A Meta-synthesis of Qualitative Research about Mobile Assisted Language Learning (MALL) in Foreign Language Teaching

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Abstract

The previous research indicates that technology plays an important role and has a great potential in foreign language teaching. It is also obvious that mobile assisted language learning (MALL) considerably affects learning process among foreign language learners. Thus, this current study aims to present a meta-synthesis of qualitative research results on the MALL published in high stakes academic journals especially in the last decade. Through electronic databases, the results of studies about MALL were identified and included in the study. After collecting the studies about MALL, thematic analysis was used and some of the themes were identified and analyzed in accordance with the data, respectively. It is expected that this study will not only help the target groups such as learners, lecturers and language policy makers to broaden their knowledge about technology in Turkey, but also result in an increased awareness of MALL.

Keywords: Foreign language teaching, meta synthesis, mobile assisted language learning (MALL), qualitative research

Introduction

With the advancements and improvements in technology, internet use, computers and even mobile phones make English as a Foreign Language (EFL) teaching conducive to benefit from the available technologies. In other words, and in a broader scale, previous research results show that the implementation and adaptation of mobile phones into the foreign language classroom environment brings several opportunities for language learners and it makes the learning process more meaningful and by creating a platform to share and exchange the ideas among the language learners (Brown, 2001). The results of the recent studies on the subject illustrate that mobile assisted language learning gained more importance than ever before. Thus, this paper aims to focus on the meta-synthesis of the qualitative research about technology-based teaching in general, but more specifically on the mobile assisted language learning (MALL) and its effects on the foreign language learning process.

Another reason to carry out this study is that there is not so much research about this issue in Turkey to make conclusions and give suggestions and implications. Although there were many studies related to the use of technology in foreign language learning, its effects on the learning process and computer technology in EFL learning, available research about MALL and its effects on language learning is too limited to have a broader sense of understanding and insight. Therefore, the current study is also guided for presenting existing research about the subject and increasing awareness among the target groups such as learners, teachers and researchers in English language teaching (ELT).

Literature Review

As Kukulska-Hulme, Evans & Traxler (2005) point out, increasing use and availability of technology-based tools, mobile phones and extensive use of wireless devices make technology perspective change and using these technologies leads to enhanced student retention and thereby, success. As Gredds (2007) stated, mobile learning means learning anywhere and anytime, and there is not much research about this issue. Given that mobile learning is a key factor in foreign language learning process, this paper explores this issue and consists of the following sections: technology use among foreign language learners, mobile assisted language learning (MALL) and its effects on the foreign language learning process.

Technology in Second / Foreign Language Teaching

The use of technology for foreign language teaching and learning especially since the late 1960s has created new opportunities and possibilities and made teachers keep up with the latest technology in order to meet the expectations regarding classroom activities in the language learning process (Alsied & Pathan, 2013; Richards, 2014). Moreover, these new technological methods and tools have played a role in language learning and these can be outlined as computer-assisted, open and distance education and e-learning (Chen & Chung, 2008).

In relation to the reasons about technology integration into foreign language classrooms, another researcher named Lam (2000) states that technology gives a hint about the attitude of the students and makes them more alert and enthusiastic. Stepp-Greany (2012) in a study also mentioned that technology plays an important role for the instructional activities and enables learners to engage in language learning process. Technology integration is an inevitable part of education and should be put into use as for the continuing professional development of the

teachers (Lawless & Pellegrino, 2007). Many studies showed that the integration of technology into the classroom for instructional purposes is also based on the attitudes and beliefs of the teachers (Polly & Hannafin, 2010).

Mobile Assisted Language Learning (MALL) and Its Effects on Foreign Language Teaching

As for the definition of mobile learning, there is almost no consensus about whether it refers to either mobile technologies or the general concept of learner mobility (Kukulska-Hulme, 2009), but in general, MALL can be defined as the sub-area of m-learning, which refers to teaching and learning with the use of mobile devices. Many scholars identified and reviewed mobile learning, the use of mobile devices and its effective applications in a language learning environment (Chinnery, 2006; Godwin-Jones, 2011). However, Kukulska & Shield (2008) point out that "MALL differs 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" (p. 273). 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. Sharples (2006) provides an insight about mobile learning as a personalized activity which is flexible and compatible with the learner's needs. There is a fact that videos or cassettes are already available in language learning classrooms, however MALL has a different and unique feature that is, mobility (Kukulska-Hulme & Bull, 2009). As mobile learning technologies become widespread, it is not surprising to see that the effectiveness of MALL and its developments are available in review of literature contributing to language learning process (e.g. Cheung & Hew, 2009; Hung & Zhang, 2012; Hwang & Tsai, 2011). \

According to Thornton & Houser (2004), "mobile phones can help extend learner opportunities in meaningful ways" (p. 1). However, there is limited research about mobile technology and mobile learning in general. As the synthesis of mobile learning research demonstrates most of the studies reviewed related to MALL are experimental and small scale. This can create a sense about the validity issue in these papers over a period of time as the studies consists of just one concept or theory. In terms of literature, the primary attention is most probably on the learners' vocabulary acquisition, listening and speaking skills and language learning in general.

The researchers, Ogata & Yano (2005) introduce the main features of mobile learning as permanency, accessibility, immediacy, interactivity, situating of instructional activities. In fact, it is not so easy to give just one definition of mobile learning, just as the definitions differ from each other, however it can be stated that the technology to assist mobility consists of any kind of mobile technological devices such as cell phones, smartphones, pads, pods, tablets and personal digital assistants (PDAs). This vagueness partly stems from the rapidly changing world and the new technologies and new mobile devices turning up quickly in the market, which makes it undefinable. However, taking the literature into account, some definitions are as follows:

Sharples, Milrad, Arnedillo-Sanchez & Vavoula (2009) define mobile learning as "the processes (both personal and public) of coming to know through exploration and conversation across multiple contexts among people and interactive technologies (p. 225). Similarly,

Kukulska, Sharples, Milrad, Arnedillo-Sanchez & Vavoula (2009) gave the definition of mobile learning as:

> The mobile technology, while essential, is only one of the different types of technology and interaction employed. The learning experiences cross spatial, temporal and/or conceptual borders and involve interactions with fixed technologies as well as mobile devices. Weaving the interactions with mobile technology into the fabric of pedagogical interaction that develops around them becomes the focus of attention (p. 20).

For Hung & Zhang (2012), as mobile technologies provide numerous chances and opportunities such as flexibility and ubiquity, the researchers are trying to figure out how mobile learning affects the process of language learning. The first attempts to make sense of mobile learning effects on language date back to around 2009, in which mobile apps came to the fore for language learning developed by British Council closely followed by major ELT publishers producing stand-alone and course book related apps (Dudeney & Hockly, 2012). According to Thornton and Houser (2005), mobile devices can be effective for language learners and enable them to have rich, real-time, collaborative and conversational experiences. Kukulska-Hulme & Shield (2008) also offers that MALL supports collaborative practices in listening and speaking. Their study showed two kinds of approaches to MALL: content-related and design-related, which is still dominant in the literature.

Mobile learning does not mean just learning by mobile phones, it covers a wide range of devices thorough portable, Wi-Fi enabled and handheld ones such as smartphones, pads, pods, tablets and personal digital assistants (PDAs). Research in the literature generally focuses on the following aspects of mobile learning and MALL in the field of ELT.

- The effects of mobile technology use in foreign and second language learning/acquisition
- The perceptions/views of learners and teachers about the use of technology and mobile learning and MALL
- Mobile technology in language learning
- The impacts of technology use/mobile use on the acquisition of language skills (vocabulary, listening, speaking, reading and writing)

A great number of studies show that learners have positive attitudes towards the use of mobile technologies about the language learning process, whether it be the second or foreign language. Hockly (2013), for instance, referred to a research study by the British Council about a larger scale of app-based mobile learning projects in developing countries such as Sudan and China. In relation to this, Chang and Hsu (2011) showed in their study the intentions and attitudes towards the use of mobile technologies for language learning which is not independent from CALL and seen as a part of MALL. Taj, Ali, Sipra & Ahmad (2017) studied the effect of technology enhanced language learning on vocabulary acquisition of EFL learners and found out that vocabulary learning activities presented through PCs in language labs and receiving vocabulary cards through mobile phones are effective in vocabulary acquisition.

Furthermore, Lu (2008) carried out a research study which aims to investigate the effectiveness of using the mobile phone in English vocabulary learning. The results show that

students held positive attitudes towards learning vocabulary with the help of mobile phones. Xu, Dang and Jiang (2017) carried out a research about students' perceptions of mobile assisted feedback on oral production. The study presented that learners who received mobile assisted feedback gained more confidence in speaking English and showed positive attitudes. Similarly, Estarki and Bazyar (2016) dealt with the effect of MALL on pre-intermediate EFL learners' writing performance and the results of the study suggested that MALL had a significant effect on learners' academic performance who received instruction in academic writing through technology. Another researcher, Noriega (2016), studied the use of mobile technology incorporation into the traditional English class by using genre approach in the writing skills. The results of the study revealed that genre approach towards improving writing skills and abilities can be realized with the support of mobile technology. In addition to the latest studies mentioned, the literature provides some research showing the positive effects of MALL on learners' second and foreign language acquisition and language proficiency (see, for example, Cheng, Hwang, Wu, Shadiew & Xie, 2010; Hsu, 2012; Liu, Yu & Ran, 2008; Petersen & Markiewicz, 2008; Rosell-Aguilar, 2007).

Method
        This study reports the results of a meta-synthesis of qualitative studies, which stays directly on the mobile learning, MALL in ELT, attitudes of learners towards MALL and qualitative studies published in academic journals especially in the last decade in order to provide a better understanding of MALL and mobile learning in foreign language teaching and attempt to improve its quality and insight. The following keywords were selected before carrying out the research and academic articles were found in accordance with them; qualitative, mobile learning, technology, MALL in ELT, attitudes towards MALL. The studies focusing on the mobile learning, technology, MALL in ELT, attitudes of the learners towards MALL were selected through multiple databases as the University of Rochester Library, Web of Science-Social Science Citation Index (SSCI), Academic Search Complete, ProQuest, Education Research Information Center (ERIC), EBSCO Host, and ULAKBIM Turkish National Databases. The number of studies included in the study was 17.

        According to Finfgeld (2003), meta-synthesis can be described as "an umbrella term that refers to the synthesis of findings across studies to create a new interpretation" (p. 895). Similarly, Nye, Melendez-Torres & Bonell (2016) present new perspectives on the concept by the interpretation of the prior qualitative research and to reach a "third-level" finding(s) which is not intended to brief all available data (p. 57). In relation to the meta-synthesis of qualitative research, Sandelowski, Docherty & Emden (1997, p. 367) propose that there may be three different approaches to meta-synthesis and one of them is the synthesis of studies by different investigators in a related field, which is adapted for carrying out this study.
        The following section gives information about data collection and data analysis.

Data Collection and Data Analysis
        The studies which met the following criteria were considered suitable for inclusion in the study:

(1) focus on mobile assisted language learning (MALL), mobile learning, mobile phones,
(2) use of qualitative or mixed methods (only the qualitative results were included),

(3) publication in a refereed journal (national and international)

In accordance with Braun and Clarke's process of data analysis (2006), inductive thematic analysis was used to analyze and report themes within data. The data gathered from the selected studies were read at least twice by the researcher himself to strengthen the synthesis. Later, the researcher identified and analyzed the themes within the data. The themes were reviewed and discussed with a researcher outside the study until the applicability to the study was reached. The following table shows the articles with its authors, publication year, research methods and characteristics which are included in the study.

Table 1. *Characteristics of the articles included in the study*

	Articles included in the study (N=17)	**Authors and publication year**	**Research methods**	**Characteristics**
1.	Understanding Hypertext in the context of Reading on the Web: Language Learners' Experience	Altun, A. (2003).	Qualitative	This study explores second language readers' understanding of hypertext in the context of reading on the web from a qualitative research paradigm
2.	Toward an Effective Integration of Technology: Message Boards for Strengthening Communication	Altun, A. (2005).	Mixed methods	This paper reports on preliminary findings from a longitudinal study on the integration of multimedia and the internet technologies into language teaching.
3.	A Comparison of Undergraduate Students' English Vocabulary Learning: Using Mobile Phones and Flash Cards	Basoglu, E. B., & Akdemir, Ö. (2010).	Mixed methods	In this study, the effects of using vocabulary learning programs in mobile phones on students' English vocabulary learning were investigated using the mixed-method research design.

4.	Effects of gloss type on text recall and incidental vocabulary learning in mobile-assisted L2 listening	Çakmak, F., & Erçetin, G. (2017).	Mixed methods	This study examines the effects of multimedia glosses on text recall and incidental vocabulary learning in a mobile-assisted L2 listening task.
5.	Towards Understanding the Potential of E-Portfolios for Independent Learning: A Qualitative Study	Chau, J., & Cheng, G. (2010).	Qualitative	This paper discusses the findings of a research study concerning the use of e-portfolios to develop independent learning, from the perspectives of teachers and students in a Hong Kong university.
6.	Effects of short-term memory and content representation type on mobile language learning	Chen, N-S., Hsieh, S-W., & Kinshuk. (2008)	Mixed methods	The effect of content representation on the short-term rote learning of 24 L2 English/Chinese word pairs by 156 Taiwanese university students during a 50-minute session using mobile phone SMS/MMS
7.	Mobile learning: Two case studies of supporting inquiry learning in informal and semiformal settings	Jones, A. C., Scanlon, E., & Clough, G. (2013).	Qualitative	The paper examines two case studies of inquiry learning in contrasting settings in order to understand more about learner

				control and how technology can support learners' inquiries.
8.	Exploring Smartphone Applications for Effective Mobile-Assisted Language Learning	Kim, H. & Kwon, Y. (2012).	Mixed methods	The purpose of this study is to show the success of MALL technology with extensive, updated information regarding currently available ESL mobile applications (apps).
9.	Challenging Mobile Learning Discourse Through Research: Student Perceptions of Blackboard Mobile Learn and IPADs	Kinash, S., Brand, J., & Mathew, T. (2012).	Mixed methods	This paper reports the dominant discourse of mobile learning as revolutionary and/or necessitated by demand of the 21st century student.
10.	How effectively do good language learners use handheld electronic dictionaries: A qualitative approach.	Koyama, T., & Takeuchi, O. (2009)	Qualitative	This paper compares the L2 English word look-up behavior of five good language learners (EFL/SLA post-graduate students) using handheld electronic dictionaries (ED) with that of five false-beginner level college students.
11.	Mobile-Assisted Grammar Exercises: Effects on Self-Editing in L2 Writing	Li, Z., & Hegelheimer, V. (2013).	Mixed methods	In this paper, we report on the development and implementation of a web-based mobile application, Grammar Clinic, for an ESL writing

				class.
12.	Effectiveness of vocabulary learning via mobile phone	Lu, M. (2008)	Mixed methods	This paper examines the effectiveness of SMS vocabulary lessons of limited lexical information on the small screens of mobile phones
13.	An Investigation of Preservice English Teachers' Perceptions of Mobile Assisted Language Learning	Öz, H. (2015)	Mixed methods	This study dealt with teachers' perceptions about mobile assisted language learning (MALL) and tried to find out whether their perceptions differed by gender, grade level and grade point average (GPA)
14.	Mobile Assisted Language Learning: English Pronunciation at Learners' Fingertips	Saran, M., Seferoglu, G., & Cagiltay, K. (2009)	Mixed methods	This paper investigates the potentials and effectiveness of using mobile phones in foreign language education, in particular, the effects of using multimedia messages via mobile phones for improving language learners' pronunciation of words.
15.	Exploring College Students' Attitudes and Self-Efficacy of Mobile	Shih-hsien, Y. A. N. G. (2012).	Mixed methods	The purpose of this study is to investigate the

	Learning			attitudes and self-efficacy of using mobile learning devices for college students in a language class by employing task-based instruction.
16.	An Inquiry-based Mobile Learning Approach to Enhancing Social Science Learning Effectiveness	Shih, J.-L., Chuang, C.-W., & Hwang, G.-J. (2010).	Mixed methods	This study presents a mobile exploration activity that guides elementary students to learn during a social science activity with digital support from mobile devices and wireless communications.
17.	Introducing mobile technology for enhancing teaching and learning in Bangladesh: teacher perspectives	Shohel, M. M. C., & Power, T. (2010).	Qualitative	This paper reviews the themes emerging from Bangladeshi teachers' experiences of taking part in the initial research and the development stage of a professional development program called as "The Secondary Teaching and Learning Program" which is an information and communications technologies-enhanced supported open distance learning program.

Findings

Taking the findings into consideration, overarching themes from the selected articles are given in Figure 1.

Figure 1. Overarching themes

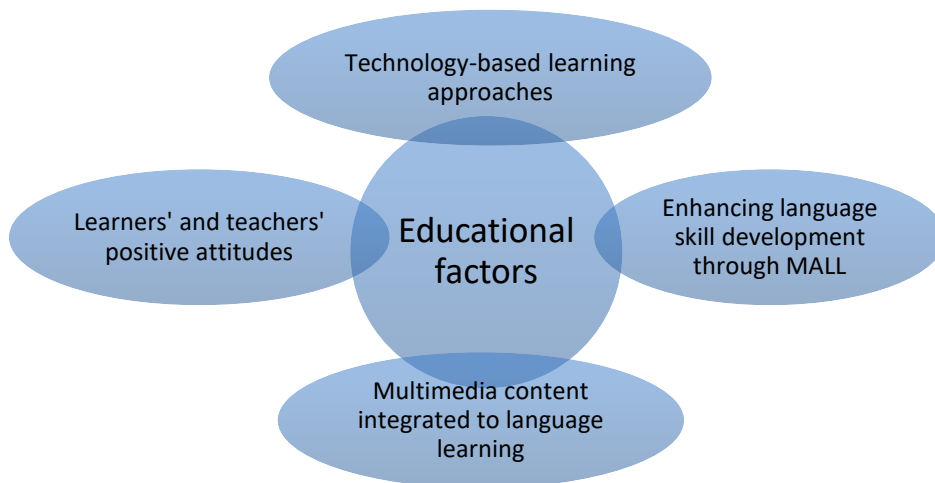Main themes obtained from the selected academic articles of journals can be outlined as in Figure 2.

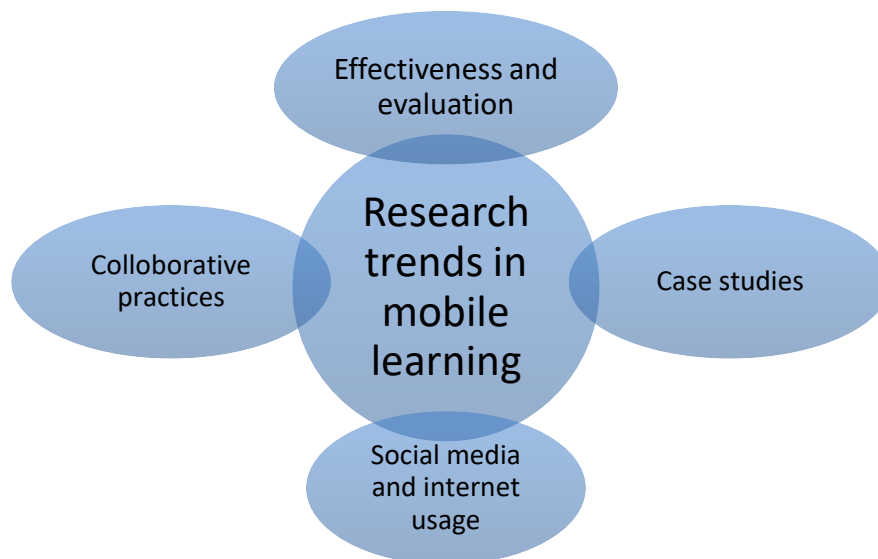
Figure 2. Educational factors about MALL

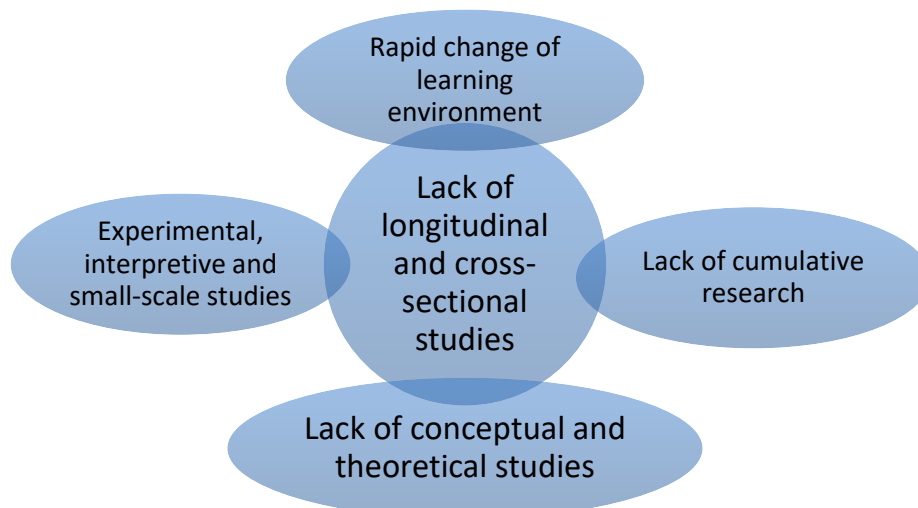*Figure 3.* Research trends in mobile learning

Figure 4. Lack of longitudinal and cross-sectional studies

As shown in the figures, this meta-synthesis research indicates three main themes out of the reviewed studies together with some factors. The findings of the studies show mainly an overall picture of the mobile use on the acquisition of language and linguistic skills, which is parallel to the previous studies investigated before (Baran, 2014; Burston, 2015; Wu, Wu, Chen, Kao, Lin & Huang, 2012) with some new highlights such as using social media and networking, genre approach and mobile learning software. However, Kinash, Brand & Mathew (2012) carried out a study about mobile learning which is not demanded by the students and mobile learning did not contribute to learning environment. Out of the language skills, the most popular one seems vocabulary acquisition in the teaching process (Duman, Orhon & Gedik, 2015; Lu, 2008; Taj et al. (2017). However, Hu (2013) stated the vocabulary acquisition with the help of mobile devices should not be stressed upon so much.

It is also clear from the findings that MALL in EFL field has positive and beneficial effects on language skills, learners' attitudes (Wong & Looi, 2010) and language learning. Based on the findings, it is also clear that there are some striking points and issues about MALL which come to the fore such as; the effectiveness of MALL and its developments and contributions to the second/foreign language teaching, its impact on the improving learners' proficiency levels especially in language skills; listening-speaking, writing performance, vocabulary acquisition (Li & Hegelheimer, 2013; Noriega, 2016; Xu et al., 2017), thereby enabling them to have more confidence in foreign language learning and learners' and teachers' mostly positive attitudes towards mobile learning and MALL (Öz, 2015; Saran et al., 2009) which is quite clear from the studies and MALL practices fostered self-study and self-regulated learning (Kondo, Ishikawa, Smith, Sakamoto, Shimomura & Wada, 2012).

The findings also reveal that mobile assisted language learning (MALL) has some significant contributions to the foreign language teaching especially as a supplementary tool although there are some potential drawbacks and problems such as concrete theoretical and conceptual model about MALL, technological limitations, lack of proper network coverage and small size screen. The findings of the study may also guide the researchers, academics and educators to investigate MALL and mobile learning quantitatively and qualitatively with a more specialized conceptual and theoretical model.

Discussion

This present study aims to report a meta-synthesis of qualitative research results on MALL in foreign language teaching especially within the last decade. Considering the research results, some practical implications could be made. It is clear that the use of mobile devices, m-learning and MALL for educational purposes have mostly positive effects on language learning process for the learners. With regard to language and linguistic skills, vocabulary instruction had a variety of foci such as paramount effect of mobile devices on vocabulary learning (Agca & Özdemir, 2013; Basoglu & Akdemir, 2010). From this point of view and meta-synthesis of the studies, it can be said that MALL has contributed much to language skills such as listening-speaking, but especially for vocabulary learning and English pronunciation. Nonetheless, it should also be kept in mind that MALL, mobile technology is not always effective due to some drawbacks such as screen size and limited presentation of graphs (Albers & Kim, 2001). It was also concluded that some researchers claim that computer assisted language learning (CALL) is not independent from MALL, some are against this perspective, though. From Turkey's perspective towards MALL, it can only be seen that there are some studies which are mostly based on vocabulary learning, English pronunciation, L2 listening and perceptions towards MALL, concluding that MALL environment helped learners improve their vocabulary acquisition, pronunciation and they had positive attitudes towards MALL (Agca & Özdemir, 2013; Basoglu & Akdemir, 2010; Çakmak & Erçetin, 2017; Öz, 2015; Saran et al., 2009, 2012). Because of the dearth of studies regarding MALL in Turkey, it is nearly impossible to say that MALL is more effective than other technological devices and contributions in view of teaching a foreign language.

Conclusion

In conclusion, as the results indicate, using mobile technology as a tool in foreign language teaching increases learners' language proficiency levels and also enables them to raise

their awareness in the language learning process. Another conclusion which is the most important conclusion from this meta-synthesis research is that there are not so many longitudinal and cross-sectional studies about MALL, mobile learning or any devices through mobile ones. This situation can be stemming from the quick cycle and transformation of mobile devices of technology itself. As Kukulska-Hulme, Lee & Norris (2017) put forth that "while 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 (p. 220). Overall, much more research about mobile technology, mobile learning and MALL is required to distinguish the field from other kinds of technological tools and to construct new conceptual and theoretical models.

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