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What's up with WhatsApp? A Critical Analysis of Mobile Instant Messaging Research in Language Learning

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Abstract

This paper is devoted to exploring the way how the mobile instant messaging WhatsApp is deployed to enhance the learning of a second or foreign language. Therefore, this study set out to investigate the empirical studies related to WhatsApp and language learning published in peer-reviewed journals. Thirty-seven studies were selected after a four-phase article identification procedure and a systematic review was conducted to investigate the effectiveness of WhatsApp on language learning. The analysis focused on the keywords, sample sizes, participants, data sets, duration, and language learning benefits of the studies. The results have shown that WhatsApp has been used diversely in language learning. The studies found evidence that WhatsApp can be used to improve the four language skills (i.e. reading, listening, writing, and speaking), integrated language skills, and vocabulary. Moreover, WhatsApp was found to be effective in increasing motivation and language attitudes, fostering learner autonomy, increasing interaction, and lowering language anxiety. The study also provided future research directions and recommendations for practice concerning how to appropriately employ mobile instant messaging in language learning.

Key words: WhatsApp, Mobile instant messaging, Mobile phones, Language learning, EFL

Introduction

Teaching and learning English as a foreign language (EFL) is a challenging process since learners in these environments do not have the opportunity to learn the language in natural settings. Therefore, numerous theories, approaches and methods have been proposed and implemented in EFL contexts to increase the success of the learners. One common application of the researchers, practitioners, and learners to overcome this limitation is the integration of technology that might increase exposure and motivation. Utilizing technology to increase exposure and motivation is important because the EFL learners receive far less exposure to the language and it is crucial for these learners to have adequate exposure and a motivation to learn (Lightbown & Spada, 2013). Rapid improvements in technology helped teachers and learners to implement the tenets of many theories, approaches and methods of language learning.

Technological developments provide anywhere and anytime learning opportunities. The use of computer and mobile technologies has considerably changed the way people utilize the information. Therefore, today, technology plays a significant role in educational environments in which emerging technological tools are used. It is a well-established issue in the literature that these tools can be used for language teaching and learning in several ways. Utilizing these tools in foreign language learning and teaching has caught more and more attention and thus, recently, numerous studies have explored the potential of these tools in language learning settings. One popular and simple way of integrating technology into the language learning process is to use mobile learning, which is mainly about enabling flexible learning via mobile devices (Kukulska-Hulme & Traxler, 2005). The widespread use of mobile phones by everyone indicates that they have become an important element of people's e-routines. Today, mobile smartphones are a part of modern life and learning a language by using the applications (henceforth apps) on these phones is now quite on the vogue. As smartphones become more prevalent, their potential to be used for the purposes of teaching and learning grows into more critical for mobile learning, which can be considered as a learner-centric approach that focuses on the mobility of the learner as well as the mobility of the learning.

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The mobile technology has been used by educators to comply with the demands and challenges of a globally competitive society. The apps of these devices are reckoned to liberate their users from spatial- and temporal as well as time-related constraints (Gourova, Asenova, & Dulev, 2013). In addition, these apps provide learners with opportunities for self-learning and they can be used in and outside the classroom for practising a foreign language. A growing body of research has recognized the important role of mobile technologies for efficient learning. In language learning, mobile learning took the form of mobile-assisted language learning (MALL). There is evidence in the literature that MALL has a great value for learning independently (Bull & Reid, 2004) and collaboratively (Hine, Rentoul, & Specht, 2004; Rambe & Chipunza, 2013). Mobile instant messaging (MIM) services are also commonly used by learners and teachers under MALL as they help foster individual learning experiences (Moreira, Ferreira, Pereira, & Durão, 2016).

MIMs provide “a rich context for open and transparent interaction that alerts communicants to the temporal and time-span constraints of the interaction (Rambe & Bere, 2013, p. 546). There are educational and academic advantages of MIMs (Bouhnik & Deshen, 2014) and the use of MIMs can increase motivation and participation in the educational process (Andújar, 2016). With its real-time nature, MIMs contain repair moves and negotiations for meaning that have been found to promote the development of another language (Sotillo, 2000). By using these services, students modify their discourse in order to achieve understanding; collaborating and putting into practice their target language skills. Among available MIMs (e.g. Wechat, Kakao Talk, QQ, Tango, Viber, and Telegram), the most frequently used one is WhatsApp which can be easily installed on almost all generations of smartphones.

WhatsApp is a freeware, proprietary, cross-platform and end-to-end encrypted MIM app for smartphones. It is a service that has the features of multimedia, group chat, and unlimited messaging. WhatsApp has been used in educational setting including language learning and numerous studies portrayed the positive impact of WhatsApp in language learning. According to Andujar (2016), for instance, “WhatsApp constitutes a powerful educational tool to encourage second language interaction among participants and its tremendous potential to activate students' involvement remains one of the least exploited functionalities of mobile phones” (p. 63). WhatsApp can also boost students' dynamic participation (Baffour-Awuah, 2015) and inspire learners to get involved in purposeful activities with a special emphasis on effective learning outcomes (Beetham & Sharpe, 2013).

Studies on WhatsApp regarding language learning show that it can be used to develop reading skills (Hazaea & Alzubi, 2016), listening skills (Fauzi & Angkasawati, 2019), speaking skills (Andújar-Vaca & Cruz-Martínez, 2017), writing skills (Andujar, 2016), vocabulary knowledge (Lai, 2016; Liu, 2016), enhance communicative language learning (Kheryadi, 2018), foster language learner autonomy (Alzubi & Kaur, 2018), increase motivation (Ahmed, 2019), increase classroom interaction (Mwakapina, 2016), and alleviate communication anxiety (Shamsi, Altaha, & Gilanlioglu, 2019). The majority of these studies have shown that WhatsApp helps learners motivate themselves to learn and develop positive attitudes towards using it for language learning purposes. In addition, it has been used to support a more flexible and free mode of language learning beyond the classroom. There is evidence in the literature that mobile technologies improve language teaching and learning (Liu, Lu, & Lai, 2016) and there are some review studies that have focused on mobile technology and collaborative learning (Kukulska-Hulme & Shield 2008; Kukulska-Hulme & Viberg, 2018) and quantitative meta-analysis of the effectiveness of mobile devices in language learning (Sung, Chang, & Yang, 2015). This study, different from the available review studies on mobile learning, focuses solely on WhatsApp.

Aims of the Study and Research Questions

This current study is motivated by the assumption that a critical analysis of the empirical studies that utilized WhatsApp as a MIM tool in language learning may allow researchers and practitioners to advance the current practices and seek new opportunities in language learning. This study set out to analyse only the empirical research papers that examined the role of WhatsApp in language learning. More specifically, the current study explores the opportunities and potentials provided by WhatsApp as a MIM for teaching and learning of a second or foreign language. The formulated research questions are as follows:

1. What are the characteristics of the empirical research that have been conducted on WhatsApp in language learning?
2. How was WhatsApp used for language learning?
3. What language learning benefits were found by using WhatsApp?

Method

Article Selection Criteria

Guided by the research questions, the present study applied the following article inclusion criteria:

- 1) The articles had to be empirical studies reporting data derived from actual observations or experimentations. Survey studies, theoretical papers and literature review studies that were solely based on opinions or perceptions of the participants were excluded.
- 2) The studies including the utilisation of WhatsApp were included for further analyses. Studies that deal with other MIMs, such as MMS, SMSs, Wechat, Kakao Talk, QQ, Tango, Viber, or Telegram were excluded.
- 3) The studies had to be conducted in second or foreign language learning settings. Articles that deal with other educational areas were excluded.
- 4) The studies had to be published in peer-reviewed journals, which is a useful criterion for article selection regarding the quality (Korpershoek, Harms, de Boer, van Kuijk, & Doolaard, 2016). Therefore, the analysis excluded conference proceedings and articles that are not published in peer-reviewed journals.

Identification of the Studies

The identification of the studies was conducted in four phases. A similar article selection criterion was used by some other previous critical review studies on Twitter which is a microblogging social networking site (Gao, Luo, & Zhang, 2012; Hattem & Lomicka, 2016). In phase one, Google Scholar was searched using the terms WhatsApp AND “language learning” and Mobile Instant Messaging AND “language learning.” In phase two, 12 academic databases were searched: These were: *Web of Science*, *Academic Search Premier*, *Educational Resources Information Center (ERIC)*, *EBSCOhost Research Databases*, *Directory of Open Access Journals*, *Directory of Open Access Journals (DOAJ)*, *JSTOR*, *Scopus*, *ProQuest*, *Academia Social Science Index (ASOS)*, *Turkish Education Index*, and *Turkish Academic Network and Information Center (ULAKBIM)*. The third phase employed a search in major refereed academic journals in educational technology using the keyword “Mobile Instant Messaging,” “MALL,” or “WhatsApp.” In the last phase, the researcher checked the reference sections of the articles which are already included in the analysis. This phase helped the researcher make snowball sampling. The aim of this phase was making sure that the current study reached more empirical research conducted with WhatsApp in language learning.

This study did not apply a time limitation for the studies. After the identification process, 37 articles were found. The publication years of the studies are given in Figure 1.

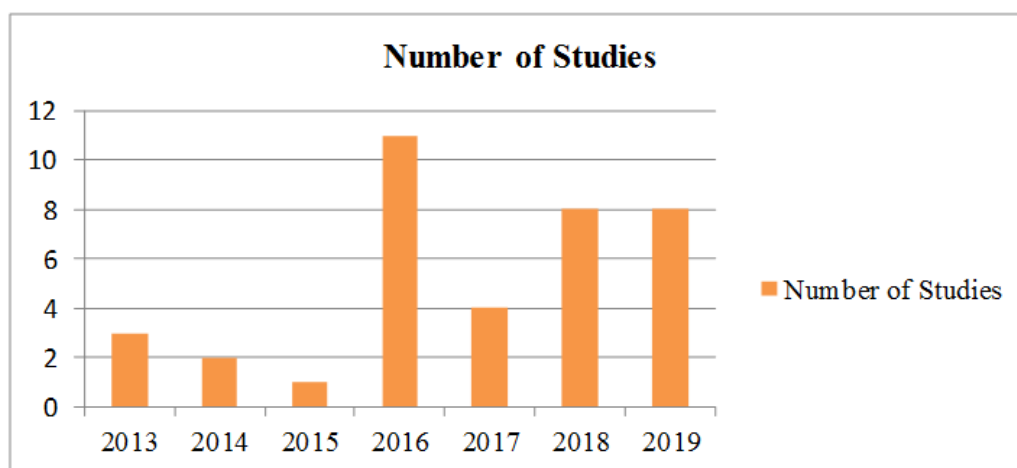


Figure 1. The publication year and the number of studies

As the figure shows, the studies on WhatsApp date back to 2013, after four years of its foundation. Eleven empirical studies were published in 2016 and this was followed by eight studies in 2018 and 2019.

Analysis of the Studies

A content analysis was conducted as the majority of the studies lacked satisfactory information for a meta-analysis. The content analysis of the selected articles included the keywords, settings (i.e. university, pre-service teacher education, private language institute & college, and K12), sample size and participants (i.e., <10, 10-20, 20-50, and >50), data sets (i.e. pre-test/post-test, surveys & questionnaires, interviews, observation, post-test only, achievement test, perception logs, peer-evaluation forms, portfolios, rubric, and log files), and duration of the implementation (i.e., <4 weeks, 4–14 weeks, >15 weeks). Language learning benefits were also investigated and the identified themes were vocabulary, writing, reading, speaking, general achievement, anxiety, listening, motivation, integrated skills, language attitude, and learner autonomy.

Results and Discussion

This study investigated 37 empirical studies that explored the effects of WhatsApp in language learning. The findings were presented in six sub-headings regarding the aims of the study and the research questions. The representative sample of the analysed studies provided evidence that integrating WhatsApp into language learning yielded positive effects in developing language skills of vocabulary, reading, listening, writing, and speaking as well as other benefits such as fostering learner autonomy and decreasing anxiety. In addition to language learning benefits, the analysis of the characteristics of the studies (keywords, settings, sample sizes and participants, data sets and duration of the treatment) provided insights into the use of WhatsApp in language learning research. The analysis of the papers reveals that WhatsApp has been used to support a more flexible and free mode of learning beyond the classroom. The study found that WhatsApp has been used between teachers and students, and students and students for language learning. The findings are elaborated in line with the research questions.

Results concerning the characteristics of the empirical research that have been conducted on WhatsApp in language learning

The findings regarding the characteristics of the studies are given under *keywords, settings, sample sizes and participants, data sets and duration of the treatment.*

Keywords

The keywords were analysed by copying all of them from the selected articles and putting them in Vocab Profiler (<http://www.lex tutor.ca/vp/eng/>), a website that analyses texts for types and tokens. In addition, a keyword cloud is provided (Figure 2) to illustrate the prominent keywords and thus to show the way WhatsApp is used in the empirical studies. Except for two articles, all of the articles had keywords. There were 158 keywords which had 84 types (i.e. a unique word) and 171 tokens (i.e. any occurrence of the types).



Figure 2. The keyword cloud of the keywords

The spaces between the separate words in the keywords were removed to be able to see the keywords as a single word. As figure 2 shows the most outstanding keywords are WhatsApp (N =24), EFL (N=12), Mobile Learning (N=9), Mobile Apps (N=5), and MALL (N=3). When the keywords are analysed regarding the language areas the most frequently used keywords were: writing (N=9), vocabulary (N= 6), reading (N= 5), anxiety (N= 2), speaking (N=1), listening (N= 1), and motivation (N= 1). As the analysis of language learning benefits shows, ‘vocabulary’ and ‘writing’ are the most common keywords regarding the effects of WhatsApp on a language area.

The analyses of the keywords help understand how researchers have examined WhatsApp in foreign language learning and obtain a prioritized list of keywords. Identification of the keywords showed that the keyword cloud and calculating types and tokens of the keywords represent the focus of the studies. The most outstanding keywords (i.e. writing, vocabulary, EFL, mobile, language) showed how WhatsApp research is conducted in language learning. Although it is expected to reach these findings regarding the keywords, the keyword analysis helped understand the focus of research. The deeper analysis of the keywords showed that the keywords did not follow a pattern like from general to specific or vice versa. A review study by Hattem and Lomicka (2016) also showed that the analysis of keywords in the abstracts of the studies is useful to track the tendency in a specific research area.

Settings

The settings of the studies were investigated to track the trends of using WhatsApp in educational levels. Table 1 shows the results regarding the settings of the selected articles.

Table 1. Educational settings

Setting	N	Studies
University	24	Alghamdy (2019), Allagui (2014), Ahmed (2019), Alsaleem (2013), Alzubi & Kaur (2018), Amry (2014), Andujar (2016), Andújar-Vaca & Cruz-Martínez (2017), Ashiyan & Salehi (2016), Avci & Adiguzel (2017), Awada (2016), Basal, Yilmaz & Tanriverdi (2016), Bensalem (2018), Dewi (2019), Fageeh (2013), Fauzi & Angkasawati (2019), Han & Keskin (2016), Hazaea & Alzubi (2016, 2018), Liu (2016), Minalla (2018), Shamsi et al. (2019), Şahan, Çoban, & Razi (2016), Ta'amneh (2017)
K12	6	Al-Hamad, Al-Jamal, & Bataineh, (2019), Bataineh, Al-Hamad, & Al-Jamal (2018), Bataineh, Baniabdelrahman, & Khalaf (2018), Çetinkaya & Sütçü (2018), Jafari & Chalak (2016), Lai (2016)
Private language institute&college	4	Fattah (2015), Samaie, Mansouri Nejad, & Qaracholloo (2018), Saritepeci, Duran, & Ermiş (2019), Wahyuni & Febianti (2019)
Pre-Service teacher education	3	Aburezeq & Ishtaiwa (2013), Bozoglan & Gok (2017), Yavuz (2016)

Table 1 displays that the majority of the studies examined the effects of WhatsApp in university settings. Six studies were conducted in K12 settings and three at private language institutions or colleges. Also, three of them were conducted with pre-service teachers. Except for two studies with French learners (Ashiyan & Salehi, 2016) and pre-service Arabic language teachers (Aburezeq & Ishtaiwa, 2013), all of the studies were conducted with participants who were learning English.

The analysis of the settings of the studies showed that the majority of them were conducted with university-level students. This finding is expected as WhatsApp requires having a smartphone and internet connection which cannot be available with very young learners. Moreover, as users of WhatsApp register using their mobile phone numbers, it is not surprising that the convenient samples are generally not young learners but adolescents or adult learners. When the language levels of the participants are considered, it can be said that most of the studies did not provide levels of the participants. It is reasonable to suggest using the Common European Framework of Reference (CEFR) for generalizing the levels since CEFR (Council of Europe, 2001), “opens to a complex vision of the situated and integrated nature of language learning and language use (Piccardo, North, & Goodier, 2019, p. 18). The CEFR can be used to understand what learners can do with the language.

Sample Size and the Participants

The sample sizes and the participants of the studies were analysed and the results are illustrated in Table 2.

Table 2. Number of the participants

PN	N	Studies
<10	1	Shamsi et al. (2019)
10-20	3	Aburezeq & Ishtaiwa (2013, Ahmed (2019), Dewi (2019)
20-50	19	Alghamdy (2019), Allagui (2014), Alsaleem (2013), Amry (2014), Basal et al. (2016), Bataineh, Al-Hamad, & Al-Jamal (2018), Bataineh, Baniabdelrahman, & Khalaf (2018), Bensalem (2018), Fattah (2015), Fauzi & Angkasawati (2019), Han & Keskin (2016), Hazaea & Alzubi (2016, 2018), Lai (2016), Minalla (2018), Samaie, Nejad & Qaracholloo (2018), Saritepeci et al. (2019), Şahan et al. (2016), Wahyuni & Febianti (2019), Yavuz (2016)
>50	14	Al-Hamad et al. (2019), Alzubi & Kaur (2018), Andujar (2016), Andújar-Vaca, & Cruz-Martínez (2017) Ashiyan & Salehi (2016), Avci & Adiguzel (2017), Awada (2016), Bozoglan & Gok (2017), Çetinkaya & Sütçü (2018), Dewi (2019), Fageeh (2013), Jafari & Chalak (2016), Liu (2016), Ta'amneh (2017)

The sample sizes of the articles varied greatly, ranging from 9 (Shamsi et al., 2019) to 100 (Liu, 2016). Among them, 19 studies had a sample size between 20 and 50, 14 studies were conducted with more than 50 participants, three studies were conducted with less than 20 participants and one study with less than 10 participants. In some of the studies, control and experimental groups were created and the participants were assigned to these groups (e.g., Alghamdy, 2019; Andujar, 2016; Jafari & Chalak, 2016, Ta'amneh, 2017).

Data Sets

The studies were analysed regarding the data sets including pre-test/post-test, surveys/ questionnaires, interviews, observation, and so on. The findings are given in Table 3.

Table 3. Data sets

Data	N	Studies
Pre-test/post-test	26	Ahmed (2019); Alghamdy (2019), Al-Hamad et al. (2019), Alsaleem (2013), Amry (2014), Andujar (2016), Andújar-Vaca, & Cruz-Martínez (2017) , Ashiyan & Salehi (2016), Awada (2016), Basal et al. (2016), Bataineh, Al-Hamad, & Al-Jamal (2018), Bataineh, Baniabdelrahman, & Khalaf (2018), Bensalem (2018), Bozoglan & Gok (2017), Çetinkaya & Sütçü (2018), Fageeh (2013), Fattah (2010), Han & Keskin (2016), Hazaea & Alzubi (2016), Fauzi & Angkasawati (2019); Jafari & Chalak (2016), Lai (2016), Liu (2016) Minalla (2018), Shamsi et al. (2019), Ta'amneh (2017), Wahyuni & Febianti (2019), Yavuz (2016)
Survey & Questionnaire	11	Ahmed (2019), Allagui (2014), Alzubi & Kaur (2018), Amry (2014), Awada (2016), Bensalem (2018), Dewi (2019), Fattah (2015), Han & Keskin (2016), Minalla (2018), Samaie et al.(2018)
Interviews	11	Aburezeq & Ishtaiwa (2013, Alghamdy (2019), Avci & Adiguzel (2018), Bataineh, Baniabdelrahman, & Khalaf (2018), Dewi (2019), Han and Keskin (2016), Hazaea & Alzubi (2016, 2018) Samaie et al. (2018), Saritepeci et al. (2019), Shamsi et al. (2019), Şahan et al.(2016)
Log files	3	Aburezeq & Ishtaiwa (2013, Andújar-Vaca, & Cruz-Martínez (2017) , Avci & Adiguzel (2017), Awada (2016)
Observation	2	Ahmed (2019), Dewi (2019)
Achievement test	1	Şahan et al. (2016)
Evaluation forms	1	Avci & Adiguzel (2017)
Portfolios	1	Hazaea & Alzubi (2018)
Rubric	1	Avci & Adiguzel (2017)

As Table 3 shows, 26 studies used pre and post-tests, 11 of them utilized surveys or questionnaires, 11 studies used interviews, two studies used observation techniques and log files, and there was one study that used each of the achievement test, evaluation forms, portfolios, and rubric. Some of the studies (e.g. Awada, 2016; Hazaea & Alzubi, 2018) utilized more than one data collection tool. Some studies (e.g., Ahmed, 2019; Allagui, 2014) utilized surveys and questionnaires to support the empirical data. However, the reliability and validity calculations were not involved in some of the studies which utilized pre and post-tests but did not include the findings on the validity calculation statistics. Additionally, the piloting of the instruments was conducted by only a few articles.

Duration

The analysis of the studies regarding the duration of experimental implementation is given in Table 4.

Table 4. Duration of the implementation

Duration	N	Studies
<4 weeks	4	Awada (2016), Fattah (2015), Fauzi & Angkasawati (2019), Liu (2016)
4–14 weeks	25	Ahmed (2019); Alghamdy (2019), Alsaleem (2013), Alzubi & Kaur (2018), Amry (2014), Avci & Adiguzel (2017), Bataineh, Al-Hamad, & Al-Jamal (2018), Basal et. al. (2016), Bataineh, Baniabdelrahman, & Khalaf (2018), Bensalem (2018), Bozoglan & Gok (2017), Çetinkaya & Sütçü (2018), Dewi (2019), Fageeh (2013), Han & Keskin (2016), Hazaea & Alzubi (2016, 2018), Lai (2016), Jafari & Chalak (2016), Shamsi et al (2019), Şahan et al. (2016), Ta'amneh (2017), Wahyuni & Febianti (2019), Yavuz (2016)
>15 weeks	4	Aburezeq & Ishtaiwa (2013), Andujar (2016), Andújar-Vaca, & Cruz-Martínez (2017), Saritepeci et al. (2019)
Not Available	4	Al-Hamad et al. (2019), Allagui (2014), Ashiyan & Salahi (2016), Minalla (2018)

As can be seen in Table 4, most of the studies' implementation lasted for four to 14 weeks. Four studies lasted less than four weeks and four studies' treatment lasted more than 15 weeks. Four studies did not provide information about the duration of the implementation. The duration of the studies ranged from four weeks to six months. Some of the studies were conducted in a semester of an educational year. The table shows that there are noteworthy discrepancies in duration of the intervention, which makes it difficult to reach conclusive results about the use of WhatsApp and duration of the studies.

Results concerning the utilisation of WhatsApp for language learning

The analysis of the way WhatsApp was exploited to develop language skills revealed some common practices (see Table 5). Some of the theoretical models that underlie the WhatsApp research are the zone of proximal development (Vygotsky, 1978), repair moves or negotiation for meaning (Smith, 2003), noticing hypothesis (Schmidt, 2001), and collaborative learning. The analysed studies appear to be divided between those that put WhatsApp in the centre and those that use WhatsApp to apply the tenets of a well-established theory. While some studies used WhatsApp to explore its effects on a language area (e.g. Basal et al., 2016), some others used WhatsApp for applying a theory. For instance, one study utilized the tenets of mobile-blended collaborative learning via WhatsApp (Avci & Adiguzel, 2017) and another study (Liu, 2016) used concept-mapping strategy for vocabulary learning. Sustainable success in the meaningful integration of the technology requires a well-established theoretical foundation. Although it was beyond the scope of this analysis, it was found that some of the articles lacked providing theoretical underpinnings of their studies. In other words, some of the reviewed studies did not provide a pedagogical rationale. Today, some of the theories used in technology integrated language teaching studies are social constructivism, interaction theory, activity theory, and multimodal analysis of interaction. In some of the studies, the authors have not explicitly explained the theory behind the treatment of the empirical study. Utilising the tenets of a theory is crucial because without a well-established theory, the research studies turn into a data collection that does not have any foundation (Perraton, 2000). This present review could not include a comparison of the effect sizes of the findings on different language areas because the majority of the studies did not calculate the effect size. However, such a comparison allows meta-analytic assessment of facilitates accumulation of knowledge (Sun, Pan, & Wang, 2010). This is one of the most outstanding findings of this critical review because calculating the effect size also aid to understanding the strength of the results (Maher, Markey, & Ebert-May, 2013).

Table 5. The use of WhatsApp in language learning

N	The Study	How WhatsApp is Used?
1	Aburezeq & Ishtaiwa (2013)	Traditional class activities were supported through collaborative and individual activities.
2	Ahmed (2019)	Sending several questions, debates and articles about the target topic.
3	Alghamdy (2019)	Language skills were practised
4	Al-Hamad et al. (2019)	The researchers designed a WhatsApp-based instructional program.
5	Allagui (2014)	Participants sent messages to each other and did writing assignments.
6	Alsaleem (2013)	Participants had discussions via dialogue journaling.
7	Alzubi & Kaur (2018)	Participants employed strategies of asking for clarification and correction and cooperating and empathising.
8	Amry (2014)	Studying a course (Educational Media) through the WhatsApp.
9	Andujar (2016)	Negotiation of meaning skills and cooperative learning activities.
10	Andujar-Vaca & Cruz-Martínez (2017)	Daily interactions during six months.
11	Ashiyani & Salehi (2016)	Students kept the thread of their conversation reported their progress after each session.
12	Avci & Adiguzel (2017)	Collaborative and authentic language activities using the approach of project-based learning.
13	Awada (2016)	Writing a critique essay.
14	Bataineh, Al-Hamad, & Al-Jamal (2018)	Writing texts, lesson plans and writing worksheets, a self/peer editing checklist, and a self/peer revision checklist.
15	Bataineh et al. (2018)	Eighteen paraphrasing and summarizing activities on nine reading passages.
16	Bensalem (2018)	Vocabulary assignments such as looking up the meanings of new words in a dictionary and writing example sentences.
17	Bozoglan & Gok (2017)	Dialect Awareness Training via WhatsApp
18	Çetinkaya & Sütçü (2018)	Sending information messages that include the definition of the word in English, Turkish equivalent, and a sample sentence.
19	Dewi, 2019	The teaching of integrated skills.
20	Fageeh (2013)	The researcher sent a list of words selected from the textbook. 3 times a week.
21	Fattah (2015)	Activities on re-writing, drafting, reviewing, editing, and publishing.
22	Fauzi & Angkasawati (2019)	The practice of listening through listening logs.
23	Han & Keskin (2016)	Conducting tasks in EFL speaking courses for four weeks.
24	Hazaea & Alzubi (2016)	Learners were kept in contact with each other with regard to our reading class
25	Hazaea & Alzubi (2018)	Tasks and assignments were conducted by learners outside the classroom. The learners searched the internet about topics of their choice and share them for interaction with peers and teachers' feedback.
26	Jafari & Chalak (2016)	Studying definitions, synonyms and antonyms of the new words
27	Lai, 2016	There were reading texts, lesson plans and writing worksheets, a self/peer editing checklist, and a self/peer revision checklist. The teacher supplemented in-class writing instruction
28	Liu, 2016	Learning the 32 target vocabulary words with a concept-mapping strategy and constructing vocabulary maps.
29	Minalla (2018)	Voice messages.
30	Samaie et. al. (2018)	Students talked about a topic sent by the researchers and recorded their voices and the recordings were sent to the WhatsApp group.
31	Saritepeci et al. (2019)	Reinforcing the activities conducted in a regular classroom.
32	Sahan et al. (2016)	Messages were sent about the target idioms. The messages included the idiom, the meaning, a picture, and sample sentences.
33	Shamsi et al (2019)	The learners had three speaking tasks and recorded their voices. The learners sent and received feedback about their strengths and weaknesses.
34	Şahan et al. (2016)	15 idioms were sent via WhatsApp
35	Ta'amneh (2017)	Exchanging information and explanations.
36	Wahyuni & Febianti (2019)	WhatsApp group discussion
37	Yavuz (2016)	Used in a "Listening and Pronunciation" course

Table 5 shows the featured WhatsApp implementations for the enhancement of vocabulary were dialogue journaling (Alsalem, 2013), vocabulary assignments (Bensalem, 2018), studying definitions, synonyms and antonyms of the new words (Jafari & Chalak, 2016), concept-mapping strategy and constructing vocabulary maps (Liu, 2016), and sending the meaning and pictures (Sahan et al., 2016). Second, some of the studies that explored the role of WhatsApp on writing skills utilized sending several questions, debates and articles about a topic (Ahmed, 2019), dialogue journaling (Alsalem, 2013), negotiation of meaning skills and cooperative learning activities (Andujar, 2016), conducting paraphrasing and summarizing activities (Bataineh, Baniabdelrahman, & Khalaf, 2018), doing activities on re-writing, drafting, reviewing, editing, and publishing (Fattah, 2015). Third, the WhatsApp activities of developing reading skills were dealing with several questions, debates and articles about a topic (Ahmed, 2019), choosing a topic and sharing it for interaction with peers (Hazaea & Alzubi, 2016). Fourth, the speaking skills was tried to be developed through daily interactions on WhatsApp (Andújar-Vaca, & Cruz-Martínez, 2017), collaborative and authentic language activities using the approach of project-based learning (Avci & Adiguzel, 2017), and sending and receiving voice messages (Minalla, 2018). Last, the listening skill was developed via practising of listening through listening logs (Fauzi & Angkasawati, 2019). As Table 5 shows, almost half of the studies did not provide detailed information about the way they exploited WhatsApp.

Results concerning the language learning benefits of the empirical research that have been conducted on WhatsApp

The present study analysed the main language learning and teaching benefits of the articles. Table 6 shows the language areas that were positively affected by the WhatsApp.

Table 6. The language areas that were addressed by the studies

Themes	N	Studies
Vocabulary	11	Alsalem (2013), Ashiyan & Salehi (2016), Avci & Adiguzel (2017), Bensalem (2018), Çetinkaya & Sütçü (2018), Fageeh (2013), Jafari & Chalak (2016), Lai (2016), Liu (2016), Sahan et al (2016), Şahan et al. (2016)
Writing	10	Ahmed (2019), Al-Hamad et al.(2019), Allagui (2014), Alsalem (2013), Andujar (2016), Awada (2016), Bataineh, Al-Hamad, & Al-Jamal (2018), Bataineh, Baniabdelrahman, & Khalaf (2018), Fattah (2015), Wahyuni & Febianti (2019)
Reading	3	Ahmed (2019), Alzubi & Kaur (2018), Hazaea & Alzubi (2016)
Speaking	3	Andújar-Vaca, & Cruz-Martínez (2017) , Avci & Adiguzel (2017), Minall (2018)
General Achievement	2	Alghamdy (2019), Amry (2014)
Anxiety	2	Han & Keskin (2016), Shamsi et al. (2019)
Motivation	2	Ahmed (2019), Fageeh (2013)
Listening	1	Fauzi & Angkasawati (2019)
Integrated Skills	1	Dewi (2019)
Language Attitude	1	Gokoglan & Boz (2017)
Learner Autonomy	1	Alzubi & Kaur (2018)
Interaction	1	Aburezeq & Ishtaiwa (2013)

As the Table 6 shows, WhatsApp is used to improve main language skills and some other language areas. The analysis revealed that WhatsApp is mostly used to improve vocabulary (N=11) and writing (N=9) skills of language learners. The effects of WhatsApp on the learning of idioms (Şahan et al., 2016) and collocations (Ashiyan & Salehi, 2016) are also included in the general 'vocabulary' category. There were three studies on reading and speaking. The effects of WhatsApp on the general achievement and lowering the anxiety levels of the learners were investigated by two studies. Last, WhatsApp was used to see its impact on listening, motivation, integrated skills, language attitude, learners' autonomy, and interaction in one study each.

The analysis of the language learning benefits across the studies sheds light on the way researchers have used WhatsApp to achieve various language learning and teaching goals. This analysis revealed that using WhatsApp can be effective in developing writing, grammar, listening, general vocabulary, idiom learning, and collocation knowledge of the language learners. The studies on the effects of WhatsApp on vocabulary learning writing

skills show a similar trend, i.e. there is an interest in the incorporation of WhatsApp to allow collaborative learning and using WhatsApp as a tool to make access to the words easier. This analysis has found that almost one third of studies utilized WhatsApp to develop vocabulary in the target language (Alsalem, 2013; Ashiyan & Salehi, 2016; Avci & Adiguzel, 2017; Bensalem, 2018; Çetinkaya & Sütçü, 2018; Jafari & Chalak, 2016; Lai, 2016; Liu, 2016; Sahan et al., 2016; Şahan et al., 2016). This finding is important because vocabulary knowledge plays a significant role in language skills (Graves, 2000; Seipel, 2011; Vermeer, 2001). More specifically, learners need mastery in vocabulary to understand what they read and listen and to speak fluently.

The effects of WhatsApp on the communication skills (i.e. listening, speaking, and writing) are important in Turkish context because a report by British Council (2013) showed that English teachers in Turkey focus on grammar-based approaches. This situation resulted in the failure of Turkish EFL learners to use English effectively for communication purposes. Moreover, the exam-centric education system in Turkey prevents even student teachers of English focusing on communication skills. As a result, beginning from the first year of the language teacher education programs, students have to put extra effort to improve speaking, writing, and pronunciation skills (Kartal & Korucu-Kis, 2019; Kartal & Özmen, 2018). WhatsApp provided promising findings on improving communication skills. The use of WhatsApp is very common among the language learners. Therefore, more research can be conducted with pre-service English language teachers to improve their communication skills by using WhatsApp.

In addition to language skills, the studies tracked the effects of WhatsApp on the anxiety, motivation, attitudes towards the language and the learner autonomy of the language learners. The positive effects of WhatsApp in these language areas can be attributed to the fact that traditional classrooms are the only settings in which learners learn and practice English. In the present study, the participants felt that WhatsApp could be an efficient MIM in which language is practised. WhatsApp can be used to encourage autonomous learning, allowing teachers to be facilitators, and to develop learning communities. The effects of WhatsApp on motivation and learner autonomy are important because post-method pedagogy requires autonomous, active and collaborative language teachers and students (Kumaravadivelu, 2006). Language learners' autonomy is crucial in countries like Turkey in which the English language is taught as a foreign language since exposure to language is very limited beyond the classroom walls. Learner autonomy is defined as taking responsibility for one's own learning (Holec, 1981). Jacobs and Farrell (2013) put it, "to have some choices as to the what and how of the curriculum and, at the same time, [learners] should feel responsible for their own learning and for the learning of those with whom they interact" (p. 7). Additionally, language teachers should help students develop autonomy (Benson, 2001). Therefore, the positive impact of WhatsApp on motivation and autonomy (Alzubi & Kaur, 2018) should be considered by language teachers.

Conclusion and Suggestions

This critical review contributed to the knowledge base of WhatsApp-assisted language learning and teaching. To exploit the positive aspects of WhatsApp for language learning, it is mandatory to motivate students to identify, comprehend, and engage in learning opportunities using WhatsApp. To the author's best knowledge, this study is the first to analyse the research papers on WhatsApp in language teaching and learning. Focusing on empirical studies is important because exploring the real use of a tool in real settings with real people is more inspiring than imagining their potential use (Selwyn & Grant, 2009). A total of 37 studies were identified, and the analysis is shown in six major categories: (a) keywords, (b) settings, (c) sample sizes and participants, (d) data sets, (e) duration of the treatment, and (f) language learning benefits. Therefore, this article addresses the topic of current concern in the sphere of language learning and technology-enhanced learning with a specific focus on the most commonly used MIM WhatsApp and provides a guideline and suggestions for further research. This study holds the idea that this review will enable language teachers and researchers to better see how WhatsApp is being used in language teaching and learning. Finally, this study provides future study directions referring to WhatsApp use in language learning.

The research findings resulted in invaluable findings regarding the usefulness of WhatsApp in language learning. This study, considering the analysed studies, provides guidelines for improving and strengthening the effects of WhatsApp in language learning. First, the studies should discuss the theoretical underpinnings clearly. An empirical study without a theoretical foundation may result in misleading conclusions. Moreover, the studies seem to collect data without any basis (Perraton, 2000) and the empirical implications without a theoretical framework cannot be reliable. The studies should clearly show how the underlying theory can be implemented in the language learning setting. Second, the levels of the participants should be given by using a standard such as CEFR for making the study applicable for generalizability. Some of the analysed articles did not provide any

information about the levels of the participants. Third, some studies did not provide information about the reliability of the pre and post-tests that were used to track the effects of WhatsApp. Fourth, the analysis of the data collection tools revealed that the studies mainly relied on quantitative data. However, supporting the statistical findings with qualitative methods is important since mixing quantitative and qualitative methods help compensate for the weaknesses of the studies (Punch, 2009). Last, the studies should provide the details of the implementation process, which is crucial for replicating the studies in different contexts. After critically analysing the 37 studies, it was found that none of them mentioned any challenges in using WhatsApp in language learning, which shows that this MIM tool is a user-friendly app that can be used in language teaching and learning.

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