table>

Pre-Test and Post-Test

A reading test was designed by the researcher to be used as the pre and post-tests. This test consists of 4 texts which were downloaded from the internet. Each text includes at least 5 collocations of the Flax Completing Collocations. The participants of this study had 45 minutes to answer the 20 questions of the test.

For the first part of this test (questions 1-5), the participants read a text (http://web2.uvcs.uvic.ca/elc/studyzone/490/wchild/wchild21.htm) and then chose the best preposition for each collocation. For the second part (questions 6-10), the participants read a text (http://www.esl-lounge.com/student/reading/3r1-learn-english-reading.php) and then chose the best word of each collocation. For the third part (questions 11-15), the participants read a text (http://www.examenglish.com/B1/b1_reading_free_time) and then filled in the blanks with the given words. Finally, for the last part (questions 16-20), the participants read a text (http://profesornativogratis.com/phrasal-verbs-1) and then matched the collocations with their meanings.

To check the reliability of the test, it was piloted to 30 intermediate EFL learners of an institute in Alborz province. The examinees’ answers were collected by the researcher and the KR-21 formula was used to calculate the reliability of the test. To do that, mean (X) and variance (V) were calculated by the researcher as below:

\[
\sum x = 504, \quad X = \frac{\sum x}{n} = \frac{504}{30} = 16.8 \approx 17
\]

\[
SD = \sqrt{\frac{\sum (x-\bar{x})^2}{n-1}} = \sqrt{\frac{267}{29}} = \sqrt{9.2}
\]

\[
V = SD^2 = 9.2
\]

\[
r_{Kr-21} = \left( k \right) \left( 1 - \frac{x(k-x)}{KV} \right) = \left( 20 \right) \left( 1 - \frac{17(20-17)}{20 \times 9.2} \right) = 0.74
\]
To check the readability of the four texts in this test, the Flesch Reading Ease was used. The Flesch Reading Ease score is a tool for calculating the approximate reading level of English-language content. Accordingly, the reading ease scores of text 1, text 2, text 3, and text 4 were respectively 72.1, 71.3, 76.5, and 73.6. Since a score of 60-75 means that the content is perfect for readers at or above an 8th or 9th grade reading level, it was decided that the reading test was suited for intermediate readers.

**Flax Completing Collocations**

Flax is an interactive open source system which has been developed for teaching and learning a second language on mobile devices. It includes several language games that incorporate the common learning strategies that facilitate raising awareness (e.g., help students notice language patterns), enhancing precision (e.g., help students express ideas more precisely) and improving motivation (e.g., help students maintain high motivation). These games are fun to play and mimic traditional classroom activities such as Collocation Matching, Collocation Guessing, Collocation Dominoes, Related Words and Completing Collocations.

Flax Completing Collocations is both vision and a tool that teachers can use to create language learning exercises and promote their students’ language production. This game enables teachers to create charming activities, to attract learners into interesting language play, to provide fingertip access to huge collection of authentic phrases, and to design activities easily by automatically transforming existing language material (Yu, Wu, Witten, & König, 2016). Therefore, it was employed in this study.

In Completing Collocations, the collocation is split into two partial phrases. There are seven exercises in the game: verb noun, noun noun, verb preposition noun, noun of noun, adjective to verb, adjective preposition noun, and adjective noun. To begin playing, the participants clicked on one of the exercises in the list, then dragged and dropped the partial phrase to make a collocation.

**WhatsApp Messenger**

In the present study, the researcher employed WhatsApp Messenger to keep in touch with the participants in the experimental group. WhatsApp Messenger was used to send the link of Flax Completing Collocations to the participants.

**Procedure**

This was a quantitative study with 30 participants in the experimental group and 30 participants in the control group who were selected non-randomly. The procedure of this study was conducted as the following:

**Phase I:** As the first step of this study, to select the participants of the experimental group, the researcher administered the reading section of PET test as the proficiency test to a group of 45 EFL learners who were passing the intermediate
levels in an institute in Alborz province. This test was also administered to a group of 40 EFL learners who were passing the intermediate levels in another institute in Alborz province to select the participants of the control group. The highest score for the test is 35. Those examinees who got 20+ were selected as the participants for the experimental and control groups.

**Phase II:** As the second step, the examiner administered a reading test as the pre-test to the participants of both experimental and control groups.

**Phase III:** In this phase of the study, the game of Flax Completing Collocations was sent to the participants in the experimental group. These participants were asked to play and complete the game. The researcher sent the link of the game to the participants of the experimental group and pursued their progress through WhatsApp Messenger.

The participants in the control group received a set of lesson plans including collocations which are presented in Flax Completing Collocations. Therefore, the collocations were employed in lesson plans and taught for seven sessions. Table 4 shows the procedure with the control group in details.

**Table 4.** The Procedure with the Control Group

<table>
<thead>
<tr>
<th>Session</th>
<th>Procedure</th>
<th>List of Collocations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Proficiency Test</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Pre-Test</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Teaching collocations: verb + noun</td>
<td>have dinner/ miss family/ check throat/ improve listening/ retain culture/ keep your first language/ encourage the children/ provide an opportunity/ pass laws/ practice the situation</td>
</tr>
<tr>
<td>4</td>
<td>Teaching collocations: noun + noun</td>
<td>school uniforms/ afternoon tea/ summer holiday/ language development/ time limit/ computer games/ seat belt/ vegetable garden/ family connection/ phone book</td>
</tr>
<tr>
<td>5</td>
<td>Teaching collocations: verb + preposition + noun</td>
<td>storm out/ live with his son/ listen to music/ stay on farms/ change with the time/ ride on the free bus/ break down/ take on/ run out of/ pull out</td>
</tr>
<tr>
<td>6</td>
<td>Teaching collocations: noun + of + noun</td>
<td>hundreds of websites/ knowledge of agriculture/ myth of creation/ purpose of this exercise/ types of food/ number of words/ roles of men and women/ maintenance of their first language/ point of view/ history of their people</td>
</tr>
<tr>
<td>7</td>
<td>Teaching collocations: adjective + to + verb</td>
<td>difficult to save money/ important to retain/ able to separate/ hard to read/ possible to see/ easy to connect</td>
</tr>
<tr>
<td>8</td>
<td>Teaching collocations: adjective + preposition + noun</td>
<td>open to the public/ free with language/ stronger with the revival/ full of words/ perfect for parapenting/ worse with the arrival/ ready for the hairdressing/ happy in the first months/ central to their culture</td>
</tr>
<tr>
<td>9</td>
<td>Teaching collocations: adjective + noun</td>
<td>traditional legal marriage/ special occasions/ exciting adventures/ spare time/ informal vocabulary/ further changes/ regular meetings/ official languages/ cultural identity/ active holiday</td>
</tr>
<tr>
<td>10</td>
<td>Post-Test</td>
<td></td>
</tr>
</tbody>
</table>
Phase IV: Finally, in the last phase, all the participants in the experimental and control groups took the reading test again after 7 sessions as the post-test.

Design
In planning a study, selecting an appropriate design is crucial. The design which was used in this study was the pre-test/post-test quasi-experimental design due to the fact that the participants were not selected randomly and it was a convenience sampling model. This study was done with one experimental group and one control group. According to the purpose of this study, the independent variable in this study was mobile-assisted teaching of collocations and the dependent variable is the participants’ reading comprehension.

Data Analysis
In the present study, data were analyzed using the Statistical Packages for Social Science, 16.0 (SPSS). The statistical data obtained from the PET test to check the participants’ homogeneity were also examined using SPSS programs. In measuring the quantitative data collected in this study, means and standard deviations of the pre- and post-test scores of the experimental and control groups were compared using Independent Samples t-test.

Results and Discussion
Overview
This study aims at investigating the effect of mobile-assisted teaching of collocations on EFL learners’ reading achievement. To achieve these objectives, the following research question and its null-hypothesis were formulated;

Does the mobile-assisted teaching of collocations have any effect on EFL learners’ reading achievement?

The following null-hypothesis will be explored in this chapter; Mobile-assisted teaching of collocations does not have any effect on EFL learners’ reading achievement.

Testing Normality of Data
The data collected in this study were analyzed using independent-samples t-test which has two assumptions; normality of the data and homogeneity of variances of group. The normality of the data was probed by computing the ratios of skewness and kurtosis indices over their standard errors (Table 5). Since these absolute values of the ratios were lower than 1.96, it can be concluded that the normality assumption was retained.
Table 5. Descriptive Statistics; Testing Normality of Data

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>Skewness Statistic</th>
<th>Skewness Std. Error</th>
<th>Kurtosis Statistic</th>
<th>Kurtosis Std. Error</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>PET</td>
<td>30</td>
<td>0.422</td>
<td>0.427</td>
<td>-0.305</td>
<td>0.833</td>
<td>-0.37</td>
</tr>
<tr>
<td>Experimental</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pretest</td>
<td>30</td>
<td>0.115</td>
<td>0.427</td>
<td>-0.877</td>
<td>0.833</td>
<td>-1.05</td>
</tr>
<tr>
<td>Posttest</td>
<td>30</td>
<td>-0.774</td>
<td>0.427</td>
<td>-0.367</td>
<td>0.833</td>
<td>0.44</td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PET</td>
<td>30</td>
<td>0.371</td>
<td>0.427</td>
<td>-0.736</td>
<td>0.833</td>
<td>-0.88</td>
</tr>
<tr>
<td>Pretest</td>
<td>30</td>
<td>0.044</td>
<td>0.427</td>
<td>-0.474</td>
<td>0.833</td>
<td>-0.57</td>
</tr>
<tr>
<td>Posttest</td>
<td>30</td>
<td>-0.493</td>
<td>0.427</td>
<td>-0.706</td>
<td>0.833</td>
<td>-0.85</td>
</tr>
</tbody>
</table>

KR-21 Reliability Indices

Table 6 displays the descriptive statistics and KR-21 reliability indices for PET, and pretest and posttest of reading achievement. The results indicated that the three tests enjoyed reliability indices of .86, .85 and .76.

Table 6. Descriptive Statistics and KR-21 Reliability Indices

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Variance</th>
<th>KR-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proficiency</td>
<td>60</td>
<td>4</td>
<td>35</td>
<td>19.53</td>
<td>7.156</td>
<td>51.202</td>
<td>0.86</td>
</tr>
<tr>
<td>Pre-Test</td>
<td>60</td>
<td>1</td>
<td>20</td>
<td>10.53</td>
<td>5.117</td>
<td>26.185</td>
<td>0.85</td>
</tr>
<tr>
<td>Post-Test</td>
<td>60</td>
<td>5</td>
<td>20</td>
<td>13.42</td>
<td>4.010</td>
<td>16.078</td>
<td>0.76</td>
</tr>
</tbody>
</table>

Homogenizing Groups on PET

An independent t-test was run to compare the experimental and control groups' means on the PET in order to prove that they enjoyed the same level of general language proficiency prior to the main study. Based on the results displayed in Table 7 it can be claimed that the experimental (M = 20.73, SD = 6) and control (M = 18.33, SD = 8.04) groups had had fairly close means on the PET test.

Table 7. Descriptive Statistics; PET by Groups

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>30</td>
<td>18.33</td>
<td>8.070</td>
<td>1.473</td>
</tr>
<tr>
<td>Experimental</td>
<td>30</td>
<td>20.73</td>
<td>6.005</td>
<td>1.096</td>
</tr>
</tbody>
</table>

The results of the independent t-test (t (58) = 1.30, p = .196, 95 % CI [-1.27, 6.07], Cohen’s d = .338 representing a weak effect size) (Table 8) indicated that
there was not any significant difference between the two groups’ mean scores on the PET. Thus it can be claimed that they enjoyed the same level of general language proficiency prior to the main study.

The negative 95% lower bound confidence interval of -1.27 indicated that the difference between the two groups’ means on the PET could have been zero. Thus the above mentioned conclusion as no significant difference between the two groups’ means was correctly made.

It should also be noted that the assumption of homogeneity of variances was met (Levene’s F = 2.38, p = .128). That is why the first row of Table 8, i.e. “Equal variances assumed” was reported.

**Table 8. Independent Samples t-test; PET Test by Groups**

<table>
<thead>
<tr>
<th>Levene’s Test for Equality of Variances</th>
<th>T-Test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>---</td>
<td>------</td>
</tr>
<tr>
<td><strong>Equal Variances Assumed</strong></td>
<td>2.383</td>
</tr>
<tr>
<td><strong>Equal Variances Not Assumed</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 6. Mean on Pet Test by Groups**
Exploring Null-Hypothesis

An independent t-test was run to compare the experimental and control groups’ means on the posttest of reading achievement in order to probe the only null-hypothesis raised in this study. Based on the results displayed in Table 11 it can be claimed that the experimental group (M = 14.97, SD = 3.85) had a higher mean than the control group (M = 11.87, SD = 3.58) on the posttest of reading achievement.

Table 9. Descriptive Statistics; Posttest of Reading Achievement by Groups

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>30</td>
<td>11.87</td>
<td>3.589</td>
<td>.655</td>
</tr>
<tr>
<td>Experimental</td>
<td>30</td>
<td>14.97</td>
<td>3.855</td>
<td>.704</td>
</tr>
</tbody>
</table>

The results of the independent t-test (t (58) = 3.22, p = .002, 95 % CI [1.17, 5.02], Cohen’s d = .834 representing a large effect size) (Table 12) indicated that the experimental group, after receiving mobile-assisted teaching of collocations, significantly outperformed the control group on the posttest of reading achievement. Thus it can be claimed that the null-hypothesis was rejected.

Table 10. Independent Samples T-Test; Post-test of Reading Achievement by Groups

<table>
<thead>
<tr>
<th>Levene’s Test for Equality of Variances</th>
<th>t-test for Equality of Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Sig.</td>
</tr>
<tr>
<td>---</td>
<td>------</td>
</tr>
<tr>
<td>Equal Variances Assumed</td>
<td>0.018</td>
</tr>
<tr>
<td>Equal Variances Not Assumed</td>
<td>3.22457.05</td>
</tr>
</tbody>
</table>

It should also be noted that the assumption of homogeneity of variances was met (Levene’s F = .018, p = .893). That is why the first row of Table 12, i.e. “Equal variances assumed” was reported.
Discussion

This study examined the effect of mobile-assisted teaching of collocations on EFL learners’ reading achievement. The only research question in this study was intended to find out whether mobile-assisted teaching of collocations has any effect on EFL learners’ reading achievement. The statistical analysis of the pretest and posttest scores of both experimental and control groups was utilized to investigate the research question. The results showed that the experimental group who received mobile-assisted teaching of collocations was more successful than the control group who received teacher’s instruction of collocation on the posttest of reading achievement. In other words, it was found out that mobile-assisted teaching of collocation had significant positive effect on EFL learners’ reading achievement.

Although research has been rarely done to find out the effect of mobile-assisted teaching of collocation on EFL learners’ reading achievement, the findings of the present study are to some degree in line with the theories in the literature about teaching collocations. As, it was found out that the reading achievement of the participants in the control group was improved after receiving the collocation instruction in the current study, it can be said that the findings of the present study were similar to the results of the previous studies in this respect that teaching collocations is an effective strategy which positively contributes to the development of reading comprehension.

On the whole, the findings of this study have supported the previous studies on collocation whose results emphasizes the positive effect of collocation teaching on foreign language learning in many aspects. However, this study revealed that mobile-assisted teaching of collocations had more positive effect than teacher’s instruction on learners’ reading achievement.
Regarding the findings mentioned above, it can be noted that mobile-assisted teaching of collocations had more effect on learners’ reading achievement than teacher’s instruction of collocations. Therefore, the reading achievement of learners who have received mobile-assisted teaching was significantly improved.

**Conclusion**

There are not so many longitudinal and cross-sectional studies about MALL, mobile learning or any devices through mobile ones. This situation can be because of the quick cycle and transformation of mobile devices of technology itself. Although Kukulska-Hulme (2005) submitted that mobile language learning may not yet be currently reflected in the curricula of English language teacher qualifications or professional development frameworks, there is evidence of interest in mobile language learning from educational technology developers, publishers and teachers.

In a study which was conducted by Yukselir (2017), it was found that using mobile technology as a tool in foreign language teaching increases learners’ language proficiency levels and also allow them to increase their awareness in the language learning process. Furthermore, Nemat Tabrizi (2016) investigated the effect of collocation instruction via short message service (SMS) on the acquisition of collocations by Iranian intermediate EFL learners. He found that the experimental group after receiving collocation instruction via short message service significantly outperformed the control group who received instruction inside the classroom on the posttest of collocations.

It can be seen that the findings of this study have confirmed and supported previous research on the effectiveness of mobile-assisted teaching on learners’ English learning. As it was mentioned earlier, this study revealed that learners’ performance on the reading test was better when they received mobile-assisted collocation instruction indirectly via playing Flax Completing Collocation game rather than receiving direct collocation instruction inside the classroom.

The findings of the present study seem to have some educational implications for EFL learners, language teachers, and also material developers. According to Gangaiamaran and Pasupathi (2017), there are a lot of apps referring to learning English for students who have an easy access to these resources and materials. But the reality is that the App market is like a jungle. There is too much software for students to choose and use. Obviously, there is a lack of recommendation about relevant apps and suggestions about how effectively to use them to learn English. Therefore, teachers have to overcome the challenges in implementing technology for effective teaching of the language and it is their duty to recommend suitable English learning applications to their learners and help them use those apps effectively.
Materials are anything which can be used to help the learning of a language, including course books, videos, flash cards, games, websites and mobile phone interaction. Teachers as material developers can evaluate, adapt, replace, supplement materials and discover ways to implement selected materials for classrooms (Tomlinson, 1998). So, material developers have an important role in designing activities and well planned lessons to improve students’ English ability at different levels.

Since the majority of students use their mobile devices for social purposes such as music, social media, and game after class hours, this can be indicated that the teaching materials to be used after class hours can be adapted for mobile devices and be shared with the students in order to attract them for educational purposes. Therefore, regarding the findings of this study, it is recommended to material developers to develop game-based applications to make the learning process more efficient and student-centered.

Due to the portability of mobile phones as compared to computers, it is time to think about performing mobile assisted teaching and learning besides traditional classroom approaches in teaching and learning. Mobile phone offers many benefits that students can gain in supporting classroom activities and English learning. Therefore, regarding the findings of the present study which showed that mobile-assisted learning has significant effects on EFL learners’ reading achievement; it is highly recommended to students to benefit from mobile learning applications to improve their English skills and support their learning experience.

The objective of this study was to find out the effect of mobile-assisted teaching of collocations on EFL learners’ reading achievement. However, there is a lack of empirical studies providing definite evidence on how the mobile technology use can improve individual’s language learning results. Therefore, the findings of this research reveal that there is still a room for much further progress in this area. The following recommendations can be addressed in future studies:

1. This study investigated the effect of mobile-assisted teaching of collocations on EFL learners’ reading achievement through using Flax Completing game. Similar studies can be done using other games of Flax such as Collocation Matching, Collocation Dominoes, and Collocation Guessing.

2. Further research can examine the effect of computer-based teaching of collocations on EFL learners’ reading achievement.

3. A similar study can be done to find out the effect of mobile-assisted teaching on collocation or vocabulary acquisition.

4. This study was conducted on a small non-randomly selected sample of EFL learners and only one teacher. In order to increase the generalizability of the findings, it can be done on a larger number of learners and teachers selected through random sampling.
References


Kruidenier, J. (2002). Based Principles for Adult Basic Education Reading Instruction.


**Appendix 1**

**Pre- and Post-test**

**Text 1**

**A) Read the text. Then choose the best preposition for each collocation.**

From psychologists’ point … 1….. view, there are four basic stages that human beings pass through when they enter and live in a new culture. This process, which helps us to deal with culture shock, is the way our brain and our personality reacts to the strange new things we encounter when we move from one culture to another.

Culture shock begins with the “honeymoon stage”. This is the period of time when we first arrive in which everything about the new culture is strange and exciting. We may be suffering from “jet lag” but we are happy ……2….. the first months to be in the new environment, seeing new sights, hearing new sounds and language, eating new types of food. This honeymoon stage can last for quite a long time because we feel we are involved in some kind of exciting adventure.

Unfortunately, the second stage of culture shock can be more difficult. After we have settled down into our new life, working or studying, buying groceries, doing laundry, or living ……3… a home-stay family, we can become very tired and begin to miss our homeland and our family. This period of cultural adjustment can be very difficult and lead to the new arrival rejecting or pulling away from the new
culture. This “rejection stage” can be quite dangerous because the visitor may develop unhealthy habits.

The third stage of culture shock is called the “adjustment stage”. This is when you begin to realize that things are not so bad in the host culture. Your sense of humor usually becomes stronger and you realize that you are becoming stronger by learning to take care of yourself in the new place. Things are still difficult, but you are now a survivor!

The fourth stage can be called “at ease at last”. Now it is easy ... 4...... connect to the new culture and surroundings. You may still have problems with the language, but you know you are strong enough to deal with them.

There is a fifth stage of culture shock which many people don’t know about. This is called “reverse culture shock”. Surprisingly, this occurs when you go back to your native culture and find that you have changed ......5..... the time and that things there have changed while you have been away. Now you feel a little uncomfortable back home. Life is a struggle!

1. a) in                               b) of                     c) with                               d) for

2. a) at                               b) on                    c) between                        d) in

3. a) with                            b) in                     c) from                              d) by

4. a) for                             b) to                     c) at                                 d) by

5. a) at                                b) in                     c) of                                 d) with

Text 2

B) Read the text. Then choose the best answer.

Today, millions of people want to learn or ..........6.............. their English but it is difficult to find the best method. Is it better to study in Britain or America or to study in your own country?

The advantages of going to Britain seem obvious. Firstly, you will be able to listen to the language all the time you are in the country. You will be surrounded completely by the language wherever you go. Another advantage is that you have to speak the language if you are with other people. The only problem is that you
may 7 your family. In Italy, it is always possible, in the class, to 8 your first language and speak Italian if you want to and the learning is slower.

On the other hand, there are also advantages to staying at home to study. You don’t have to make big changes to your life. As well as this, it is also a lot cheaper than going to Britain but it is never possible to achieve the results of living in the UK. If you have a good teacher in Italy, I think you can learn in a more concentrated way than being in Britain without going to a school.

So, in conclusion, I think that if you don’t have enough time and enough money, the best choice is to spend some time in the UK. This is simply not possible for most people, so being here in Italy is the only viable option. The most important thing to do in this situation is to your opportunities to speak only English in class and to try to use English whenever possible outside the class to help your language.

6. a) improve b) make c) check d) provide
7. a) keep b) stay with c) connect to d) miss
8. a) change b) keep c) watch d) know
9. a) have b) do c) provide d) develop
10. a) teaching b) development c) translator d) processor

Text 3

C) Read the text. Then fill in the blanks with the words given. One word is extra.

| a) Changing with the time | b) computer games | c) knowledge of agriculture | d) listening to music | e) stay on farms | f) spare time |

Studies say that people nowadays have more free time than ever before. Then why doesn’t it feel that way? These days, our free time is usually spent watching television, using computers, 11 or communicating on our phones. Images and information are constantly flashing into our brains, so it’s no wonder we don’t feel as if we have really switched off. To really wind down and help us regain our energy levels, it is important to use our 12 wisely. Here are some tips to do so.

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1. Establish your goals

Think about what you want to achieve in your free time. Do you want to get fit, get creative or simply relax? Don’t worry about what you ought to be doing, just think about what will make you feel more content.

2. Set a date

Plan when you are going to enjoy your free time, and treat it in the same way as anything else on your calendar. If something else more important comes along, you can choose whether or not to postpone it, but never cancel it!

3. Plan ahead

Make sure you have everything you need to enjoy your free time in advance. If you’re looking forward to a nice long bath, buy in bath oil and candles. If you want to …………..13……………….. in the countryside, enjoy collecting eggs or increase your ………………….. 14……………….. working in vegetable gardens.

4. Get creative

In many free time activities, we take the role of consumer. When we watch TV, play ……………… 15……………….. or read, we are only passively involved. Take on the role of producer for a change. Build a model, write a blog or make an animation film. You will use a different part of your brains and will feel more energized as a result.

5. Change your life

Once you’re relaxed and energized, you can think about what you’d like to improve in your life. What to get fit? Learn a skill? Improve your job prospects? There are plenty or groups, clubs and classes you can join that will set you on a completely new life path. So what are you waiting for? Get out there and enjoy yourself!

Text 4

D) Read the text. Then match the underlined collocations with their meanings.

When I left home for work this morning, my car broke down, so I ended riding on the free bus. As soon as I got off, I met an old schoolmate, Mark. While we were talking, he started to talk about something I had already found out from some mutual friends- that he had received some money and had established his own business. He told me that there was a lot to organize, and offered to take me on, but I refused his offer straight away.

When I arrived at work, my boss argued with me, speaking to me angrily in front of everyone. When I got over the initial shock, I told her I’d make up for being
late, but it turned out that she had become angry over a contract that had failed, after a client of mine had pulled out of a contract. She told me that I would be punished, that I’d move everybody to a lower position, and just went on and on….

Eventually, I ran out of patience and answered back — I said I was not going to accept it anymore, and if she wanted to stop employing me, she should do it. Anyway, to cut a long story short, I stormed out, phoned Mark’s secretary, who put me through to him. I told Mark I’d like to accept his offer. So, in the end, everything has worked out perfectly!

16) break down (………………) a) leave angrily
17) take me on (………………) b) to have no more of something
18) pull out (………………) c) to start to employ me
19) run out of (………………) d) stop being involved in something
20) storm out (………………) e) stop working

Answer Key

Text 1
1 B 2 D 3 A 4 B 5 D
Text 2
6 A 7 D 8 B 9 C 10 B
Text 3
11 D 12 F 13 E 14 C 15 B
Text 4
16 E 17 C 18 D 19 B 20 A

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