Mobile Learning of English Speaking and Listening Skills via Smartphones
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ABSTRACT

This PhD thesis aims to develop and implement mobile teaching interventions that help a group of Turkish university students improve their general English listening skills, speaking fluency and specific problematic English sounds (/ð/, /θ/ and /ŋ/) for Turkish learners by utilising the affordances of smartphones. In this direction, a mobile application called SpeakingPal, specifically designed to improve students' speaking and listening skills, and WhatsApp, a popular instant messaging application, were employed. This study designs teaching interventions on WhatsApp using some principles of social constructivism and collaborative learning.

It investigates which designed WhatsApp teaching interventions are valued by the students. It also examines how SpeakingPal lessons and WhatsApp teaching interventions affect this group of students and the effects of teaching these problematic sounds separately on these students. Another aim is to examine how students' perceptions of mobile learning of English and a set of skills necessary for effective mobile learning, referred to as mobile literacy in the thesis, change as a result of the study.

This study targets to achieve affective, perceptual and performance-related changes in students through collaborative teaching interventions on WhatsApp. Students' overall listening skills, speaking fluency and pronunciation, especially targeted problematic sounds, are expected to improve due to their improved motivation, self-confidence and changed perceptions of English through mobile learning.

It was observed that the study contributed positively to these students' speaking fluency and pronunciation of problematic sounds. In addition, the students' attitudes towards mobile learning of English continued to be positive, and it can be argued that the skills necessary for the effective use of mobile learning also improved. At the end of the study, the students reported that they were more confident and experienced less anxiety while speaking English.

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CHAPTER 1: INTRODUCTION

The widespread adoption of mobile technology over the last decade has resulted in a significant increase in the number of people carrying mobile devices worldwide. Turkey is no exception. It is a frequent sight to observe individuals of various age groups engrossed in their mobile devices while commuting via the subway or bus in Turkey. Almost every teenager and adult in Turkey has a smartphone. They watch television, access social networking sites (SNS), listen to music, text and call, send e-mails, and perform various daily tasks on their smartphones. In Turkey, life now is virtually mobile. In addition to this "smartphone fever," the English education boom in Turkey in recent years has encouraged the development of smartphone applications (apps) to support different aspects of English learning, including vocabulary, reading, listening, speaking, grammar, and writing. Mobile apps are proliferating rapidly and may make desktop computing obsolete (Gümüş, 2017; Ergun & Guzel, 2018; Sanakulov & Karjaluoto, 2017).

The rapid emergence of the smartphone has enabled foreign language learners to practise their target language skills "anywhere, anytime" (Geddes, 2004, p. 1) and to access various apps, which provide an ideal platform for informal, individualised learning (Godwin-Jones, 2011; Steel, 2012). The growth in the number of smartphone users has boosted the educational potential of Mobile-Assisted Language Learning (MALL). Thus, it has become important to examine the potential impact of smartphones on foreign language learning and students' acceptance of smartphone language learning. Irrespective of the popularity of smartphones and English learning apps, few studies have explored the potential use of well-known and commonly used mobile apps such as WhatsApp in English language teaching, students' acceptance, usage, and motivation patterns of these apps for English language learning. This thesis fills that gap by exploring Turkish English Language Teaching (ELT) and English Language and Literature (ELL) college students' usage of smartphones, particularly

WhatsApp, and how it supports them in improving their English listening and speaking skills as a foreign language and their mobile literacies.

1.1 Background of the Study

Learning through smartphones, known popularly by terms like mobile learning (m-learning) or Mobile-Assisted Language Learning (MALL), has become increasingly popular among students over the last few years. M-learning can be defined as the learning through mobile devices' usage which includes, but not limited to, mobile phones, handheld PDAs, and smartphones in learning without constraints in time or place (Demirbilek, 2010; Kukulska-Hulme & Shield, 2008). Rapid technological advances over the past years have inspired both language students and educators to implement mobile devices in their learning and teaching environments (Stockwell & Hubbard, 2013). Various studies in the available literature have highlighted the possibilities of foreign language learning with mobile devices (Chinnery, 2006; Hu, 2010; Kukulska-Hulme, 2009; Levy, 2009; Miangah & Nezarat, 2012; Ota, 2015; Thornton & Houser, 2005; Wang & Smith, 2013). The adoption of mobile devices in foreign language learning has been found to improve different aspects of L2 language learners' English language skills and components, such as vocabulary (Kennedy & Levy, 2008; Stockwell, 2010; Tafazoli & Jam, 2015; Thornton & Houser, 2005), reading comprehension (Chen & Hsu, 2008; Huang & Lin, 2011; Lan, Sung, & Chang, 2007), grammar (Baleghizadeh & Oladrostam, 2010; Guerrero, Ochoa, & Collazos, 2010; Wang & Smith, 2013), listening (Azar & Nasiri, 2014; Rahimi & Soleymani, 2015), and speaking (Demouy & Kukulska-Hulme, 2010; Kukulska-Hulme & Shield, 2008; Liu, 2009). Portability, accessibility, interactivity, and individualised learning are important components of MALL, and these characteristics have been proven through recent studies (Chinnery, 2006; Fujimoto, 2012; Hu, 2010; Kukulska-Hulme & Shield, 2008; Miangah & Nezarat, 2012; Steel, 2012). Moreover, the effectiveness of smartphone apps

in language learning has been discussed in different countries (Faqe, 2015; Kim & Kwon, 2012; Kwon, 2013a; Ota, 2015; Park, 2013; Seo & Choi, 2014; Weng & Chen, 2015).

Mobile apps have become pervasive in our daily lives and are now evolving into an ideal platform for foreign language learning (Pindeh, Suki & Suki, 2016). However, the availability and accessibility of mobile apps do not guarantee their success in an educational context (Godwin-Jones, 2017; Liu, Li, & Carlsson, 2009). In this regard, it must be examined that the acceptance and motivation of students regarding the usage of technology and how it plays a significant role in shaping the success of their MALL. If students perceive that technology is helpful and easy to use, they tend to show a positive attitude and higher satisfaction and motivation, which will drive them to capitalise on the technology (Chung, Chen, & Kuo, 2015; Park, Nam, & Cha, 2012; Pindeh et al., 2016; Mtebe & Raisamo, 2014; Nassuora, 2012). Thus, students' perspectives towards the acceptance of mobile apps are critical factors in successful m-learning. A number of studies have found that MALL enhances learners' motivations for English learning and positive attitudes towards MALL (Demirbilek, 2010; Fujimoto, 2012; Kim, Rueckert, Kim, & Seo, 2013; Kwon, 2013b; Steel, 2013; Yang, 2012). Therefore, students consider mobile devices to be useful tools for acquiring information and ubiquitous learning.

With the sharp rise in the number of smartphone users, smartphone apps have become more popular and diversified. Weng & Chen (2015) examined many positive factors contributing to the smartphone's popularity in English learning and found the following: Four A's (Anytime, Anywhere, Anyway, and Achievement), R.A.I.L. (Real-Person Pronunciation, Adaptive-Testing, Instant Translation, and Language-Drills), and S.I.D.E. (Supplementary, Interesting, Dual-Purpose, and Effortless). They argued that the most significant advantage of learning English through smartphones is that learning takes anywhere, anytime, and just always at the fingertips of the learners. Particularly, smartphone apps like WhatsApp, dictionaries,

flashcard apps, and vocabulary-building apps can facilitate English learners with special functions like instant translation, meaning and synonyms, authentic pronunciations, flashcards, language drills, and adaptive testing which can significantly improve the ability and language proficiency of learners to English learning. For instance, language drills including multimedia effects make language learning more attractive, thus boosting learners' motivation. Finally, smartphone apps can supplement schoolwork as students can learn simply by touching screens instead of browsing through thick textbooks and dictionaries.

Researchers and teachers have developed and incorporated various mobile applications to promote teaching and learning, such as podcasts, MicroWorlds, mobile-based intelligent vocabulary tutor systems, and mobile applications like WhatsApp and Mobile Dictionaries (e.g., Stockwell, 2007; Han & Keskin, 2016; Fattah, 2015; Şahan, Çoban, & Razı, 2016). WhatsApp is one type of app that enables users to share messages in text, audio, and video files and make audio and video calls. Many second language teachers and researchers have advocated using WhatsApp to improve learners' listening and speaking skills (e.g., Han & Keskin, 2016; Fattah, 2015; Şahan, Çoban, & Razı, 2016). However, the extent of the effectiveness of WhatsApp in English speaking and listening skills remains underspecified.

The body of existing literature provides a firm foundation for this research study. This research is the utilisation of mobile learning (m-learning) and mobile-assisted language learning (MALL), specifically through the use of smartphone applications as language learning tools. As the professors have tried numerous other methods, at times with only minimal success, the use of MALL will be an innovative approach at the research site. Potentially, the use of m-learning through smartphone apps could aid in the language acquisition process in a number of possible ways. Such utilisation could positively affect student motivation, achievement, engagement, and other factors. There have been several studies on the use of MALL and m-learning in English as Foreign Language (EFL) classrooms, and this is an excellent opportunity

for research in this field. A primary theory supported by the research of Khrisat and Mahmoud (2013) and Ketyi (2013) is that MALL techniques may be beneficial for assisting English language learners (ELLs) in their acquisition of the English language.

In his pilot study using m-learning, Ketyi (2013) concluded that integrating mobile devices into language learning practices can significantly benefit students to gain valuable additional learning outside the school resulting in enhancing their motivation and efficiency in language learning. The research of Khrisat and Mahmoud (2013) showed that students tend to respond positively towards the use of m-learning. Other sources also support the use of smartphones in ESOL classrooms (Kim, Rueckert, Kim, & Seo, 2013; Korucu & Alkan, 2011; Nah, White, and Sussex, 2008; Thornton & Houser, 2002; Stockwell, 2008, 2010; Stockwell & Liu, 2015; Vasquez-Cano, 2014).

The studies mentioned above might support the idea that smartphones are likely to be useful tools for English learning in various contexts; however, they may not be effectively used under different circumstances. It can be argued that mobile learning must be adapted according to the context it will be used. Still, it will be more reliable for different contexts should some of the well-known concepts of English language learning can be fitted to mobile learning. By all means, the principles and theories to be employed for this purpose can change according to the need.

For this study, the theories and concepts helping understand the reasons for the problems causing Turkish students to show lower performance at learning English than expected, which will be explained below, are the affective filter hypothesis (Krashen, 1981, 1982), students' perceptions, attitudes, and motivation. The theory and concepts that support the solutions to these problems and form the interventions are the digital literacy - mobile literacy, the technology acceptance model (TAM), social constructivism, collaborative learning and the engagement theory (Kearsley & Shneiderman, 1998).

1.2 Statement of the Problem

The students in Turkey tend to have low levels of interest and poor attitudes towards studying English in Turkey. Turkish students tend to believe that English is useless in their lives unless it is learnt for academic purposes (Karahan, 2007). On the other hand, some Turkish students still think that it is necessary and fun to learn English in today's world; however, they feel anxious about speaking English in and out of classrooms (Durer and Sayar, 2012). It can be argued that many Turkish students think that learning English is an academic achievement rather than learning a language. This thought of Turkish students and their emotional barriers while speaking in English can be mainly caused by their lack of engagement with English outside the classroom. It is essential to support this argument with the literature.

1.2.1 Affective Filter Hypothesis

According to Krashen (1982), "the Affective Filter hypothesis states how affective factors relate to the second language acquisition process" (p. 30). The notion of an affective filter, which was first coined by Dulay and Burt in 1977 (Krashen, 1982), is focused on how attitudinal factors, such as anxiety and motivation, affect language acquisition (Gass & Selinker, 2008). Krashen (1981; 1982) elaborated on this model and described it as a mental construct such that if a positive attitudinal factor such as motivation is high and a negative factor such as anxiety is low, then the affective filter is lowered, allowing language acquisition to happen.

In the acquisition of English as a second and/or foreign language (L2), there are several factors that may influence the amount of learning or degree of fluency experienced by language learners. These factors are known as affect or affective factors. Gass and Selinker (2008) explain affect as the emotional reactions or feelings L2 learners have about the language they are learning, the native speakers of the target language, and possibly their culture. "Affect, from Krashen's perspective, is intended to include factors such as motivation, attitude, self-

confidence, and anxiety" (Gass & Selinker, 2008, p. 402). According to the affective filter hypothesis, which is a part of the monitor model of SLA proposed by Krashen (1981), there are three categories of attitudinal factors which affect L2 acquisition: anxiety, motivation, and self-confidence (1982, p. 31). Krashen (1982) states that learners who are highly motivated are generally more successful in SLA.

Another part of the monitor model is the input hypothesis which is closely related to the affective filter hypothesis. Saville-Troike (2006) explains Krashen's theory as follows. "Language acquisition takes place because there is comprehensible input. If the input is understood, and if there is enough of it, the necessary grammar is automatically provided" (p. 45). This is tied to the affective filter in that if the filter is up or high, then the understandable information is unable to get through. Thus, the main premise of Krashen's (1981, 1982) theory concerning affect states that if positive factors are high and negative factors are low, then the affective filter is low, and L2 learners are able to acquire the language. For example, if students have high levels of motivation to study an L2, such as English, and positive attitudes towards the target language, then the learners are more likely to have success in acquiring English.

Conversely, if the positive factors are low and the negative factors, such as anxiety, for example, are high, then the affective filter is high, thus impeding the process of L2 acquisition (Arnold & Brown, 1999; Brown, 2007; Krashen, 1982; Saville-Troike, 2006). "The affective domain includes several variables that can either enhance second language acquisition or hinder it, depending on whether they are positive or negative, the degree to which they are present, and the combinations in which they are found" (Richard-Amato, 2003, p. 111). Brown (2007) names several factors comprising the affective domain such as attitudes, self-esteem, anxiety, and inhibition amongst other factors. Essentially, if language learners have low self-esteem or a great deal of anxiety about learning a given L2, then the chance of their success in language acquisition is lowered. According to Oroujlou and Vahedi (2011), a lack of learner motivation

and the presence of negative attitudes can hinder the language learning process. However, it is possible to convert these negative attitudes into positive attitudes. Thus, taking these issues into account, if teachers provide learners with a proper environment and activities to lower the affective filter, successful language acquisition is more likely to happen.

Smartphones and their continuously increasing popularity can give some ideas to teachers about how they can create a learning environment that can help students have low affective filters. This learning environment must include elements to positively change students' attitudes and boost their motivation to learn English. The following sections will explain how this study attempts to create this kind of learning environment with the help of smartphones. Before that, it is essential to understand what attitudes and motivation mean in learning English; thus, they will be discussed more.

1.2.2 Attitudes & Motivation

As seen in the affective filter hypothesis, attitudes and motivation are key factors in the process of language acquisition. Pickens (2005) defines attitudes as "a complex combination of things we tend to call personality, beliefs, values, behaviours, and motivations" (p. 44). Pickens (2005) explains the formation of this complex combination as a result of a learning process, modelling of others, and our personal experiences of people and circumstances. Ahmed (2015) specifically defines attitudes in language learning as "a collection of feelings regarding language use and its status in the society" (p. 6). Ahmed (2015) agrees with the overall intent of the affective filter hypothesis stating, "Depending on the learner's attitudes, learning a second language can be a source of enrichment or a source of resentment" (p. 8). Finegan (2008) adds to this by stating, "Language attitudes can have a profound effect on your ability to acquire a second language, especially beyond adolescence" (p. 522). Overall, attitude is a factor that affects learners of varying types in different countries who are studying/learning various

languages as seen in the work of Ahmed (2015) and other scholars (Al Samadani & Ibnia, 2015; Latifah et al.,2011; Tahaineh & Daana, 2013, as cited in Ahmed, 2015).

Motivation is one of several key attitudinal factors affecting second language acquisition. There are different schools of thought concerning motivation, the most well-known being Gardner and Lambert's (as cited in Brown, 2007; Dörnyei & Skehan, 2003; Richard-Amato, 2003) social-psychological approach focusing on the concepts of integrative and instrumental orientations to motivation and Dörnyei's (2005) L2 motivational self-system. In the first component of Gardner and Lambert's (as cited in Brown, 2007; Dörnyei, 2009; Dörnyei & Skehan, 2003) model of motivation, integrative orientation, the focus is on the desire of learners to not only acquire an L2 but to also possibly integrate themselves into the community of the target language they are learning.

Essentially, individuals who are integratively motivated wish to be able to speak a given language and adopt aspects of the culture where the language is spoken. Regarding instrumental orientation, Gardner and Lambert (as cited in Brown, 2007; Dörnyei & Skehan, 2003) proposed the theory that L2 learners may be instrumentally motivated to learn a language for the reasons of securing employment, a better salary, or advancing their academic studies. This is particularly true in countries such as South Korea and Turkey where individuals need English skills to get into prestigious universities or obtain employment. In their discussion of the social-psychological approach, Dörnyei and Skehan (2003) cite Gardner's (as cited in Dörnyei & Skehan, 2003) further work to give a deeper understanding of Gardner's theories, specifically "the concept of integrative motive. This is a complex construct made up of three main components: (i) integrativeness, subsuming integrative orientation, interest in foreign languages, and attitudes towards the L2 community; (ii) attitudes towards the learning situation, comprising attitudes towards the teacher and the course; and (iii) motivation, which according

to Gardener is made up of motivational intensity, desire to learn the language, and attitudes toward learning the language" (Dörnyei & Skehan, 2003, p. 613).

The second and third parts of integrative motive, a learner's attitude toward their learning situation, their hope to learn a given L2, and their feelings about that process, are key factors to the learner's success in acquiring a language. Richard-Amato (2003) stresses the importance of motivation, stating that without it, "learning any language, first or second, would be difficult, and perhaps impossible" (p. 115).

While Gardner and Lambert's (as cited in Dörnyei, 2005, 2009) model was the standard for understanding the motivation for many years, Dörnyei's (2005, 2009, 2010) work concerning the L2 self-built on Gardner's theories and moved forward in presenting a clearer understanding of motivation. Dörnyei (2010) describes this paradigm shift as a move away from "an integrative/instrumental dichotomy to the recent conceptualization of motivation as being part of the learner's self-system, with the motivation to learn an L2 being closely associated with the learner's 'ideal L2 self'" (p. 74). Dörnyei (2010) points out that when Gardner first coined the theory of integrative motivation, he did so in the multicultural context of Canada, where English is spoken predominately. Thus, the theory was applicable in such an ESL context; however, this concept would not make sense in EFL contexts such as teaching English in Japan or French in China (Dörnyei, 2010). Indeed, Benson (as cited in Oroujlou and Vahedi, 2011) suggested a better way of viewing integrative motivation in EFL situations is that learners wish to become bilingual and bicultural rather than completely adopting the culture of the L2. Thus, instead of completely integrating into the L2 culture, the goal behind integrative motivation in EFL contexts is for English language learners (ELLs) to add the L2 cultural identity to their own.

Ahmed (2015) calls learner motivation the most significant single factor affecting their success. As mentioned above, learner success is often affected by levels of motivation and the

type of attitudes towards the L2. A great number of researchers have conducted studies on learner attitudes in general, the effects of learner attitudes on language acquisition, and the part motivation plays in SLA (Ahmed, 2015). In his study of 238 EFL learners in Malaysia, Ahmed (2015) utilised a survey instrument to determine the attitudes of undergraduate university students towards learning the English language and to discover what issues hindered their L2 acquisition. The results of the study revealed that the participants held positive views of English language learning; however, they also had negative views about the instructions they received in the classroom (Ahmed, 2015).

Additionally, Ahmed (2015) cited several other attitude studies conducted in Malaysia, which discovered positive learner attitudes towards English (Mohd Allehhuddin, 1994, as cited in Ahmed, 2015); positive and instrumental attitudes and motivation (Mahreez, 1994, as cited in Ahmed, 2015); high motivation and positive attitudes towards learning English among participants with high proficiency (Yang, 2012, as cited in Ahmed, 2015); and that attitudes positively impact performance in English classes (Latifah et al., 2011, as cited in Ahmed, 2015). Ahmed (2015) also cited a number of attitude and motivation studies in a number of countries, from Bangladesh (Al Mamun et al., 2012, as cited in Ahmed, 2015) and Iran (Chalak & Kassaian, 2010, as cited in Ahmed, 2015) to Japan (Galloway, 2011, as cited in Ahmed, 2015) and Spain (Bobkina & Fernandez, 2012, as cited in Ahmed, 2015), to name a few, which reveal positive attitudes towards English in both social and academic contexts, and a range of motivation, including instrumental, integrative, and extrinsic motivation/orientation. Given the importance of attitudinal factors in language acquisition, the overall perceptions L2 learners have of English, or any L2, is an important issue as well.

In her integration of social, linguistic, and psychological perspectives of SLA, Saville-Troike (2006), listed motivation as a factor in why certain L2 students have more success in language learning than other students. Saville-Troike (2006) called motivation a determiner of

student effort at different points throughout their development of a particular L2 and aid in attaining higher language proficiency. Saville-Troike (2006) also stated that the types of motivation do not seem "to have any inherent advantage over the other in terms of L2 achievement" (p. 178).

Attitudes are overarching since they may include all the beliefs, feelings and actions of a person. However, motivation in language education may significantly affect students' success rate in language learning. The explanation above suggests that students' perceptions of English can affect their motivation types and levels for learning English. The level and type of motivation along with the elements determining the level of the affective filter such as anxiety, self-confidence and self-esteem can alter students' attitudes towards learning English. That means students' perceptions can be crucial in English language learning.

1.2.3 Students' Perceptions of English

Attitudes and perceptions are closely related; however, the two constructs are not the same. Perception is the way in which the organism interprets and organizes sensations in order to produce meaningful experiences of the world (Lindsay & Norman, 1977). Despagne (2010) explains what can possibly form perceptions of languages as follows.

> "…our perceptions towards languages will be influenced mostly through our
> parents', teachers' and peers' perceptions, which in turn will be defined based on
> the social context in which we are living. These perceptions will also depend on
> our own personal experience(s) with the language and its associated culture(s)."
> (pp. 55-56)

Given this definition of perceptions in the context of attitudes, it is logical that students in various cultures will have different perceptions of their EFL studies based on their individual experiences. Alkaff (2013) reflected on this definition to state that "attitudes can be defined as the behavioural outcomes of perceptions" (p. 107). In short, perceptions can shape attitudes.

As a global language, English is taught in numerous countries around the world as both a second and a foreign language. With different language and cultural backgrounds, such as from Mexico (Despagne, 2008), Saudi Arabia (Alkaff, 2013), China (Peng, 2016), and South Korea (Kim, 2013) come differences as well as similarities. In each of these countries, English is not the commonly spoken or official language; thus, English is taught as a foreign language in each country.

Despagne (as cited in Despagne, 2010) aimed to find out students' attitudes towards learning English. An online questionnaire was applied to 300 students from different Mexican states who were in A1 or A2 English classes at a Mexican university called Universidad Popular Autónoma del Estado de Puebla (UPAEP) in 2008. The results of the questionnaire showed that most students thought that English is important and can help them find a better job or do a Master's degree abroad. Despagne (as cited in Despagne, 2010) concluded that the students in A1 and A2 English classes at UPAEP are extrinsically motivated to learn English.

Alkaff (2013) investigated the perceptions and attitudes regarding learning English held by Saudi Arabian university students attending a university English language institute. She sampled pre-intermediate and intermediate students and discovered that despite their busy lives and limited chances to practice speaking English, most of the students felt positive about English and tried to practice as much as they could (Alkaff, 2013). However, in spite of their positive feelings, the 47 students surveyed reported that they need more time to practice using English, and they want more authentic practice, especially speaking practice, with English speakers (Alkaff, 2013). The students Alkaff (2013) surveyed also expressed the perception/opinion that at the language institute: there was too much emphasis on exams, the courses were too long and too intense, the institute needed language labs, and classes needed to be more interactive and enjoyable. Some students admitted they needed to work harder or overcome their shyness to improve their English skills (Alkaff, 2013). Alkaff also found her

hypotheses to be true that a range of factors hamper students' efforts to improve their English skills and that, unfortunately, they do not have numerous opportunities to practice outside of their English classes. She concluded that despite the various hindrances, the students in the study truly wish to improve their English language abilities. Thus, she recommended that the university's English language institute makes a number of changes, such as utilising a more flexible curriculum and teaching more vocabulary and speaking skills to keep the students' positive attitudes and make the teachers' instruction more effective.

Peng (2016) conducted a study with 116 Chinese university students, including English and non-English majors, to determine their attitudes about their learning environment and whether their perceptions varied depending on their major. Peng used four domains in which to consider learning environments: motivational, learning, teaching, and physical. After reviewing the data, Peng concluded that the students had mixed attitudes towards their learning environment. While the students were willing to learn the English language, they felt forced to learn and were not interested in English or its cultural context, despite showing a willingness to participate in various learning activities in their English classes (Peng, 2016).

Kim (2013) conducted a study of ten Korean students studying at an English language institute at a university in the United States (U.S.). During the study, Kim (2013) investigated the students' experiences with learning English in both Korea and the U.S. One of Kim's (2013) research questions dealt with the students' perceptions of learning and speaking English in Korea both inside and outside of class. Another research question that guided her investigation concerned how the students' experiences and culture affected their perceptions of learning to speak English. One of the reasons why Kim conducted the study was to understand more about English language learning from the perspective of Korean students because, despite years of study, many Koreans still have poor English-speaking skills. During the years of elementary schooling, students found studying English to be fun and enjoyable; however, middle school

brought a lot of testing and high school brought preparation for the college entrance exams. So when the students were in middle and high school, they found their English studies to be difficult and tedious, yet found college English classes to be easier, though instead of preparing for college entrance tests, they had to study for English proficiency exams (Kim, 2013). Kim discovered that while many students disliked studying English, they also understood that they needed to study it, and some regretted not studying harder in school.

In answer to the question concerning how the students' experiences and cultures shaped their perceptions of learning English, Kim found five key hindrances to the students being able to speak well in the U.S. The problems that impeded their English speaking in the US included: very little English-speaking experience in Korea, difficulties with English as a school subject in Korea, retaining Korean classroom culture in the American classrooms, not making much effort to meet Americans in the US, and socialising with Koreans that impeded their daily English usage (Kim, 2013).

The perceptions and attitudes behind these problems stemmed from the importance of English in Korea as a status symbol, their own shyness or lack of confidence, and the Korean mindset that included factors such as competitiveness or pride. Overall, Kim (2013) learned that the students did not believe themselves capable of truly becoming fluent in English; they just wanted to learn enough for the status they would gain in Korea.

The findings of the studies summarised above show that students may tend to have instrumental or extrinsic motivation for learning English. They want more opportunities to practise English and request a more interactive and enjoyable learning environment instead of being forced to learn English for exams or other academic purposes. They also expressed a desire to improve their confidence and overcome their shyness when speaking English. However, it is difficult to do so for various reasons, such as the fact that they are learning English in dull environments, their mindset, which can prevent them from attempting

to speak English, as well as the limited amount of time and opportunity to practise English inside and outside classrooms.

Turkish students are similar to those from different countries: Mexico, Saudi Arabia, China and South Korea. The students in Turkey are taught English for 10 to 13 years until they reach the university level; however, some students still cannot pass the English exam, which is a prerequisite for most universities in Turkey before they are allowed to take the departmental courses. This undesirable situation is caused by the same or similar reasons causing students from various countries to experience hindrances when learning English.

First of all, students in Turkey cannot speak English inside and outside the classroom adequately since they do not find enough chances to use it in their classrooms (Kara, Ayaz & Dündar, 2017), and they do not have contexts to use it outside the classroom (Uzum, 2007). Another reason is that they mostly tend to see English as a subject to pass at school, not as a language or a means of communication. This circumstance results in temporary learning, and Turkish students restart learning English from the beginning every year. They focus on passing English exams and then stop studying or using English until they need it later for academic or occupational purposes (Karahan, 2007). The last reason is that Turkish students have a high level of anxiety, especially when speaking English, which hinders them from fluently speaking it (Çağatay, 2015, Öztürk, G. & Gürbüz, N. 2014, Yalçın, Ö. & İnceçay, V. 2014).

1.2.4 Summary

It can be inferred that perceptions, motivations, attitudes and elements included in Affective Filter Hypothesis are closely related and can impact one another. It can be argued that Turkish students' perceptions of English are similar to the perceptions of their peers from different countries. Since their perceptions partially or fully cause them to have instrumental motivations to learn English, their attitudes are accordingly shaped as well. The reasons causing

Turkish students or students from different countries in similar conditions to have problems when learning English can be summarised in the following items:

- Turkish students perceive English as a 'tool' to achieve their academic purposes or find a better job.

- Their perceptions cause them to have instrumental motivation, and they lose their motivation to learn and continue using English soon after being rewarded with academic success or a prestigious job.

- Turkish students cannot find opportunities to practise English inside and outside classrooms which is another reason causing them to have instrumental motivation.

- Turkish students cannot lower their affective filters. They cannot alter this situation since the language learning environments are dull and too academic. As stated in the previous item, they cannot practise English adequately. That causes them to be shy and/or anxious when speaking English. Also, their self-confidence and self-esteem are negatively affected under these circumstances.

It was essential to gain insights into the major reasons for Turkish students' English learning problems and to briefly review the explanation attempts of these rooted problems in the literature. It is crucial to diagnose and understand the problems before offering treatment. The treatment of these problems should be either to change the present situation or to modify it in order to address its shortcomings. In this case, this treatment should provide the students with an enjoyable and less formal learning environment. It should enable them to increase their listening and speaking English time outside traditional classrooms. Lastly, this learning environment must be constructive and supportive to help them reduce their affective filters.

Students' mobile devices, which are commonly their smartphones, can be a tool to overcome these problems of Turkish students with their rather useful features, which can help create a digital collaborative learning environment to increase students' engagement time with English out of the classroom and to lower their affective filter as long as the students accept their smartphones as a means of learning English and have positive attitudes and perceptions towards their regular use in their English language learning process. (These attitudes and perceptions should not be mixed with students' attitudes and perceptions towards English learning). Therefore, research is needed to examine whether mobile learning of English speaking and listening skills via smartphones supports Turkish university students in improving their English listening and speaking skills.

According to Kennedy (2014), researching the use of mobile devices in tertiary environments is overdue since, at this time, these devices have become commonplace. Both Burston (2014) and Kennedy (2014) emphasise the need for more research on learner-focused interventions with mobile learning (m-learning). Given the diverse literature base concerning MALL, ranging from mobile device ownership and motivational effects to user attitudes and teacher training (Burston, 2014), this study concerning the use of smartphone apps and m-learning is both timely and necessary.

In the intertwined areas of mobile learning, m-learning, and MALL, smartphones have emerged as promising new tools in the preface of emerging technologies in education. Although there are promising opportunities, there are also research gaps in the domain of MALL, which is one of the justifications for conducting this study. MALL is one of the trends that seeks to take advantage of the English language speaking and listening learning and mobile learning alliance.

Various studies conducted on the MALL have stressed asynchronous English speaking and listening activities (Kukulska-Hulme & Shield, 2008). On the contrary, the previous studies

with a synchronous approach are either text-based (Samuels, 2003; Ogata & Yano, 2003) or lack taking into account the scheduling and technical difficulties (Tomorrow's Professor Listserv, 2002). Therefore, and since English listening and speaking skills involve timeliness, promptness and immediacy as opposed to English reading and writing, the current research problem explored how English language learners might enhance their English listening and speaking skills via collaboration within MALL environments, especially by using smartphone apps like WhatsApp. Pursuing this study within MALL using a popular application (WhatsApp) that has great potential to enhance the English speaking and listening skills of all English language learners in and outside the classroom was based on an effort to close the gap in the literature in the area of synchronous m-Learning.

In Turkish higher education and K-12, future generations are more inclined towards adopting and are more closely attached to mobile technologies than before. The potential of mobile learning in Turkey makes it a powerful tool to be integrated into the learning process. Such advantages include, but are not limited to, portability, ease of access, platform compatibility, affordability (especially vs. PCs), and availability. The Speak Up (2010) survey pointed out that learners in various parts of the world have been increasingly adopting a variety of technologies as part of their daily school routine or using them as a valuable resource that could assist them in finishing their homework assignments. In this context, the usage of mobile technology and mobile apps has become the next logical step for them in their learning process.

Consequently, the researcher believes that as a future educational technologist, designer and teacher, he would like to be a part of that change by pursuing studies that tackle these topics. A study of the role of collaboration on students' listening and speaking skills within the mobile learning environment, especially for a software app like WhatsApp, could potentially add to the existing body of literature in the area of instructional technology and specifically to the field of mobile learning. The current research can also provide insights to teachers and scholars who

are searching for more effective and practical strategies to adopt mobile technologies inside and outside the classroom for English learning.

1.3 Purpose of the Study

The primary motivation for conducting this study is to use smartphones as a digital auxiliary teaching/learning platform that creates a digital learning environment enabling students to have additional chances to use English by combining the up-to-date sociability and entertainment of smartphones with the interactions and tasks designed and based on the engagement theory, social constructivism and collaborative learning. Specifically, the purposes of the study are to gain insights into whether the students' listening and speaking skills in using English can be improved with the support of smartphone apps by taking students' perceptions and readiness for mobile learning of English into consideration.

The purpose of this study is multifold. The first is to find out Turkish students' perceptions about their abilities to use smartphones and what they think about utilising them to improve their English listening and speaking skills. The prerequisite to achieving the aims of this study is that the students must be digitally literate. That means they must have the necessary mobile literacies. Also, the students must have a positive attitude towards mobile learning of English via smartphones and accept them as practical language learning tools. Thus, it must be ascertained whether the students are sufficiently digitally literate to optimally use their smartphones in the required way for this study. Last but not least, the students should improve their skills in using smartphones for their English learning purposes. It must also be observed whether their thoughts about mobile learning of English remain the same or change to more positive or negative after they experience it in this study. The terms related to this purpose will be explained in detail in the next chapter.

The second is to design speaking tasks encouraging Turkish students to do them collaboratively on smartphone apps, specifically WhatsApp in this study, to improve Turkish students' overall speaking and listening skills in English. WhatsApp is not designed for educational purposes but benefits from most of the advantages of mobile learning that can potentially facilitate language education. These advantages will be further discussed in Chapter 2. These tasks also include mobile literacy elements to make Turkish students capitalize on the potential of smartphones. Turkish students are also expected to upgrade their mobile literacy during this process since the task requires them to use various features of smartphones.

The third is to see whether smartphones can be used in the treatment of the pronunciation of specific sounds in English, which are problematic for Turkish learners, with the help of WhatsApp and SpeakingPal. Improving the pronunciation of some English sounds is a part of this study in addition to improving overall English listening and speaking skills. Researchers (Hismanoglu, 2006; Akyol, 2013; Gurler, 2015) argued that Turkish students feel more motivated and confident when they know how to pronounce English sounds, which causes them to have a better English learning experience. Unlike WhatsApp, SpeakingPal is an app designed to improve students' speaking and pronunciation skills. More information about this application will be given in Chapter 3.

In this way, the potential of smartphones will be understood better since the study will present valuable knowledge about whether a smartphone app, which is specifically designed for students to practise English autonomously, can be helpful to students' English learning process. Also, an app like WhatsApp, which is not designed for educational purposes but is still customisable for this study, could be tested to determine whether it can be used to improve students' speaking and listening skills in English.

In conclusion, this study aims to improve Turkish students' English listening and speaking skills by changing their perceptions of English from a school subject to a commonly-

speaking foreign language. It is thought that should Turkish students' perceptions change that way, this can lead to a positive 'chain of changes'. This altered perception of English can change their motivation from instrumental to intrinsic and their attitude from negative to positive. As a result of all these changes, their affective filters can be lowered, and Turkish students can speak English more fluently.

1.4 Research Questions

The problems and circumstances discussed above led to a thought on how to deal with Turkish students' problems in English language learning. As it can be deduced from the statements above, Turkish students and students from different countries, who have similar contexts and problems to Turkish students, experience severe problems in learning to speak English. My experiences as an English teacher in Turkey also approve of this situation.

In considering methods to improve the speaking abilities of Turkish students, I conducted extensive research into the existing literature. This analysis revealed that the primary obstacles impeding their progress are their perceptions of the English language, low levels of motivation, negative attitudes, and significant affective barriers in listening and speaking. The solution to these problems could be to increase their engagement time with English in a social, collaborative, constructive and less formal teaching/learning environment.

Due to advancements in mobile technology and the increasing popularity of these devices, predominantly smartphones, I decided to make use of the smartphone features that are suitable for creating the type of learning environment mentioned above. The initial question was, "how can smartphones be used to improve the general listening skills and speech fluency of university students in Turkey?" There seem to be two predominant approaches to integrating smartphones into mobile learning. The first involves the use of specialized applications explicitly designed for educational purposes, while the second entails adapting general applications for use in educational contexts. This study included two main applications, one

designed specifically to improve listening and speaking in English and one general application. These applications were SpeakingPal and WhatsApp respectively. In addition to these, students needed to use other applications to do the tasks. Although some applications were suggested at the request of the student, the choice of these applications was left to the student.

The question that emerged after determining the smartphone application on which the study would be conducted was 'How can teaching interventions on WhatsApp be designed to improve Turkish students' general listening skills, speaking fluency and pronunciation of specific problematic sounds in English?'. This question became the broad research question (BRQ) of the study. I aimed to develop teaching interventions that could be seamlessly integrated into messaging applications such as WhatsApp. These interventions were created with the guidance of engagement theory, social constructivism, and collaborative learning principles. Further elaboration on these theories will be presented in the subsequent chapter.

Furthermore, after reviewing the literature, it was seen that there are important concepts to take into consideration while designing the study. These concepts are digital natives and immigrants, digital literacies and students' acceptance of technology. These concepts supported the idea that any mobile learning study has some prerequisites to meet. All the participants must perceive their smartphones as a convenient tool that supports their English learning. Also, they must be competent in using their smartphones to complete tasks. Although they can see themselves as competent smartphone users, this may not be the actual situation. Pickens (2005) highlighted that what one perceives can be significantly different from reality. This condition added another dimension to the study, so another question to be answered. It was also necessary to modify the interventions to include elements of digital literacy, which would encourage students to use their smartphones in more complicated ways and help them improve their digital literacy in the meantime.

The study was divided into pre-study + three phases. The research questions will be explained in accordance with the phases to make them easier to follow even though the answer to a research question can include collecting data in different phases. Before stating the research questions of the study, it is necessary to see the question to be answered in the pre-study phase so that the complete frame of the study can be seen better. This question is:

- What are the trends in smartphone use among the students at Gazi University? -

It was aimed to gather information about the technical features (mobile data packages, e.g.) and students' smartphone preferences, such as the operating system (OS), the most popular applications among them and so on. It was necessary to find out more about the conditions to ensure the study could be feasible without any technical issues. The content of this questionnaire will be shared in more detail in Chapter 3.

Following a thorough evaluation, the research questions (RQ) were determined as follows:

BRQ: How can teaching interventions on WhatsApp be designed to improve Turkish students' general listening skills, speaking fluency and pronunciation of specific problematic sounds in English?

This broad question is narrowed down to more specific questions to explain what the study exactly looks at. These questions are:

RQ1: What teaching interventions are highly valued by a group of Turkish university students?

RQ2: How do teaching interventions on WhatsApp and SpeakingPal lessons affect a group of Turkish university students?

RQ3: How does teaching specific problematic sounds (/ð/, /θ/ and /ŋ/) on WhatsApp and using the SpeakingPal impact a group of Turkish university students?

RQ4: How do a group of Turkish university students' perceptions towards mobile learning of English and their mobile literacies change by the end of the study?

In addition to these questions, an action research planning question that was required to ask was how best to monitor the results. This question is, "How can I know whether mobile-assisted language learning extension activities enable students to improve their listening skills, speaking fluency, and mobile literacies?". This action research planning question was adapted and asked for every research question, and necessary research tools were employed. The research tools and methods will be explained in Chapter 3.

RQ1 was answered through the interviews conducted towards the middle of the study and the questionnaire at the end of the study. RQ2 and RQ3 were answered with a pre-test and post-test procedure, analysis of the students' voice recordings as they complete the tasks, their feedback throughout the study and the questionnaire administered at the end. The students in the control and experimental groups took an IELTS preparation test in the preliminary phase. After that test, the experimental group had mobile-assisted language learning extension activities based around the use of WhatsApp to improve their speaking and listening skills and their pronunciation of the problematic sounds (/ð/, /θ/ and /ŋ/) for Turkish EFL students. Additionally, the experimental group had full access to the 'SpeakingPal' app, which enabled them to practise English listening and speaking on their own. After these activities, both groups took another IELTS preparation exam at the end of the main phase. The results of these IELTS preparation exams were analysed according to the criteria which were developed based on the literature to minimise subjectivity. The related literature on the development of the criteria will be covered at the end of the next chapter.

RQ4 was answered with the data collected in the preliminary and post-study phases. Two questionnaires, one conducted in the preliminary phase and the other conducted in the post-study phase, were employed to monitor how the students' perceptions of their mobile

literacies and perception towards mobile-assisted language learning of English listening and speaking changed by the end of the study. So that it was possible to compare the students' perceptions of their mobile literacies before and after the study, and more importantly, it could be observed how the students' acceptance of their smartphones and mobile learning changed after the study. All the other data collection procedures will be explained in more detail in Chapter 3.

1.5 Significance of the Study

The rationale for this action research study is centred on the work implemented by English language educators to assist students with the acquisition of English and to do this teachers must utilise various learning tools. This action research study has two primary points of focus: m-learning using smartphone apps as a learning tool and student perceptions about learning English via their smartphones. The current atmosphere in the organisation is the following: while education, in general, is important to many students, their English classes do not hold a great deal of importance to them. As a result, many students display poor attitudes towards English conversation classes. To combat this lack of engagement and interest, the researcher has designed this study to provide students with an alternative form of learning utilising an item that students use all the time: their smartphones.

Currently, the professors do not use mobile learning a great deal, if at all, and with the absence of computers in most classrooms, having the students use their smartphones as computers will be a substantial change. This intervention is designed to identify some more effective strategies and provide professors with new tools for their English classes. According to Scarino and Liddicoat (2009), communication and information technologies are significant tools for learning and teaching where these technologies facilitate both learners and teachers to obtain new up-to-date resources. As smartphones are essentially small computers, they will help bring information technology into English classrooms. Nah, White and Sussex (2008) have

confirmed that mobile devices, especially mobile phones, offer language learners greater accessibility and portability than stationary computer devices. This makes them an ideal tool for language learning.

Successful use of WhatsApp will also equip the students with a dynamic learning tool for their English speaking and listening classes. The overall consequences for the students are numerous if the WhatsApp intervention is successful. In their study using MALL, Nah et al. (2008) investigated learner attitudes concerning the use of mobile phones to improve listening skills with positive results from the learners. Should the intervention demonstrate similar results, in the future, there may be improved attitudes among the freshmen English students in Turkey towards their studies. Ideally, more motivation may lead to better performance, which in turn may result in fewer students failing.

If the use of MALL does not prove successful, then the professors can consider other strategies and may discard MALL as another unsuccessful teaching approach. It is possible that the intervention will not be a success due to inherent issues with using mobile phones such as device size and technological capabilities. Ting (2012) indicates three key problems reported by learners in MALL studies: "small screen, limited input options, and low computational power" resulting in a negative perception of mobile devices as learning tools (p. 119). These mobile device problems outlined by Ting (2012) could possibly be issues that would negate the effectiveness of mobile learning.

If the intervention is successful, the professors will need to spend a great deal of time reviewing the study, so they can learn how best to implement MALL in their classes on a regular basis. This time commitment is necessary for professors to understand how to use the apps most effectively and to know what materials they may need to develop to use along with the apps. According to Ting (2012), the usability feature of mobile devices needs to be explained to students for the successful adoption of these technologies in learning. In regard to the students,

the intervention should provide them with new opportunities for practising their English skills and also learn more about using technology in English. In the absence of this intervention, the problems of low student interest and poor attitudes toward their English studies may continue unchanged. Furthermore, instead of learning on their smartphones, the students will likely continue sending text messages to their friends and/or playing games which are far from utilising the true potential of smartphones.

This first chapter has introduced the dissertation's basic components, stated the possible reasons and related concepts for Turkish students' English learning problems, contextualised the study and emphasised the purposes and significance of the study. Chapter 2 presents a critical synthesis of previous research pertaining to the topic, and it examines the concepts establishing the prerequisites in order to conduct this study and the concepts inspiring and forming the designs of teaching interventions. Chapter 3 presents the research design and methodology in a detailed manner. Chapter 4 presents the results of the data analyses. Chapter 5 discusses the research results, and Chapter 6 concludes the study and includes implications and recommendations for future studies.

CHAPTER 2: LITERATURE REVIEW

The purpose of this chapter is to review the literature surrounding the use of mobile learning (m-learning) through the related concepts and ideas and the use of smartphone applications (apps) in English language classrooms in foreign language contexts. The topics covered here can be considered a series of nested, interrelated topics. Technology can take many forms, with the most notable being computers, which leads to the next topic, computer-assisted language learning (CALL). CALL has been in use for many years, but as technology has progressed, so has the form of CALL, which led to mobile learning (m-learning) and mobile-assisted language learning (MALL). Then, the focal point of this study, smartphone applications (apps) for English language learning, will be examined. After that, digital literacy, its expansions, the debate over the concepts: of digital natives and immigrants, and the technology acceptance model (TAM) will be reviewed in order to understand better some issues and concepts affecting the quality and feasibility of m-learning. The review will conclude with the theories and concepts building the design of teaching interventions.

2.1 Introduction

The 21st century has known an unprecedented evolution in mobile technology. As a result, there is an abundance and diversity of mobile devices, which includes mobile phones, PDAs, tablets, portable audio players and handheld gaming consoles, which have come into existence and become widespread all over the world. The common features of these mobile devices consisted of being connected to a network, digital, portability, data storage, video and audio recording, facilitating a number of tasks, including communication and sharing the media and the like (UNESCO, 2013, p.6). Every year the number of users of mobile phones is substantially increasing. In 2018, worldwide mobile phone subscriptions went over four billion, which is likely to increase further in the following years (Statista, 2018). It is estimated that around 70% of the youth population of the world have access to the internet on their mobile

phones (Statista, 2018). For instance, 94% of people aged between 15-24 in industrialised countries have access to the internet. In comparison, only 67% of young people in the same age group have access to the internet in developing countries (Statista, 2018). In Turkey, the number of mobile phone subscribers is 41 million, while the number of mobile broadband (wireless internet access) has reached 17 million subscribers (Statista, 2018).

Educators and scholars did not go unnoticed by the widespread use and abundance of mobile devices. Added to this is that there is a rising demand and need for learning languages, particularly English, in various non-English speaking countries. As a result, this rising interest in language learning led researchers to look for modern tools that could support effective language teaching. Various studies in the available literature have been conducted so far since the beginning of the 2000s on the subject of mobile learning in general and mobile phones and mobile apps in particular with respect to their advantages and effectiveness in implementing them for language learning. These studies commonly found that mobile learning is flexible and effective with respect to facilitating students, overcoming time and space restrictions and learning at their own comfort and pace wherever and whenever they want. Because of added features of memory and storage, mobile phones enable learners to search and revise the content as many times as they want to improve their weak areas of language learning. Among these features of mobile phones and mobile apps include their low cost (most of the apps are free to download and use), user-friendliness, small equipment size, and flexibility (Huang et al., 2012). Some of the other unique features of mobile devices that facilitate learners include individuality, social interactivity through apps, portability, connectivity, and context-sensitivity (Klopfer, Squire, & Jenkins, 2002). Because of their lightweight and portability, mobile phones are easy to carry in the pocket and can be used anywhere for an entire day without any worry about charging the devices (Huang et al., 2012). Social interactivity refers to users' ability to exchange data to communicate with one another. Context sensitivity is a feature that enables mobile users

to collect data that is related to current location, environment and time. Connectivity enables handheld devices to connect to available data networks to send and receive information, while individuality provides a unique experience to the users because their devices can be customised to their needs and interest (Huang et al., 2012). This means that mobile phones can serve as a great instructional tool when content is carefully designed, and teachers are willing to embark on a modern experience that caters for the 21st-century learners' needs (Huang et al., 2012).

As mentioned earlier, the expansion of mobile devices has been intensively investigated by many scholars across various parts of the globe since the 2000s. Since mobile technology is a new flourishing field, many educators and researchers have been trying to get more and more benefits from this technology in the field of education. These attempts have led to the emergence of m-learning as a form of using mobile technological devices as tools for enhancing education quality in various aspects and disciplines.

Language teachers and scholars have also been inspired by the availability and expansion of mobile devices and have made attempts to integrate them into language teaching and learning. These endeavours and attempts have, in turn, led to a new revolutionary concept in language teaching and learning, globally known nowadays as mobile-assisted language learning (MALL). Many scholars and educators see this concept as an added value to teaching and learning languages. However, the use of technology is not new in the field of language education, given the widespread use of computers that led to Computer Assisted Language Learning (CALL) which was the precursor to MALL.

2.2 Computer-Assisted Language Learning

In second and foreign language (L2) pedagogy, there has been a widespread increase in the research and use of technology in the classroom in various countries for teaching a number of different languages and not only English. Computer-assisted language learning (CALL) has served as a helpful source of beneficial activities for many years (Dina & Ciornei, 2013). Three

stages have been identified in the gradual development of CALL: stage one was behaviouristic CALL, stage two was communicative CALL, and stage three was integrative CALL (Dina & Ciornei, 2013; Stockwell, 2007; Warschauer & Healey, 1998). According to Davies, Otto, and Ruschoff (2013), CALL was first used in the UK as a response to the need for a learning environment focused more on language learners than instruction.

Behaviouristic CALL, also called Structural CALL, was created and practised in the latter half of the 20th century, just before the 1970s up to the 1980s, and computer programs were essentially used as grammar and vocabulary tutors (Bax, 2003; Davies, Otto, & Ruschoff, 2013; Dina & Ciornei, 2013). However, during this period, CALL was not an interactive learning process. According to Dudeney and Hockly (2012): "This was, then, the era of static text: word processors, text reconstruction, simple games, and exercises with automatic (and unsophisticated) feedback" (p. 534). This stage of CALL focused on learner interaction with language content but did not involve actual communication, and CALL did not develop into a more dynamic state until much later (Dudeney & Hockly, 2012).

Communicative CALL, which built on the tutoring idea, was utilised in the late 1970s through the 1990s and focused on the use of computers as stimuli and tools for aiding language learners in developing their communication skills (Bax, 2003; Davies, Otto, & Ruschoff, 2013; Dina & Ciornei, 2013). Dudeney and Hockly (2012) explained that due to advances in technology during the second stage of CALL, there was "more language production over language recognition" (p. 534). Warschauer (as cited in Bax, 2003) described communicative CALL as utilising computers for communication-based exercises, wherein the focus was on fluency.

According to Thomas, Reinders, and Warschauer (2012), CALL has gone from language learning using dial-up modems and videos on CD-ROM to the current use of the Internet and mobile devices, now being the third stage, integrative CALL (Dina & Ciornei,

2013). Now, grammar drills that were once done with computer tutors can be done using digital media (Thomas et al., 2013). According to Warschauer's (as cited in Bax, 2003) discussion of CALL, this third phase occurring in the decades at the start of the 21st century, focused on more authentic communication through the use of the Internet and multimedia resources.

2.3 What is Mobile Learning (M-Learning)?

With the emergence of the Internet in the 1990s, e-learning started to be common because students could access the information they needed even when they were not at school. They only needed access to a PC and the Internet. The beginning of the 2000s was another milestone in the history of technological devices that support learning with the emergence of mobile handheld devices which started to be common in many parts of the world. This gave rise to a contemporary form of computer learning or e-learning, known as m-learning.

Mobile learning is defined in various ways due to the continuous development and expansion of this tool. The discussion of m-learning cannot be fully defined in this thesis. Despite that, it is significant to shed some light on this field because it comprises the foundation for mobile-assisted language learning. Mobile learning (m-learning) refers to the use of portable devices such as mobile phones, personal digital assistants (PDAs), tablet computers, and smartphones in learning (Ahmed, 2015; Demirbilek, 2010; Weng & Chen, 2015).

Some definitions of M-learning focus on only the mobility and features of portable devices. Mobile learning can be explained as a "special type of e-learning, bound by a number of special properties and the capability of devices, bandwidth and other characteristics of the network technologies being used" (Stone, 2004, p.146). It can also be explained as "e-learning using mobile devices and wireless transmission" (Milrad, 2003, p.151) or "learning that takes place with the help of portable electronic tools" (Quinn, 2000, as cited in, Cavus & Ibrahim, 2009, p.79).

M-learning is characterised as a technology that is accessible anytime and anywhere (Geddes, 2004). Traxler (2005) added further to m-learning by stating it is "any educational provision where the sole dominant technologies are handheld or palmtop devices" (p.262). It implies that mobile devices are highly portable and easily accessible whenever and wherever learners go. The current availability and abundance of these mobile devices are obvious nowadays more than at any time before. For instance, most of the students in Turkey own and carry mobile phones with them. This helps them to engage in various activities based on their needs anytime and anywhere they go (Kukulska-Hulme & Shield, 2008).

The feature of the mobility of mobile devices is an issue debated among researchers (Kukulska-Hulme & Shield, 2008). Currently, mobile is an important concept not simply due to mobile technology but because of the mobility of learners and learning (Kukulska-Hulme, 2009). In contrast with the conventional definition of m-learning that emphasises mobile technology, the more recent definitions of m-learning focus on the mobility of learners rather than technology (O'Malley et al., 2003; Sharples, 2006; Winters, 2007). Mobility refers not only to technological capabilities within the physical context and activities of learners but also to activities in the learning process and learners' behaviours while using the technology to learn (El-Hussein & Cronje, 2010). Thus, the recent definition of m-learning emphasises learners' experiences, contexts, movements, informality, and learner-generated content (Kukulska-Hulme, 2012; Kukulska-Hulme & Traxler, 2007).

Mobility still refers to mobile devices which are portable and handheld, such as mobile phones. However, the mobility of learners is more focused, which means the focus shifts from the devices themselves to the learners' mobility and their ability to use their devices anywhere they go, and anytime they want to. This view considers this type of learning from the learner's perspective and argues that m-learning is "any sort of learning that happens when the learner is not at a fixed, predetermined location, or learning that happens when the learner takes

advantage of learning opportunities offered by mobile technologies" (O'Malley et al., 2003, p.7).

The above definition seems more comprehensive and relevant to the present research since it encompasses both the mobility of the learner and the device being used. Hence, the definition of mobile learning can be summed as an approach to language learning and teaching which is focused on enhancing the quality and effectiveness of learning both inside and outside the classroom and also beyond the classroom anytime and anywhere by the application of mobile devices such as mobile phones and mobile applications (Kukulska-Hulme & Shield, 2008).

The varying definitions emphasise the dual perspectives of m-learning: mobility of learning and learner (Sharples, 2013). In other words, m-learning gives the tool to learners to enjoy mobility in time, space and technology, which helps learners accomplish their goals (Weng & Chen, 2015). As a result, m-learning facilitates personalised learning by connecting time and space (Sharples & Pea, 2014). For example, learners can easily take information from one location and apply it to another or revisit knowledge gained previously in a different context. Moreover, they can transition from different topics instead of following a rigid curriculum (Sharples & Pea, 2014; Sharples, Taylor, & Vavoula, 2005). Mobile devices and mobile connectivity enable learners to enhance their time-on-task anytime, anywhere, especially when there is limited time and opportunity to learn (Steel, 2012).

With the advent of new technologies, m-learning is increasingly transitioning through rapid evolution. A new concept of m-learning should not focus on information transmission, and its focus should not be limited to anytime, anywhere access according to Winters (2007). Sharples et al. (2007) explained the concept of m-learning as "the processes of coming to know through exploration and conversation across multiple contexts, amongst people and interactive technologies" (p. 225). They viewed learning as a "tool-mediated, socio-cultural activity". They

regarded conversation and context as crucial factors in comprehending the way m-learning could be incorporated with traditional education learning (Kukulska-Hulme et al., 2009). Mobile learning allows the contextualisation of learning, which is unattainable in e-learning. Context is not just circumstances surrounding the learner at a particular place and time, rather it is a dynamic setup formed by the interface between learners and circumstances (Sharples et al., 2005).
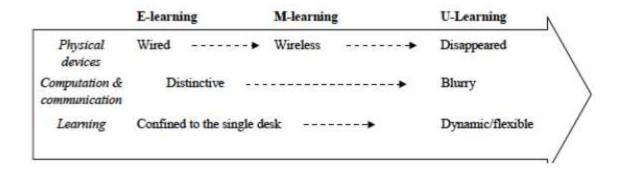
Kukulska-Hulme (2012) indicated that m-learning goes beyond making linkages among contexts to actively utilising or building new contexts. Thus, "people learn within multiple contexts; by moving through and comparing contexts; and creating contexts from interacting with locations, artefacts, resources, and other people" (Sharples & Pea, 2014, p.13). For example, learners can bookmark or save their interests and make annotations, which support follow-up learning, or use them at another time and location. This type of activity demonstrates the most innovative use of mobile devices, in addition to in-context interaction and content delivery (Kukulska-Hulme, 2009). In this process, learners' choice is critical; they can be more proactive in choosing their activities, as well as the time and place to complete the activities. Therefore, m-learning "offers new ways to expand education outside the classroom, into the conversations and interactions of everyday life" (Sharples et al., 2009, p.237). Since m-learning supports both formal and informal learning (Jung, 2015; Kukulska-Hulme et al., 2009), it breaks down the boundaries of a conventional classroom and offers new opportunities for learning (Demirbilek, 2010).

Recent advancements unfolded the ubiquity of technology. Weiser (1991) stressed that computers will be integrated into our lives so commonly that no one will feel their presence and how the ubiquitous nature of technology can positively affect our lives. He highlighted that machines would fit our lives instead of forcing people to shape according to the environment of the machines, thanks to the ubiquity of technology. It can be argued that this kind of presence

of technology described by Weiser could be extensively possible after the widespread use of mobile devices.

The transition of technology has affected education. Park (2011) sees the transition of technology utilization as shown in Figure 1 below. Basically, it is from e-learning to m-learning and, ultimately, u-learning. It is getting more flexible and less dependent on time or place. Kang (2016) explained Park's comparisons of e-learning, m-learning and u-learning as follows: "The physical devices will disappear; the relationship between computation and communication will be blurry; the learning environment will not be constrained to the single desk but will be dynamic and flexible" (p.21).

Figure 1

"Comparisons and Flow of E-learning, M-learning, and U-learning"
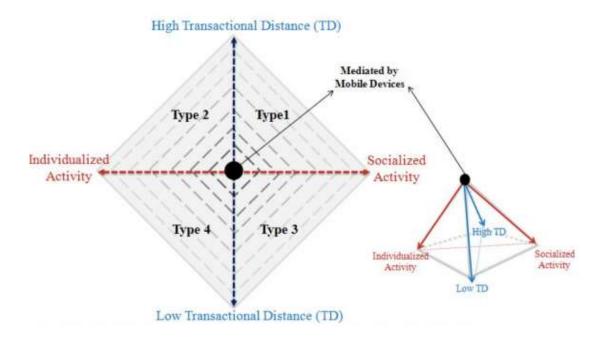
Source: Park (2011)

Park (2011) also adapted the transactional distance theory, which was first offered by Moore (Moore, 1972, 1973) and then developed by him again (Moore, 1989, 1993). Moore (2007) explained the transactional distance as the "interplay of teachers and learners in environments that have the special characteristics of their being spatially separate from one another" (p. 91). Park (2011) suggested a pedagogical framework of m-learning, including the separation of individual and social activities and the categorisation of these activities in terms

of high or low transactional distance that could help understand the different types of activities and their possible advantages and disadvantages in m-learning.

Figure 2

"Four Types of M-learning: A Pedagogical Framework"

Source: Park (2011)

Park (2011) defined four types of m-learning:

1) high transactional distance socialised m-learning

2) high transactional distance individualised m-learning

3) low transactional distance socialised m-learning, and

4) low transactional distance individualised m-learning.

To understand what these types of m-learning refer to, it is essential to understand what high and low transactional distances mean. Kang (2016) explains them as "high transactional distance means more structured activity with less communication between learner and instructor, whereas low transactional distance means less structured activity with more support from the teacher (p.22).

Types 1 and 3 refer to the usage of mobile devices in group activities; however, Type 1 is more structured, whereas Type 3 is less structured. Type 2 and 4 refer to the usage of mobile devices in individualised activities. High transactional individualised activity, which is type 2 is more structured while low transactional individualised activity - type 4 is less structured. All the types can have their unique advantages and drawbacks; however, they can give ideas to teachers to prepare their activities according to the purpose of m-learning in various contexts, the profiles of learners and the devices to be used. Although the mobile learning activities prepared for this study do not use this framework, they have similar characteristics to type 1 and type 3. This will be explained in more detail in the methodology section, where teaching interventions are described.

Three concepts of mobile learning have been explained above; however, it can be more beneficial to dedicate a sub-section to them to put a finer point on them.

2.3.1 Mobility of Technology, Learner, and Learning

M-learning combines "both features of e-learning and benefits of technology", offering "convenience, immediacy, and expediency" (Chang et al., 2012, p.809). Thus, m-learning is widely being considered by many researchers as the next innovation in e-learning (Almasri, 2015; Chang et al., 2012; Miangah & Nezarat, 2012). Although e-learning is "asynchronous, tethered, scheduled, structural, formal, and passive", m-learning is "synchronous, un-tethered, spontaneous, informal, context-aware, personal, and instant" (Kukulska-Hulme & Traxler, 2007; Mehdipour & Zerehkafi, 2013; Traxler, 2005; Uğur, Koç, & Koç, 2016). However, we should not simply regard m-learning as e-learning powered by mobile devices. M-learning facilitates learners with a new learning environment, where they can access materials anytime, anywhere. In addition, the contents that they access are dynamic and flexible depending on time and location (Park et al., 2012). El-Hussein and Cronje (2010) categorised mobile learning into

three types: "mobility of technology, mobility of the learner, and mobility of learning especially in higher education landscape" (p.17).

2.3.1.1 Mobility of technology

Mobility of technology is enabled by more advanced mobile devices such as smartphones, PDAs, tablet computers, and other mobile devices that are furnished with Wireless Fidelity (Wi-Fi) (Kim & Kwon, 2012). These mobile devices equipped with a powerful processor, camera, voice recorder, and other multimedia functions enable users to connect to the Internet and access content anytime, anywhere (El-Hussein & Cronje, 2010; Sharples & Pea, 2014).

2.3.1.2 Mobility of learners
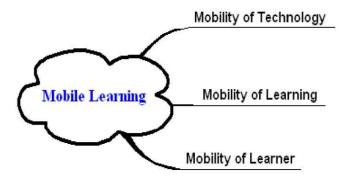
The mobility of learners can be explained as a learner-centred activity that is mobile and nomadic (El-Hussein & Cronje, 2010). Learners can take part in various educational activities regardless of location and time restrictions. In addition, the control of learning is flexible to be based on the learners, teachers, guides, technologies, and resources in the world, unlike the traditional classrooms where control of learning largely remains with teachers (Sharples et al., 2005; Sharples & Pea, 2014). Thus, mobile devices enable learners to participate in highly flexible, accessible, and personalised learning activities that enhance their effectiveness and productivity of learning (Sharples & Pea, 2014). Mobile devices enable learners to have feelings of community, individuality, and ubiquity as well as collaborative learning. They can learn not only away from their teachers but also with complete accessibility to information on their mobile phones. Therefore, mobile devices provide learners with a greater amount of independence and freedom while, at the same time, a sense of enjoyment in learning (El-Hussein & Cronje, 2010; Kim & Kwon, 2012).

2.3.1.3 Mobility of learning

Mobility of learning can be explained as the unique learning experiences and contexts that mobile learners are situated (El-Hussein & Cronje, 2010). Kukulska-Hulme and Traxler (2007) emphasised learning experiences across a variety of learning settings in mobile learning, which can be described as seamless learning (Sharples & Pea, 2014). Seamless learning suggests that learners can learn anytime and anywhere across multiple contexts using their mobile devices whenever they are curious (Sharples, 2013). Learning increasingly occurs during everyday activities such as searching for information online, taking photos and videos and sharing them instantly with others (Sharples, 2013; Sharples & Pea, 2014; Sharples et al., 2005). Pettit and Kukulska-Hulme (2007) showed that participants use their mobile devices, especially when travelling, to download podcasts, read e-books, browse websites, and make video clips. This result shows how people use their mobile devices personally and informally in their daily lives. They can learn individually, with peers, or in a large social community.

Learners' collaboration is crucial in informal learning. Through collaboration and interaction with the circumstances surrounding them, learners can create contexts, and these interactions can transform into learning opportunities (Sharples & Pea, 2014). In the learning process, many people including "teachers, relatives, experts, and members of communities" can support their "face-to-face or through different modes of interaction at a distance in places such as classrooms, outdoors, parks, and museums" (Kukulska-Hulme et al., 2009, p.26). Since mobile learning provides learners with personal, learner-centred, ubiquitous, lifelong, collaborative, and situated learning (Sharples et al., 2005), it suggests new approaches "to extend education outside the classroom, into conversations and interactions of everyday life" (Sharples et al., 2009, p.237). Figure 3 shows the three concepts of mobile learning.

Figure 3

"Three Concepts of Mobile Learning"

Source: El-Hussein & Cronje (2010, p. 17)

This study intends to utilise the advantages that the mobility of technology, learning and learner bring; however, these advantages have not yet been sufficiently tested and are mostly based on ideas rather than actual teaching interventions. These advantages must be discussed in more detail to guide the study's expectations and to better understand to what extent these advantages are utilised and valid in the context of this study.

2.3.2 Advantages of M-learning

2.3.2.1 Portability

Portability and connectivity are two major characteristics of m-learning (Miangah & Nezarat, 2012). The lightweight and portable size of mobile devices enable learners to carry them easily and to use them anywhere outside the classroom in their own time (Chinnery, 2006; Mehdipour & Zerehkafi, 2013). Through m-learning, learners are less dependent on the time and location of learning (Mehdipour & Zerehkafi, 2013; Miangah & Nezarat, 2012; Steel, 2013). Moreover, the portability of m-learning enables learners to use 'dead time' such as commute time with much speed and efficiency across time (Steel, 2013; Stockwell, 2010).

2.3.2.2 Ubiquity

In addition to portability, learners can access information quickly with a mobile device on the move and interact with teachers or other learners, irrespective of location and time restrictions (Fujimoto, 2012; Geddes, 2004). According to Steel (2013), students perceived that the most beneficial of the technologies outside the classroom was learning on-the-go. They were satisfied to achieve learning easily, quickly, spontaneously, personally, and habitually. The ubiquity of m-learning enables learners to learn anytime and anywhere (Miangah & Nezarat, 2012; Sharples & Pea, 2014). Thus, they can provide a way for learners to fit learning into their lives and in which technology becomes a culture (Sharples & Pea, 2014; Steel, 2012). For example, mobile applications combined with augmented reality enable learners to acquire knowledge by experiencing a new type of context and controlling their learning through dynamic interactions with real and virtual environments (Kukulska-Hulme, 2013; Sharples & Pea, 2014).

2.3.2.3 Flexibility

M-learning encourages flexibility which means anyone can be a learner without restrictions of age, gender, and geography to participate in a learning environment (Kukulska-Hulme, 2012; Uğur et al., 2016). Thus, learning can occur all the time through informal learning (Naismith, Lonsdale, Vavoula, & Sharples, 2004), which enables lifelong learning (Kukulska-Hulme, 2012). For the younger generation, it provides opportunities "to capture and organize their everyday experiences, to create and share images of their worlds, and to explore their surroundings" (Sharples et al., 2009, p.246). For the older generation, it provides opportunities to store memories and better remember people and daily experiences (Sharples et al., 2009).

2.3.2.4 Collaboration

According to Geddes (2004), "m-learning allows collaboration to happen regardless of physical location, in real time and to include text and rich media as well as voice" (p.3). M-

learning also emphasises learners' cognitive and social process of acquiring and sharing knowledge through communications with others and exploration of their surroundings, across time and place, using technologies (Naismith et al., 2004; Sharples & Pea, 2014). For instance, social media such as Facebook promote interaction among learners coupled with interactions between teachers and students, thereby increasing collaboration in group projects (Yunus & Salehi, 2012). The gravity of learning shifts from teachers to students through Facebook group discussions. Students are more actively engaged in the exchange of ideas or opinions through Facebook groups compared to face-to-face interactions in a traditional classroom. Apart from that, ideas, thoughts, or opinions shared by peers help them generate better ideas. Moreover, students can acquire the necessary skills to analyse critically and revise their learning.

2.3.2.5 Authentic and situated learning

Learning takes place effectively when the context is meaningful, authentic, and appropriate for learners (Kukulska-Hulme & Traxler, 2007). M-learning can create an authentic, interesting, and relevant environment for students. For instance, social media enable learners to communicate with others in an authentic environment and to have opportunities to build and revise their own understandings by interacting socially in a virtual learning setup. It connects their social life and the educational environment (Shih, 2011; Yunus & Salehi, 2012).

Learners can capture their own resources using mobile devices and transfer them to other students and lecturers (Ali & Arshad, 2016). For instance, learners can acquire additional information about nearby exhibits and displays using their mobile devices while having a field trip to the museum and gallery (Naismith et al., 2004). Due to this, mobile devices allow learners to build knowledge in different contexts and transfer it across contexts (Sharples et al., 2005; Winters, 2007). In this process, learners play an active role in acquiring knowledge rather than assuming a passive role. Mobile technologies enable learners to produce their own content,

such as blogging, publishing personal profiles and uploading photographs through many social networking sites. They can have ownership of the contents (Kukulska-Hulme & Traxler, 2007).

2.3.2.6 Personalised learning

Personalised learning can be defined as "learning that recognises different learning styles and approaches, social, cognitive and physical differences, and diversity" (Kukulska-Hulme & Traxler, 2007, p.184). With m-learning, learners control the learning process at their own pace based on their states (Mehdipour & Zerehkafi, 2013). Mobile and wireless technology can recognise the history and context of each student and deliver learning to him/her anytime and anywhere as they want it (Kukulska-Hulme & Traxler, 2007). Students are the most prominent in the learning process and control their own knowledge and learning. Steel (2013) reported that language students in Australia participating in the research appreciated the ability of m-learning to promote self-regulated learning and to receive feedback.

The digital environment and the teaching interventions in this study were designed to serve the study's aims so that the advantages of mobile learning mentioned above could be utilised. These advantages were as follows: anytime, anywhere learning, embedding learning into students' lives in the form of innovative and informal digital learning extensions of traditional and formal education, enabling students to interact more with their peers and teacher(s) in virtual platforms that can be new socialisation areas, producing their own content and partially shaping learning according to their needs. In addition, this study aims to explore how the advantages of mobile learning, which are often theoretical, can be applied in practical settings. It will provide valuable insights into the feasibility of mobile learning in real-life situations.

2.3.3 Disadvantages of M-learning

While mobile learning has numerous benefits, it also has several issues to be considered in its implementation. Stockwell and Hubbard (2013) divided the significant concerns into three aspects: physical, pedagogical, and psycho-social.

2.3.3.1 Physical issues

Despite their different usage, it can be argued that many mobile devices are not fully designed for educational purposes. Thus, that makes it difficult for learners to use them for learning (Miangah & Nezarat, 2012). For instance, connectivity, small screen size, limited multimedia, reading difficulty, reduced input capabilities, and limited storage and power can become physical issues for learners in adopting mobile devices into learning contexts (Chinnery, 2006; El-Hussein & Cronje, 2010; Mehdipour & Zerehkafi, 2013; Miangah & Nezarat, 2012; Pettit & Kukulska-Hulme, 2007; Stockwell, 2008; Thornton & Houser, 2005; Wang et al., 2009). Learners' negative attitudes towards m-learning were identified in Stockwell's (2008, 2010) research. The research reported that a majority of students preferred to use personal computer to mobile phone for vocabulary learning. They did not wish to use a mobile phone for learning due to many physical and environmental factors, such as small screen sizes, inconvenient keypads, scrolling screens, and distraction. Nowadays, thanks to the rapid evolution of technology, these technical deficiencies are increasingly under control. Thus, smartphones and tablets are more appealing than desktop computers as they offer large, high-definition screens and voice input (Wai, Ng, Chiu, Ho, & Lo, 2016). Compatibility is another major technical issue in m-learning. It is quite difficult to have m-learning run on all platforms, and this lack of common standards hinders learners' acceptance of m-learning (Stockwell, 2008; Wang & Higgins, 2006).

2.3.3.2 Pedagogical issues

Pedagogical issues mean that m-learning contents and activities are not essentially designed in view of the affordance of mobile devices (Godwin-Jones, 2011; Stockwell & Hubbard, 2013). Kukulska-Hulme and Shield (2008) argued that mobile learning activities do not fully take advantage of mobility and portability, which are the very rationale for using mobile technologies. Wang and Higgins (2006) emphasised users' responsibilities in learning considering the pedagogical limitations of m-learning. Since m-learning happens anytime and anywhere, it is hard to track and assess learners' achievements. In addition, there is the issue of tracking what has been learned and whether m-learning helps or hinders learning (Sharples & Pea, 2014). Thus, learners should take full responsibility for learning and exercise self-discipline, which many young students lack. Moreover, since m-learning happens while on the move, the surrounding circumstances can distract and interrupt learners' learning (Stockwell, 2008).

2.3.3.3 Psycho-social issues

The main functions of mobile devices have been personal and social in contrast to their academic function (Stockwell & Hubbard, 2013). Thus, users installed many applications, such as Facebook, Twitter, or Line to communicate with others. Since "mobile phones will mainly be used for communications with other people and not for learning purposes" (Wang & Higgins, 2006, p.4), many users may not perceive mobile phones as a learning tool. For example, "many learners seem reluctant to use the mobile phone for their language learning" and "this is unlikely to be a reflection of lack of self-confidence or competence". It just shows that they want to use their mobile phones for personal purposes(Stockwell, 2008, p.255). To this end, many people do not find it easy and therefore lack the motivation required to adopt mobile learning consistently. It is not guaranteed that learners who are proficient in using mobile devices for

specific social and personal features are undoubtedly competent to use them in educational settings (Stockwell & Hubbard, 2013).

Many researchers have looked into students' perceptions of using social networking sites (SNS) for language learning. While SNS help increase students' motivation, engagement and positive attitudes towards second language learning (Manan, Alias, & Pandian, 2012; McCarthy, 2010; Shih, 2011; Suthiwartnarueput & Wasanasomsithi, 2012; Yunus et al., 2012; Yunus & Salehi, 2012), they have some issues when applying to the classroom context. For example, Simpson (2012) showed that Facebook did not increase Korean college students' motivation and competence in English learning. Shih (2013) also mentioned that integrating Facebook into ESL classrooms would be time-consuming if teachers were not sufficiently trained to interact with students. Thus, it is crucial to understand the educational functionality of mobile technology and focus on how it can successfully become a powerful language tool in the classroom (Simpson, 2012). Also, even if a new way of learning were to develop, it would take a long time to change the learning habits from traditional classroom learning to m-learning (Wang & Higgins, 2006; Wai et al., 2016). However, nowadays, the young generation widely uses smartphones in their everyday lives. Thus it is possible for them to accept smartphones in their learning and to adjust to this major transition in learning habits (Wai et al., 2016).

This study was designed not only to exploit the advantages of mobile learning but also to overcome its disadvantages, although this is not entirely possible. The disadvantages to be overcome are, in particular, students' readiness for mobile learning, their skills in using mobile phones and their ability to adapt these skills to mobile learning, and their perception of mobile phones as a language learning tool. Related concepts will be discussed later in this chapter.

2.4 The Emergence of Mobile Assisted Language Learning (MALL)

The current forms of CALL are mobile learning (m-learning) and mobile-assisted language learning (MALL) (Burston, 2013; Kukulska-Hulme, 2009). These two terms are often

used interchangeably, usually depending on the particular usage and at the discretion of the researcher or educational practitioner. Thomas et al. (2013) called this current period of CALL wherein mobile devices are utilised, a fourth period or phase that is particularly focused on the use of digital media. "This shift towards social technologies is underpinned by developments in portable digital devices, from smartphones to tablets and e-readers, as well as by constructivist principles promoting collaborative learning on the social Web" (Thomas et al., 2013, p. 6).

Sandberg et al. (2011) indicated that m-learning deals with "the acquisition of knowledge through a mobile device" (p. 1335). Hockly (2013) gave an extended definition of m-learning as a process using a number of devices, from phones to mobile music and video players, which is based on learner mobility, device portability, and the learning context. Essentially, the use of m-learning can allow learners to study various subjects whenever and wherever they wish while also allowing for formal and informal learning both in and outside of classrooms (Geddes, 2004; Hockly, 2013; Kukulska-Hulme & Shield, 2008; Sandberg et al., 2011). The use of m-learning allows for learning to expand beyond the limits of computers at home or school as well (Sandberg et al., 2011). They further stated that the advent of the Internet and modern mobile devices allowed people to communicate instantaneously (Sandberg et al., 2011).

Thornton and Houser (2005) conducted three studies with Japanese students utilising different forms of m-learning: email use, emailed vocabulary lessons for use on mobile devices versus on paper, and the use of idiom-focused websites for studying idioms. In the course of their research, Thornton and Houser (2005) determined that the university students surveyed had positive attitudes regarding the use of their mobile phones for educational purposes. According to Kim, Rueckert, Kim, and Seo (2013), the various advances in mobile technology

such as smartphones and tablet computers, have given instructors more flexible options for communicating with their students, especially through text, voice, and video messages.

However, Kim et al. (2013) noted that educators still need to ascertain which types of devices and technologies work best for their learners. Thus, Kim et al. (2013) researched student opinions about using their mobile devices as learning tools and in what ways students use these devices to interact with other students in the learning process. Using pre- and post-study survey data along with participant reflections, Kim et al. (2013) found that while students have positive attitudes regarding m-learning, they tend to accept the use of mobile technologies more when they are familiar with them and understand how to use them properly. Essentially, technology for m-learning can be great but loses its usefulness if students are not comfortable using the devices.

Similar to how CAI (Computer Aided Instruction) and CAL (Computer Aided Learning) became CALL, mobile-assisted language learning (MALL) arose from the creation of hand-held computing devices (Burston, 2013). In their overview of research on mobile-assisted language learning (MALL), Kukulska-Hulme and Shield (2008) noted, "MALL differs from computer-assisted language learning in its use of personal, portable devices that enable new ways of learning, emphasising continuity or spontaneity of access and interaction across different contexts of use" (p. 273). At this time, MALL has become more widely used due to the current advances in mobile computing technology, such as the iPhone, Galaxy Tab, and other mobile devices, and the uses of technology in language learning classrooms have advanced as well. Thus, methods of using m-learning or MALL since the early 2000s have evolved with the technology, from the use of Personal Digital Assistants (PDAs) and electronic dictionaries several years ago to advanced smartphones now (Tai, 2012). Mobile devices such as phones, MP3 & MP4 players, and tablet computers have become widespread both in access and daily use (Kukulska-Hulme, 2009; Kukulska-Hulme, Traxler, & Pettit, 2007; Stockwell,

2010, 2012; Tai, 2012; Yoon, Lee, & Lee, 2013). This is especially true with mobile phones as it is unusual to meet someone without such a device (Quinn, 2011).

Regarding English language instruction, MALL has been and continues to be of use to English language instructors around the world. Palalas (2011) stated, "MALL can augment second language teaching and learning by taking it into the real world" (p. 71). In the first of her studies of ESL learners using mobile devices in Canada, Palalas (2011) discovered that students were happy utilising MALL. However, they often used their phones to play media. Another discovery of her initial study was that learners did not make full use of the mobile devices, thus resulting in decreased learning in listening and vocabulary activities (Palalas, 2011). For reasons such as this, educators must take care and modify their instruction to effectively use MALL in their classrooms (Palalas, 2011). Thus, Palalas (2011) designed and conducted a second study that addressed these issues, where she subsequently found that learners had mostly positive views of the MALL activities, and they utilised their mobile devices for educational, social, and personal use.

Since the number of mobile devices has exceeded the number of desktop computers, the integration of technology in language has also transitioned from desktops to portable devices like smartphones, tablets, and laptops. These small devices have become an intrinsic part of everyone's life as well as convenient tools to access relevant information. Educators and researchers have found great potential in mobile technologies as effective learning tools.

2.4.1 The Concept of MALL

The proliferation of mobile device ownership and wireless networks has quickly brought mobile technology into formal and informal language learning. A number of studies on MALL demonstrated its benefits through the flexibility of time, place and mode of communication (Park & Slater, 2015). MALL refers to any type of language learning via mobile technology (Miangah & Nezarat, 2012). MALL has a long history since Chinnery (2006) first

coined the term in 2006. MALL usually focuses on the most recent technology, and thus most recently, MALL has been associated with mobile phones (Kukulska-Hulme & Shield, 2008; Taj, Sulan, Sipra, & Ahmad, 2016).

Naismith et al. (2004) argued that mobile technology could significantly influence learning. Learning can gradually move outside the classroom and into the learners' environment in both virtual and real ways. Mobile technology supports learners in creating learning communities within these environments by making rich connections to both resources and other people (Sharples et al., 2009). When learning goes outside the classroom, the language learning process turns out to be more meaningful for learners. Thus, they can have freedom and autonomy in their learning process (Bezircilioğlu, 2016). The learners, even on the move, can better exploit their free time to develop their language skills (Kukulska-Hulme, 2009). Seamless or ubiquitous learning gradually becomes the top trend in learning through mobile devices (Wong & Looi, 2011).

MALL has played an important role to support language learning because "mobile is a significant tool that supports and integrates effectively in enhancing the language skills due to its features such as accessibility, interactivity, immediacy, permanency, situating of instructional activities" (AbuSa'aleek, 2014, p. 469). MALL has positive effects on developing language skills (Chang & Hsu, 2011), promoting learners' learning attitude and motivation (e.g., Kim et al., 2013; Liu & Chu, 2010;), lowering language anxiety (e.g., Rahimi & Soleymani, 2015; Kim, N., 2016), facilitating learner interaction, co-instruction of knowledge, and collaboration (e.g., Lan, Sung, & Chang, 2013; Wong & Looi, 2010). MALL activities have huge potential to improve the learning of a language (Stockwell & Hubbard, 2013) and evolve rapidly with the rise of apps, SNS, location-based learning (Liu, 2009), and augmented reality (Godwin-Jones, 2016; Santos et al., 2016). Technology-enhanced learning is undergoing a paradigm shift from e-learning to m-learning and from m-learning to context-aware u-learning

(Liu & Hwang, 2010). While early studies on MALL focused on transferring learning contents (Thornton & Houser, 2005), more recent studies have focused on learner-generated contexts using mobile phones (Wong & Looi, 2010).

2.4.2 The Impact of MALL on Language Skills and Components

In recent years, many researchers have demonstrated that mobile technology is an effective tool for improving four English language skills that are listening, speaking, writing and reading and components such as vocabulary and grammar. For instance, in 2012, Kondo, Ishikawa, Smith, Sakamoto, Shimomura, and Wada (2012) investigated whether using a mobile phone as an assisted language learning tool would enhance EFL college students' (n = 88) listening and reading skills and, in the long run, build up their self-study and self-regulated learning strategies. According to the statistical results, learners who used mobile phones to practise their English had significantly higher reading scores than the other group who studied English through regular textbooks. Meanwhile, the MALL group reported their beliefs in improvements in their language skills and interests in continuing to learn with the mobile device. However, the delayed post-test provided valuable evidence showing how easily learners (n = 42) would abandon this MALL activity when the teachers departed from the mobile-assisted learning process.

L2 teachers and researchers should also note some disadvantages of MALL. First, the small screen size always made it hard for students to fully engage with the learning material, and the cost of PDAs with bigger screens was much higher than other regular mobile devices (Cooper et al., 2009). Also, due to the small screen size, the lengths of the texts had to be shortened (Chinnery, 2006). In that case, Thornton and Houser (2005) suggested using mobile phones for reviewing and practising but not distributing new content. Second, since most of the MALL was not face-to-face, some drawbacks appeared, such as "limited nonverbal communication, limited message lengths, a lack of cultural context, and potentially limited

social interaction" (Chinnery, 2006, p. 13). Third, other concerns for MALL included high user fees, limited battery life, and Internet security issues (Kunori, 2005; Honma, 2002). Besides all these technical constraints, language learners might also be distracted by other untargeted programs, such as music (Young, 2007), the internet, games, and the like.

Although this study aims to develop listening and speaking skills in English, it was necessary for the design of the study to examine how learners tried to improve other language skills and components through mobile learning. The studies referred to in the previous paragraph contain essential information about what should be considered when designing an organisation related to mobile learning. Considering the period in which the study was conducted, all kinds of data obtained from these studies were necessary because it was difficult to say that the number of comprehensive studies on mobile learning focusing on improving listening and speaking skills was at a high level. Firstly, vocabulary and grammar, then two of the four skills, reading and writing, and finally, the skills that this study focuses on, listening and speaking, will be discussed.

2.4.2.1 Learning Vocabulary

Learning a foreign language requires learners to memorise and practise vocabulary, which is paramount to foreign language learning. Since most foreign language students only have few chances to speak and listen to the target language in the classroom, other types of practice and exposure are necessary to develop lexical knowledge (Thornton & Houser, 2005). Mobile technology can help learners to learn vocabulary more efficiently. Learning activities using mobile phones most frequently involve Short Message Service (SMS), and its effectiveness has been investigated (Alemi, Sarab, & Lari, 2012; Kennedy & Levy, 2008; Lu, 2008; Moura & Carvalho, 2010; Stockwell, 2010; Tafazoli & Jam, 2015; Thornton & Houser, 2005).

Thornton and Houser (2005) conducted a study in Japan to compare the usefulness of delivering vocabulary via different means: SMS on mobile phones, the Web on PC, and paper material. Teachers sent messages containing mini-lessons for vocabulary learning to the experimental group students three times a day via SMS. Similarly, Taiwanese learners' in Lu's study (2008) received two SMS vocabulary lessons every day via mobile phones, and the group compared with another group studying with paper material. Both studies showed that using SMS in vocabulary learning is a successful technique (Kennedy & Levy, 2008), and the "push learning" function of mobile phones promotes regular study. Thus, students were more exposed to the target words and acquired more vocabulary (Alemi et al., 2012; Tafazoli & Jam, 2015). In addition, the mobile group performed significantly better than the paper group or the Web group (Lu, 2008; Thornton & Houser, 2005). Moreover, students received vocabulary through mobile phones at spaced intervals (three times a day) in a variety of contexts. Such conditioning generated spacing effect and enhanced learners' vocabulary retrieval (Thornton & Houser, 2005).

In a study conducted in Iran, Alemi and colleagues (2012) confirmed the effectiveness of SMS on students' vocabulary learning and retention compared to a dictionary (Abbasi & Hashemi, 2013). They implied that using SMS enables learners to transfer vocabulary into their long-term memory. Moreover, using SMS allows learners to review vocabulary more regularly and motivates them to use mobile phones for learning (Thornton & Houser, 2005). This result is in line with Tafazoli and Jam (2015) in that "students reading the lessons via SMS on their mobile phones benefited from the push aspect of mobile technology" (p.41). They received instructional materials regularly, i.e. every 3 hours per idiom from 8 a.m. to 5 p.m. Thus, they were able to study them on a regular basis, which facilitated the learning process.

The empirical studies showed that most learners enjoyed the activity sent by SMS and valued it as a highly effective medium of language learning (Moura & Carvalho, 2010; Tafazoli

& Jam, 2015). Since SMS-based learning is based on the assumption that learners are continually on the move, a flexible and personalised learning environment is provided to learners no matter where they are. Moreover, freedom of time and place will broaden learners' learning opportunities and increases the learner's autonomy (Tafazoli & Jam, 2015).

Even though these studies proved the effectiveness of SMS in vocabulary learning, they seem to be based on the concept of Web 1.0, which is not user-created and collaborative content (Yang, 2013). These studies introduced the push mode of learning in which teachers control the learning: frequency and timing of messages sent to learners. Anytime, anywhere learning, the principle of m-learning, was not fully exploited in the activities (Kukulska-Hulme & Shield, 2008). The essential feature of Web 2.0 is learner-created and collaborative content in an authentic learning environment (Stockwell, 2010).

Wong and Looi (2010) asked 40 primary students to take pictures that demonstrate English prepositions and Chinese idioms using their mobile phones. After taking pictures, students were asked to form sentences to describe the photos. After that, they posted their sentences onto a Wiki space to share with classmates, thereby making the activity collaborative. Through the group discussion, they could revise and improve their sentences. The portability and accessibility of mobile phones enabled them to move around in different physical spaces in and out of class. Photo-taking and sentence-making activities enabled students to internalise and enhance their ability to practice prepositions in real life. Moreover, students can have authentic learning experiences by generating their own content, which is essential for vocabulary learning.

Context is crucial in vocabulary learning because students should be able to use new words in the right context. Under situated vocabulary learning, students learn the words in the context, thus applying the knowledge to the real world. Santos and others (2016) constructed "two situated vocabulary learning systems: one for 30 Filipino words and the other for 10

German words" (p.10). They "designed a system that displays words and animations to teach new vocabulary words that are relevant to the objects found within the environment" (p.3). They used multimedia for the system, including text ("vocabulary, its translation in English, and the description of the scene"), audio ("pronunciation by a native speaker"), image ("text labels and images"), and animations. They compared situated vocabulary learning to flashcard vocabulary learning that uses iPads. The result indicated that situated vocabulary learning leads to better retention of words, reduces students' cognitive loads, and improves their attention and satisfaction.

2.4.2.2 Learning Grammar

Although most existing MALL studies are related to vocabulary learning research (Godwin-Jones, 2011), mobile devices can contribute to improvements in EFL learners' grammar learning. Baleghizadeh and Oladrostam (2010) investigated the effect of mobile phones on improving Iranian EFL students' grammatical accuracy. They taught three grammatical categories to the students during six sessions of instruction. Students in the experimental group used their mobile phones to record their voices during the discussion, whereas the control group received traditional grammar instruction. The experimental group analysed their recordings at home, found grammatical errors and corrected them for the next class. During the class, they shared their recordings with classmates and got feedback from them. In a study conducted by Guerrero et al. (2010), students improved their grammar skills with a collaborative mobile learning tool. First, they worked individually in an asynchronous way, such as studying a grammatical element given by the teacher. Secondly, they worked in a group to discuss previous individual work in a synchronous face-to-face activity. Both studies revealed that collaborative mobile learning activities are effective in enhancing learners' grammatical skills and autonomy.

Li and Hegelheimer (2013) investigated the effect of using mobile-assisted grammar exercises on ESL learners' self-editing skills. They developed a web-based application called Grammar Clinic, which asks learners to identify sentence-level errors and correct them. The result showed that MALL increased the learners' self-corrections and decreased their grammatical errors in the final draft. The learners perceived the Grammar Clinic as a beneficial learning tool for increasing their metalinguistic awareness and improving their self-editing skills in English writing.

2.4.2.3 Reading Comprehension

Reading offers tremendous benefits in developing students' English skills. It is possible that students' language skills can all be enhanced through reading. Many studies tried to solve issues in traditional EFL reading activities with technology (Al-Seghayer, 2007, 2013; Hazaea & Alzubi, 2016; Huang & Lin, 2011; Lan, Sung, & Chang, 2007, 2013). Many researchers claim that using technology in EFL reading not only increases the learners' motivation, interaction, and thinking skills but also incorporates authentic material and automatic feedback (Wang & Smith, 2013). Reading materials can be provided to students either via a well-designed learning course installed on mobile devices or through an email system (Wang & Smith, 2013).

Chen and Hsu (2008) developed a "personalised mobile learning system (PIMS)" which provided L2 learners with English news articles based on their reading abilities. The result confirmed that the m-learning system could recommend news articles appropriate for the individual learner's level and help them learn unfamiliar vocabulary. In Japan, Wang and Smith (2013) developed mobile reading and grammar materials and offered them to university students on mobile phones. The result indicated that students developed confidence in using mobile phones for language learning. In addition, they responded that learning a language on

their mobile phone was a positive experience and helped them improve their reading and grammar skills. They preferred to read materials on mobile phones due to the convenience derived from the portability and accessibility of mobile phones (Khubyari & Narafshan, 2016; Miangah & Nezarat, 2012). Moreover, reading materials created by peers increased their motivation for reading. Interestingly, many students commented that they prefer receiving the material on random days instead of receiving it on specific days of the week. In contrast, Huang and Lin (2011) reported that students preferred receiving reading materials on paper rather than via mobile phones or email, regardless of text length. Mobile phones were preferred to e-mail for short texts (Wang & Smith, 2013), but least preferred for longer texts because of the small screen and font (Stockwell, 2010).

The concept of seamless mobile learning was applied to developing learners' reading skills and learning autonomy. In a study conducted by Foomani & Hedayati (2016), students used "mobile devices to take photos and create artefacts to represent English idioms" (p.206). Then, they were given time for online sharing and commenting with peers. The result revealed that seamless, context-aware mobile learning proved effective in idiom learning by allowing learners to generate their own context, which bridges the gap between in-classroom and out-of-classroom learning. Thus, it supports learners' autonomy by actively engaging them to generate learning resources.

MALL was also applied to collaborative reading activities to overcome the problems of traditional, cooperative reading activities (Chang & Hsu, 2011; Hazaea & Alzubi, 2016; Lan et al., 2007, 2013). Lan et al. (2007) try to solve the problems of traditional reading activities with mobile technology called mobile-device-supported peer-assisted learning system (MPAL). MPAL was proven to reduce EFL students' anxiety, increase their motivation to learn and enhance their oral reading confidence. This result was supported by other studies (Chang & Hus, 2011; Lan et al., 2013). Chang and Hsu (2011) reported that a PDA-based collaborative

translation/annotation system significantly contributes to supporting EFL learners' reading comprehension (Lan et al., 2013). Most importantly, the students perceived that the MALL system was useful, easy to use, and acceptable for their English learning. In another study, Hazaea and Alzubi (2016) investigated the effectiveness of mobile phones in improving Saudi EFL college students' reading comprehension. The result revealed that mobile-supported cooperative reading activity improved the EFL learners' English reading comprehension and increased their motivation for English learning.

2.4.2.4 Writing

Traditional teaching methods for writing are often dull for students living in the digital era. Zaki and Yunus (2015) argued that "mobile learning can be integrated into academic writing by using it with several writing approaches which complements the pedagogical advantages in mobile devices" (p. 11). MALL provides learners with the immediacy to write anytime, anywhere and opportunities to interact with peers and teachers via written text messages on different social applications. Many digital tools have been used to encourage students to improve their writing such as Google Docs (e.g., Suwantarathip & Wichadee, 2014), Wikis (e.g., Aydın & Yıldız, 2014), blogs (e.g., Comas-Quinn, Mardomingo, & Valentine, 2009), Facebook (e.g., Yunus et al., 2012), VoiceThread (e.g., Alameen, 2011), and other digital storytelling tools (e.g., Sepp & Bandi-Rao, 2015).

Students today are highly social and digital. For students living in this highly interconnected digital world, Social Networking Services (SNS) plays an important role in their daily life. For instance, many researchers claim that Facebook can be an effective pedagogical method for L2 writing because it allows peer assessment (Ahmad, Rusli & Mat Daud, 2011; Shih, 2011; Suthiwartnarueput &Wasanasomsithi, 2012). Peer assessment on Facebook considerably increased students' motivation and interests as they had opportunities to construct and refine their knowledge through social interactions in a virtual environment (Shih, 2011).

Facebook also facilitates the brainstorming process which develops students' critical thinking (Yunus et al., 2012; Yunus & Salehi, 2012). Through collaborative work, students with higher skills or better knowledge can support those who are less capable or informed. Scaffolding through peer feedback fosters language proficiency (Lee, 2010; Suthiwartnarueput & Wasanasomsithi, 2012).

Alsaleem (2013) used WhatsApp electronic journaling to improve EFL college students' writing skills in Saudi Arabia. The study found out that students showed significant improvement in word choice and use of voice, which are two important components of writing. They actively participated in the discussions and enjoyed their dialogue journaling. The students formed a small group that exchanged feedback on each other's work and immersed themselves in an academic environment by constantly correcting their own work. Winet (2016) showed how to use mobile instant messaging in the ESL writing class. He argued that it could increase students' motivation, output, and the quality of their writing. Furthermore, it helps learners to reflect on and learn from their errors. Instant question and feedback, in or out of class, with the teacher, was the most important uses of technology (Sherif, 2015). MALL helps the learners to develop writing skills without worrying about time and place (Jai Shree a/p Bipinchandr, Shah, Puteh, Din, Rahamat, & Aziz, 2014). Thus, it allows them to practise writing on the move (Lee & Kim, 2013).

Digital storytelling tools can be applied virtually and seamlessly in various educational environments to develop ESL students' multiliteracy and higher-order thinking and to improve their writing skills. Herrera (2013) investigated the effectiveness of collaborative digital writing tools in college-level ESL learners' writing. The result indicated that ESL learners developed an awareness of the writing process and enhanced their autonomous behaviour through self-editing and peer feedback. Moreover, they could negotiate meaning, vocabulary, and content during the writing process (Nelson, 2006). This process led them to produce more ideas to write

their stories. Fries-Gaither (2010) demonstrated that the process of digital storytelling, which combines stories with multimedia, makes the writing process more appealing and stimulating. According to Sylvester and Greenidge (2009), students, who struggle with traditional text, may feel more comfortable using digital tools and compose more strategically. Thus, ESL learners had confidence in their speaking and writing abilities which are crucial for ESL learners and creatively improved their language skills (Sepp & Brandi-Rao, 2015).

Unlike this study, these studies do not primarily focus on listening or speaking skills. However, they are still crucial in providing insight into the preparation stages of this study that incorporates mobile learning elements and aims to capitalise on its advantages while eliminating its drawbacks.

Analysing mobile learning studies on language skills such as reading and writing and on language components such as grammar and vocabulary was necessary in order to have an idea of how the transition from Web 1.0 to Web 2.0 could lead to changes, and of students' perceptions about mobile learning before and after the studies and how collaborative learning applications can be made.

2.4.2.5 Listening and Speaking

Listening and speaking are crucial skills in language learning. Demouy and Kukulska-Hulme (2010) explored the students' experiences in accessing listening and speaking courses using their own mobile devices. One group used iPods and MP3 players, and the other used mobile phones to practice listening and speaking in French. They found that mobile devices are highly effective tools for practising listening and speaking. The iPods and MP3 players were readily adopted and perceived as efficient language tools by students. Furthermore, students commented that listening and speaking activities on mobile phones were challenging but more authentic and realistic (Al Qasim & Al Fadda, 2013) than using DVD-ROMs. They could develop sharper listening skills and quick oral response skills in a foreign language.

In a study conducted in Iran, Azar and Nasiri (2014) proved the effectiveness of MALL in Iranian EFL learners' listening comprehension. They compared the group using mobile phone-based audiobooks to the group using CD-ROM/audio cassette-based audiobooks. The result indicated that MALL is an effective way of improving learners' listening comprehension (Zhang, 2016). The participants perceived that MALL is significantly effective in improving listening comprehension and offers more opportunities for language learning to happen anytime, anywhere.

According to Rahimi and Soleymani (2015), mobile devices significantly helped learners to reduce their listening anxiety. They compared the experimental group listening to audio files in the format of podcasts using their mobile devices such as mobile phones, MP3, and MP4 to the control group listening on their desktop computers. The result revealed that mobile devices significantly helped learners to reduce their listening anxiety. Moreover, podcasts provide more flexible m-learning opportunities (Chinnery, 2006) and have a considerable potential to enhance second language listening skills, which is also supported by the previous literature (Al Qasim & Al Fadda, 2013; Perez et al., 2011). Moreover, m-learning using podcasts dramatically increases students' motivation for language learning (Al Qasim & Al Fadda, 2013; Li, 2010; Zhang, 2016).

In Taiwan, Liu (2009) constructed a context-aware mobile learning game called Hand-held English Language Learning Organisation (HELLO) which develops English speaking and listening skills based on learners' location and proficiency. The experimental group used HELLO using their PDA phones while the control group used traditional methods (printed materials and CD player) for eight weeks. The experimental group students significantly outperformed the control group. HELLO provided effective learning materials and functions that enhanced English speaking and listening skills. Context-aware mobile learning environments enable students to gain authentic knowledge and achieve better learning

outcomes (Hwang et al., 2011). Moreover, "learners experience real feelings and emotions as they do in a real world through interacting with the virtual environment" (Liu, 2009, p.517). Therefore, they gained better motivation, confidence and satisfaction in developing listening and speaking skills (Liu & Chu, 2010). The context-aware mobile learning game allows learners to collaborate on their tasks in real situations and complete their tasks in actual situations (Liu, 2009). Collaborative speaking and listening activities can be successfully facilitated by MALL which allows learners to co-construct knowledge (Kukulska-Hulme & Shield, 2008).

Various studies using technology to improve speaking skills have been conducted, and the number of these studies is increasing rapidly as the technology advances as well. Nonetheless, using the technology in studies focusing on speaking skills can still have some challenges to overcome. For example, Automatic Speech Recognition (ASR), despite its potential, may still have some limitations just as it had in the study carried out by Ehsani & Knodt (1998). Some researchers tried to overcome this problem by focusing on the limited content which could be more reliable to work on. Chiu, Liou & Yeh (2007) used CandleTalk which was developed to practise different speech acts. The outcome of the study was positive and promising; however, CandleTalk was limited to six types of speech acts, and the students were guided throughout the conversations. That is, it added limitations such as the lack of free conversations and creativity although it partially overcame the speech recognition problems.

Lee, Jang, & Plonsky (2014) conducted a meta-analysis to determine the effects of pronunciation instruction (PI), and they used 86 unique reports about the effects of PI. It concluded that PI using technology or computer-delivered PI produced smaller effects than PI relying on solely human-delivered instruction. Lee et al. (2014) tried to explain this result with the weaker sides of computers such as adaptability and perceptual accuracy when they are compared with human teachers. They still suggested that the use of technology for PI has great potential, and more research needs to be done to improve it.

It was essential to investigate studies employing older technological tools, mostly computers, than advanced mobile devices such as smartphones, to understand the roots of mobile learning that can help understand what problems mobile learning can solve and how it can improve the practices that have already been mostly promising. Also, it was essential to understand what drawbacks mobile-assisted language learning can have when it is compared to computer-assisted language learning. Some of these studies were Tanner & Landon (2009) for pronunciation, AbuSeileek (2007) for learners' attitudes towards different technological tools, Razagifard (2013) for using Computer-Mediated Communication to improve oral fluency and so on. All these studies used the technology differently for various purposes; however, it can be said that they had a couple of common points which were positive attitudes and promising results of using technology for developing oral skills. Nevertheless, there is still much to explore with the addition of advanced mobile devices to the educational technology inventory in recent years, and it should be done by employing objective measures as much as possible to eliminate the potential threat of exaggerating the benefits of mobile learning.

As previously stated, mobile learners can utilise various portable devices like mobile phones, tablets, PDAs, and multimedia players. However, as technology advances and mobile phones become smarter, they are capable of performing the same functions as other portable devices. Consequently, the use of other portable devices has declined, and the majority of mobile learning applications are now used on smartphones. Because of this, smartphones are distinguished from other portable devices.

2.5 Distinguishing Smartphones from Other Information and Communication Technologies

With the advent of smartphones, such as the Apple iPhone and various Android phones, m-learning spread and became more practical. To clarify, smartphones are mobile devices with the basic capabilities of mobile phones and the abilities of a pocket computer. Yet, they are

small enough to carry easily (Korucu & Alkan, 2011). Korucu and Alkan (2011) differentiated smartphones from mobile phones, pointing to the differences in size and capabilities. Where mobile phones have small screens and keyboards, smartphones have touchscreens larger than mobile phones but smaller than PDAs (Korucu & Alkan, 2011). This is important because this capability of smartphones solves the issue of the size of screens in mobile phones cited by researchers (Stockwell, 2008, 2010; Stockwell & Liu, 2015; Thornton & Houser, 2005).

The word app is short for "application," which is specially designed software by third-party companies to be used on a smartphone or tablet device. After the mobile app was born in 2007 by Apple Corp (Godwin-Jones, 2011), it has developed fast and significantly impacted various aspects of people's lives. People enjoy life at their fingertips and spend more time on apps than on the web. It made people's lives, work, and studies more convenient through quick and easy information processing at their fingertips (Zhang & Liao, 2015).

The strength of smartphones lies in their built-in operating systems, such as Google's Android and Apple's iOS, which provide far greater computing power and connectivity than a regular mobile phone (Barrs, 2011; Rodríguez-Arancón, Arus, & Calle, 2013; Yaman, Şenel, & Yeşilel, 2015). Smartphone's operating system allows users to install apps that deliver highly usable and tightly focused functionality (Woodcock, Middleton, & Nortcliffe, 2012). The two largest app stores, the *iTunes app store* and *Google Play*, have offered millions of apps to their users since 2008. Users can download 2.2 million apps from Google Play and 2 million apps from iTunes (Statista, 2016). Though the smartphone is only pocket-sized, it has a computing power of a computer that can process and store a vast amount of data (Yaman et al., 2015). Rosell-Aguliar (2014) explained the functionality of smartphones in facilitating effective learning: responsive touch screen, enhanced text entry with QWERTY keyboards, high-quality image, audio, and video recordings, editing and sharing, voice recognition, storage, connectivity, and GPS. Thanks to Wi-Fi support and 4G wireless networks, the smartphone is

being integrated into the m-learning field by allowing learners to access information anytime, anywhere. Furthermore, language learning activities using apps are more appealing to learners than traditional activities because apps deliver information in various ways through a mixture of different media. Such activities also help learners with language anxiety to feel more comfortable because their game-like features make learning fun (Rahimi & Soleymani, 2015; Rahimi & Miri, 2014).

2.6 Smartphone Applications for English Language Learning

The use of m-learning with smartphones can vary in its usage in educational environments around the world, from classroom language learning (Kétyi, 2013; Wu, 2015) to distance learning (Vazquez-Cano, 2014) to groups of library and information science students (Ko, Chiu, Lo, & Ho, 2015). Ko et al. (2015) researched m-learning usage among library science students in Japan, Hong Kong, and Taiwan. They found that the students utilised m-learning on a regular basis, both for social and educational purposes.

According to Salman (2014), "Mobile applications play a significant role for learning or teaching through enabling learners and instructors to share (notes, videos, and tasks) with other classmates" (p. 3). There are both typical smartphone apps such as voice recorders and YouTube that are re-purposed for language learning (Munday, 2016), and other smartphone apps dedicated to language learning such as Busuu (Kétyi, 2013), Duolingo, Memrise, and Lingua.ly (Munday, 2016).

Nowadays, "the research focus of m-learning has shifted from m-learning characteristics to the development and use of mobile apps for education" (Wai et al., 2016, p.36). Using spare time for learning has received much attention in the m-learning field, and educational apps highly satisfy this kind of demand and contribute to learning at the fingertips. The number of mobile apps is quickly increasing in the mobile educational field, and they have become a new trend (Zhang & Liao, 2015).

Kétyi (2013) conducted an m-learning pilot of Hungarian college students studying German as a second language, using the Busuu language learning application on iOS and Android phones and busuu.com on personal computers (PCs). The students surveyed in Kétyi (2013) reported they enjoyed using the app, comparing it to Facebook or a game. Kétyi (2013) stated that 79% of 59 participants gave the Busuu app a rating of either "good or very good" (p. 133). A concern, however, was that the app was only free for a week before lesson access became limited, so monetary issues must be considered when using smartphone apps (Kétyi, 2013).

These apps have a multitude of useful features, varying from adaptive learning to gamification that aid language learners in the process of L2 acquisition (Munday, 2016). Salman (2014) stated, "Students can learn through playing educational mobile games to add a motivation layer to their learning" (p. 2). Munday (2016) explained that smartphone apps like Duolingo "use adaptive learning technologies, which are able to tailor the tasks to the level of each student" (p. 83). Busuu and Duolingo incorporate social interaction with language skills practice, focusing on vocabulary (Kétyi, 2013; Munday, 2016). Like Busuu, Duolingo is also available on PCs at their respective websites, and the apps are used to supplement traditional language classes (Kétyi, 2013; Munday, 2016).

To summarise, mobile language learning apps can be categorized into two major groups in mobile learning of English: those designed specifically for language learning and those adapted for language learning. While this study employs both types of apps, it primarily focuses on adapting WhatsApp, a commonly-used instant messaging app, for language learning.

It is crucial to consider students' perceptions of mobile learning and their ability to efficiently use their smartphones to ensure the effectiveness of language learning apps, whether adapted or specially developed. While several studies have considered students' perceptions, the skills required for students to fully utilize their smartphones have largely been disregarded.

Students are commonly assumed to be proficient in using their smartphones to their fullest potential. This study will examine the topics of digital literacy and the Technology Acceptance Model (TAM), shedding light on these issues.

2.6.1 The Students' Perception of Using Smartphones for Language Learning

Steel (2012) argued that "mobile apps offer a wide range of learning tools they can be downloaded to their mobile devices and used productively at opportune times in a variety of settings and on-the-go" (p. 875). Many researchers have tried to investigate the effectiveness of smartphone apps on language learning (Ahmed, 2015; Faqe, 2015; Ota, 2015; Steel. 2012). Faqe (2015) investigated the role of mobile apps in English learning among Japanese university students. The result showed that most students own a smartphone and have a positive perception of using it in English learning (Fujimoto, 2012; White & Mills, 2012; Dashti & Aldashti, 2015). The availability, accessibility and flexibility of mobile apps contributed to students' motivation for learning (Zou & Li, 2015) and also enabled ubiquitous learning. Moreover, the apps provided learners with personalised learning that helps learners achieve tasks quickly, easily, spontaneously and habitually (Steel, 2012). Furthermore, the apps extended the learning environment outside the classroom. In the case of language learning, these features are very practical as students often do not have sufficient time to practice the language in a classroom (Kennedy & Levy, 2009).

Steel (2012) investigated "how foreign language students used mobile apps to support their language learning" (p.879). The benefits of mobile apps are convenience, portability and on-the-go learning. Mobile apps enable students to become more exposed and engaged with the language than when learning is confined to a traditional classroom. Such an immersive environment helps students achieve better outcomes in language learning, and it has been posited. Moreover, time efficiency was mentioned as one of the conveniences of using apps. Students used 'dead time' more productively and spontaneously regardless of time and location

(Steel, 2013). Additionally, students showed higher satisfaction with apps that are free or inexpensive. In a study conducted by Ota (2015), most students only used free apps and were unwilling to use paid content (Marello, 2014; Woodcock, Middleton, & Nortcliffe, 2012). Paid apps were used by a higher percentage of advanced learners while free apps were mostly used by introductory-level learners. The majority of advanced students used apps for self-study outside the classroom. The increasing popularity of app learning among students can be attributed to technological convenience (accessibility and handiness) and positive reflections on their course study (Abadi & Saadi, 2015; Al-Zahrani, 2015; Ota, 2015).

Dukic, Chiu, and Lo (2015) explored higher education students' perceptions of the suitability of smartphones for learning in Hong Kong and Japan. The majority of students used smartphones for "communication, socialising, finding quick information for everyday needs and for entertainment purposes…" (p.558). They commented that smartphone is convenient and useful for simple tasks such as "accessing course materials, searching library catalogs, discussing course assignments with peers, recording academic content and taking notes, etc" (p.558). However, they perceived that the smartphone is unsuitable for academic reading and writing, requiring much more focus. The small size of the screen (Stockwell, 2010; Woodcock et al., 2012) and learning outside the classroom were major obstacles to using a smartphone for learning. The smartphone screen is too small for reading and writing academic papers. Moreover, most participants responded that the smartphone is mostly used on-the-go and outside the classroom (Faqu, 2015; Godwin-Jones, 2011; Steel, 2012). Since these environments are unsuitable for serious learning, they prefer to do their academic work on computers in a quiet environment (Stockwell, 2008, 2012).

2.6.2 Using Smartphone Apps in EFL

There is a wide variety of apps for developing different language skills and components (reading, listening, speaking, writing, vocabulary and grammar). Niño (2015) categorised the

mobile apps for independent language learning into dictionary apps, translation apps, language practice apps, flashcard apps, listening comprehension apps, newspaper apps, video apps, games, note-taking apps, and chat or message apps. With the use of gamification apps in L2 learning, many mobile apps "enhance the language learning process and motivate the learners" (Flores, 2015, p.49).

Gamification is a new concept that "uses the game elements and game design techniques in non-game contexts" (Werbach & Hunter, 2012, as cited in Flores, 2015, p.45). Munday (2016) used "an already existing language learning app, Duolingo, to complement traditional college level Spanish as second language courses" (p.83). Students found Duolingo to be an easy-to-use, functional, and enjoyable app for language learning. The participants were satisfied with its accessibility on mobile phones, gamification aspect, and a variety of tasks. Furthermore, it promoted self-directed learning beyond the course's assignments. Kétyi (2013) conducted a project using a language app, Busuu, for students learning German as a second language. They felt that mobile environments and activities were suitable not only for learning new things but also for review and practice. However, they still needed real communication with real people. In a similar line, Rezaei, Mai, and Pesaranghader (2014) also used Busuu to investigate its effectiveness in vocabulary learning. They found that using mobile apps in English vocabulary learning promoted learners' vocabulary, confidence, and class participation. As a result, they had a positive attitude towards the use of multimedia in education.

Muhammed (2014) examined the impact of mobile phones on the learners of English as a foreign language in Iraq. The author found that 99% of the participants in the study considered learning the English language through the mobile phones very effective. Interestingly, many students used TOEFL apps to develop their English language skills. Moreover, he argued that using a combination of various apps (app mashing) that are specialised for developing different language skills would provide an excellent chance to practice and learn a language anytime and

anywhere, at a desired pace with a variety of teaching styles, from the repetitive grammar drills to gamified all-in-one solutions.

Milliner (2015) proved the potential of built-in smartphone apps in a language classroom, including voice recorders, video cameras, timers and digital cameras. The voice recorder allows students to record their conversations to evaluate pronunciation or record pair presentations for practice and self-evaluation (Barrs, 2011). The video camera affords learners great opportunities to create digital stories for English learning (Gromik, 2015). The timer allows students to keep track of time spent on a task or use a study aid to increase their motivation while studying. Furthermore, students can use the camera to take a picture of what is written on the board, such as the teacher's instructions and assignments (Barrs, 2011). The cameras can also be used to develop speaking skills. For instance, students can take part in an activity where they introduce interesting photos from their camera rolls to the class.

Smartphone apps promote the ubiquity of language learning, make learners more autonomous, and give them access to rich resources anytime and anywhere (Yaman et al., 2015). Ramamuruthy & Rao (2015) explored whether smartphone promotes autonomous learning in the ESL classroom. Most participants responded that they used their smartphones to plan their own learning, set learning goals, look up information, take pictures of notes and read them. They realised that putting in their own efforts is crucial for the success of learning, which helped them progress towards autonomous learning. Smartphones enable learners not only to make more efforts in their learning but also to reflect on their learning process. For example, the students can listen to intonation, volume and other phonological features of a language using a speech recognition application. It pushes learners to become autonomous (Leis, Tohei, & Cooke, 2015).

Yaman et al. (2015) investigated "the extent to which ELT students utilise smartphones for language learning process" (p.4). Almost all students owned a smartphone, and it was

actively used for developing receptive skills (listening and reading) but not productive skills (writing and speaking). Developing productive skills by using smartphones generally proved to be challenging and appeared to be a weakness of smartphones (Muhammed, 2014). The most common apps used by students are dictionary and vocabulary apps (Abbasi-Heshemi, 2013; Al-Zahrani, 2015; Fujimoto, 2012; Kukulska-Hulme, 2012; Ota, 2015; Steel, 2012; Wai et al., 2016). Niño (2015) explored the use of smartphone apps in independent language learning in higher education. The great majority of students used smartphone apps to look up words, phrases and idiomatic expressions (72%) followed by translation (53%) and listening (43%).

The effectiveness of mobile dictionaries has been attested in previous literature (Abadi & Saadi, 2015; Rahimi & Miri, 2014; Rezaei et al., 2014; Wu, 2015). Rahimi and Miri (2014) investigated the effectiveness of using mobile dictionaries in English learning. The findings showed that "EFL learners who used the mobile dictionary to learn English improved their English ability more than those who used the printed dictionary" (p.1473). Using a mobile dictionary app also "promotes language learners' motivation, creates a positive attitude towards learning a foreign language and lowers their anxiety in language classes" (p.1473). Furthermore, using a mobile dictionary in language classrooms extends learning outside the classroom into everyday activities.

Wu (2015) investigated the effectiveness of smartphones in helping ESL college students' vocabulary learning. He claimed three deficiencies in learning vocabulary via SMS. First, the text size on SMS was too small. Second, the SMS delivery method did not fully represent anytime, anywhere learning. Finally, learners did not have control over learning because they always had to wait for SMS. However, the technology of smartphone apps can overcome these deficiencies by providing fast operating systems, high-resolution big display screens, large internal storage, and touchscreens with zoom function (Ahmed, 2015). In

addition, customised apps can be installed on a smartphone so that learners can access the content anytime, anywhere without waiting for SMS.

The smartphone offers "various multimedia functions and encourages collaborative speaking, listening, and pronunciation" (Ahmed, 2015, p.123). A number of researchers showed that social networking sites such as Twitter (Borau et al., 2009; Kim et al., 2011; Mompean & Fouz-González, 2016), Facebook (Ahmad, Rusli, & Mat Daud, 2011; Shih, 2011; Suthiwartnarueput &Wasanasomsithi, 2012) and Instagram (Al-Ali, 2014; Yadegarfar & Simin, 2016) could be used to practice fundamental language skills. These social media apps facilitate communication and interaction with fellow students and native speakers (Wai et al., 2016; Ahmed, 2015). Read and Kukulska-Hulme (2015) investigated "the role of a mobile app for listening comprehension in distance learning to sustain students' motivation" (p. 1327). Audio News Trainer (ANT) was developed for the study, which has two versions: individual learning and social learning. They compared the social learning group with the individual learning group. In the social learning group, learners wrote a summary of what they understood (or not), and it was posted to the Facebook page automatically. In the individual learning group, the students answered the questions about what they understood. The motivation to use the listening app significantly increased when social apps were incorporated to enhance interaction among students. The participants had intentions to continuously use the listening app but did not seem to be intrinsically motivated to use it for the purpose of learning a language.

Yadegarfar and Simin (2016) used the Instagram app to improve EFL Iranian TEFL students' grammatical accuracy of word classes in the form of a picture. They found that Instagram significantly improved the students' grammatical accuracy. Moreover, it motivated students, increased the amount of their input, and decreased the amount of threatening atmosphere. Therefore, they had a positive attitude towards using the Instagram app in language learning.

Kim et al., (2011) investigated the use of microblogging, Twitter, on Korean EFL students' English learning. The students formed a Twitter community and were asked to voluntarily tweet in English about the topic suggested by the researchers. The result indicated that Twitter played a crucial role in a virtual language learning classroom. EFL Korean learners significantly increased their language output by actively translating L1 knowledge into L2. Moreover, it provided them with interesting language input and output opportunities and connected inside and outside of the language classroom (Borau et al., 2009).

Similarly, Bozkurt et al., (2016) investigated the effect of microblogging on creative writing skills in an EFL environment. They found that Twitter supported EFL learners' creative writing skills as Twitter's 140-character limit forced learners to be more prudent in word choice and more creative in expressing themselves. Thus, it improved learners' creativity, vocabulary, and grammar, which are skills usually neglected by EFL learners.

In this section, studies on some language learning applications on smartphones and on how some applications are adapted to language learning have been discussed. These studies focused on different smartphone functions, their potential uses, and students' perceptions of mobile learning, which hold significant importance in language learning on mobile devices.

2.6.3 Using WhatsApp for English Learning

WhatsApp Messenger is "a cross-platform mobile messaging app which enables people around the world to exchange messages without having to pay for SMS" (WhatsApp, 2015, p.1). It first started as an alternative to SMS because it offers "simple, secure, reliable messaging and calling that is available worldwide" (WhatsApp, 2018, p.1). The application now "supports sending and receiving a variety of media such as text, photos, videos, documents, location and voice calls" (WhatsApp, 2018, p.1). Using the application requires access to internet data so that users are able to network with their friends and relatives. Bere (2012) identifies more features of the app like group chat, unlimited messaging, cross-platform engagements, offline

messaging, pins, and usernames. These features enable users to engage in synchronous and asynchronous chat and to interact with each other anytime and anywhere.

WhatsApp features can make the app appropriate and practical for educational purposes as it was shown through the use of mobile phone SMS in language learning. Even though WhatsApp is a relatively new messenger mobile application, research has been done to investigate the possibility of its integration and implementation, especially in EFL teaching and learning. For example, Şahan et al., (2016) conducted a study investigating the effect of WhatsApp on teaching English idioms to EFL students. Thirty-three students received three idioms per week for five weeks via WhatsApp. They shared sample sentences with their WhatsApp group and discussed them. The students then sat for an achievement test, and a sub-group took an interview to find out to what extent the messenger application was effective. The findings showed that the participants benefited from the integration of the platform because their English language proficiency improved according to the test. In the achievement test, 15 out of 33 students got 100 points, which is the highest score, and the mean value was 87.10.

Another study that shows the positive impact and benefits of WhatsApp on language learning is Amry's (2014) study whose findings showed that the implementation of mobile technology through the use of WhatsApp helped the experimental group score higher than the control group in the achievement test at the end of the experiment. The study which took place at Taibah University in Saudi Arabia included 15 female students in the experimental group and 15 female students in the control group. The experimental group was required to join a WhatsApp group that the instructor created prior to the study to be able to pursue the learning process which was based on unit six of the educational media course taught at the university. The control group had face-to-face learning activities in the classroom. This result indicated that WhatsApp instant messaging is more effective than face-to-face instruction. In addition to this, a number of studies showed learners holding positive attitudes towards the integration and

effect of mobile learning in language learning, which can, in turn, have positive effects on language learning.

Similarly, Bere's (2012) survey results showed that the majority of participants (81%) perceived ubiquitous learning supported by WhatsApp social networking to be useful. The findings indicated learners' high satisfaction with the effective use of WhatsApp which supports learning anywhere and anytime and which was attributed to the low cost and affordance involved in using such a medium for learning. These positive findings were also supported and confirmed by Şahan et al., (2016). The researchers investigated learners' attitudes towards the use of WhatsApp as a form of mobile learning. The findings showed that there was a consensus among participants regarding the use of smartphones in learning since their integration increased their motivation.

Aburezaq & Ishtaiwa (2013) conducted a qualitative research study investigating pre-service Arabic language teachers' views towards the integration of WhatsApp in learning and its impact on the enhancement of instructional interaction. They focused on three elements: student-student interaction, student-instructor interaction and student-content interaction. The challenges of integrating this mobile application as a mobile learning device were also part of the research questions of the study. Participants included 17 female pre-service teachers who were taking a course on teaching at a university in the UAE at the time of the study. They were asked to join a WhatsApp group which was set up by their instructor and to participate in the virtual platform through reflections, ideas and opinions related to the course they were taking for 15 weeks. The instructor's role was to observe the different interactions and to provide feedback to the participants using the same platform. The data collected included the analysis of the postings on WhatsApp in addition to semi-structured interviews. The findings showed that the participants had different views regarding the integration of WhatsApp as a learning tool in instruction. 76% of participants viewed WhatsApp as a powerful tool that contributes to

learning enhancement and considered using it in their future Arabic classes while 24% said that WhatsApp was a waste of time, money and energy. In terms of instructional interaction, the findings were generally positive, and they showed that interaction occurred at the level of student-student, student-content and student-teacher. The researchers also identified some challenges related to the use of WhatsApp such as extra workload and small screens of mobile technology.

Lai (2016) observed an experiment conducted using mobile instant messenger to assess the second-language learning of some students. The mobile instant messenger tool was WhatsApp, wherein 45 Form-1 students were divided into the mobile and control group for the three-month experiment that was mainly conducted in 2014. The findings showed a significant correlation between an individual's vocabulary gain and chat frequency, thus showing a highly positive result of second language learning through social media tools.

Ashiyan, Z., and Salehi, H. (2016) also used WhatsApp as a tool in analysing "the use and effect of mobile applications on school work as well as out of school work" (p.112). They administered an Oxford Placement Test (OPT) to eighty learners to select the intermediate EFL learners. Accordingly, the experimental group who used the WhatsApp application in learning strengthened and improved the process of collocations attainment, which can ensure the retention of the collocations observed.

Hazaea & Alzubi (2016) analysed the effectiveness of using mobile technology in EFL reading classroom of 30 male students at Najran University. The researcher has also aimed to find out about the role of the new integrated method in developing the reading practices of the EFL learners, which included the influence of WhatsApp. This study has recommended further investigation of the effectiveness of social media tools on language learning.

Jafari & Chalak (2016) studied the role of WhatsApp in the vocabulary learning development of Iranian junior high school EFL students with the help of a mixed-method

design, consisting of a group of 60 students with 30 each for the female and male groups. The results showed that using the social media app played a substantial role in the vocabulary learning of the students.

It can be claimed that the studies discussed here contribute to a general understanding of various areas of language learning by using WhatsApp. However, it can be seen that these studies have not fully investigated the affordances of mobile learning, more specifically WhatsApp, for a number of reasons. The main reasons are:

1- Limited utilisation of the extensive affordances of smartphones and, specifically, WhatsApp for some studies,

2- The perception that productive skills such as writing and speaking are challenging to improve via smartphones,

3- The low ability of students, and possibly teachers in some studies, to use the features of smartphones effectively, or the assumption that students can use smartphones most effectively only because they are young,

4- The relatively short duration of the studies in order to measure the effectiveness and continuity of the studies,

5 - Attempts to use mobile learning and WhatsApp as a substitute for traditional face-to-face learning rather than designing them as an extension of traditional learning. (This approach can be turned into an advantage in case of exigent reasons such as epidemics, wars, and disasters).

Thus it can be argued that there is a lack of studies focusing on students' speaking skills, especially fluency is lacking in MALL although it has great potential for this purpose. There is also a lack of research in the available literature indicating the effectiveness of smartphone applications, particularly WhatsApp. Therefore, the current study intends to examine how smartphone applications, particularly WhatsApp, a common smartphone application, can be

used to support Turkish university students in improving their listening and speaking skills in using English as a foreign language.

With the rapid growth of mobile technology, it is possible to diversify educational strategies in the future. The researcher believes that if educators do not stay up-to-date with rapidly emerging technologies, it might be challenging to catch up with and accommodate how students digitally learn and exchange information. Similarly, and to back up that argument from the literature, Franklin (2011) warns that "our current educational system is obsolete and that educators will become obsolete if they do not realise that they must embrace the changes that are upon us in how, where, and why students learn" (p.273). Therefore, preparing students for unknown new learning environments, such as mobile learning environments, is an ongoing obligation. This could encourage the integration of such mobile devices to reap great results and make learning happen. Therefore, when observing the current trend as depicted in the literature, the researcher believes that teachers might have to deal with mobile technology integration recommendations from administrations and management across most academic institutions sooner or later, which could be one of the justifications for pursuing this study.

The literature reviewed above highlights two issues that are as important as the design of teaching interventions to optimise the features of smartphones for mobile learning. These issues are: 1) the extent to which students have the necessary skills to make effective use of mobile learning, and 2) their perceptions of using mobile learning for language learning. These conditions, which are necessary for this study and similar mobile learning studies to be carried out most effectively, will be discussed under the headings of digital literacy and TAM.

2.7 Digital Literacy

Digital literacy is a term deriving from basic reading and writing abilities. It is a term covering the ability to read and write digital texts; it also refers to the use of technological software and hardware in the best possible ways for different purposes like educational,

vocational, social or entertainment. From this brief introduction to digital literacy, it can be deduced that it is the younger sibling of traditional literacy and has become as essential as its older sibling in today's world. That is to say, digital literacy and other literacies covered by it are extensions of traditional literacy. They differ from each other because of the horizons expanded by digital technology. Jones & Hafner (2012) concur with this analogy:

> What is different are the affordances and constraints of digital tools offer and the opportunities they make available for creative action. In many ways, digital media are breaking down boundaries that have traditionally defined our literacy practices. (p.13)

Two main observations can be made in relation to the literature on digital literacies, with implications for the present study. The first is that 'digital literacy' is the result of a more comprehensive process by which conceptions of literacy change in response to technological developments, with implications for how I handle the particular technological development (mobile devices) in my study; and the second is that digital literacy does not only require an ability to handle the technology but also a range of other skills.

2.7.1 Conceptions of Literacy Change in Response to Technological Developments

'Digital literacy' can be seen as one development within a long history of attempts to understand literacy in relation to technological developments. The cooperation between technology and education dates back to the letters, which continued with printed education, radio and television respectively (Keegan, 1980). Nevertheless, they had some deficiencies such as the lack of real interaction (Dalton, 1987), feasibility (Wilkinson & Sherman, 1989) and authenticity (Millheim, 1991). After a while, computers began to appear, and since then, they have been used to provide multimedia content, repetitive drills, simulations and CDs for asynchronous courses (Towhidi, 2010). Although computers may not have had a significant
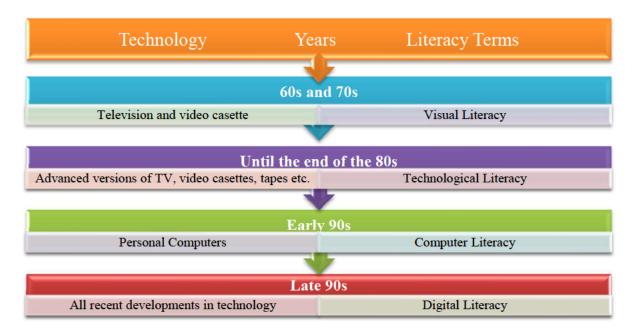
impact on language education initially, the introduction of Internet-powered computers had a noticeable influence on education. This combination of the Internet and computers has enabled teachers to use wikis, blogs, podcasts and so on (Richardson, 2010). In these ways, they can readily reach learners and make online learning possible nowadays. Also, learners have the chance to learn languages from qualified educators and to reach what they need for language education online.

To access the internet, computers (desktops and laptops) were the only common way for people and, until recent years, computers were the only devices enabling to use plenty of software. However, technological advances have produced much smaller portable devices than the computers, such as phones (iPhones, Android phones), tablets (iPads, Android tablets), and high-end multimedia devices, such as iPods, which can handle almost anything computers can handle.

These technological developments brought about the need for new terms to define the abilities required to use them appropriately and effectively. As technology has changed, the terms and their meanings have also changed. Thus, there is a close relationship between the emerging dates of technological inventions and when the terms forming the basis of digital literacy emerged. The terms closely associated with technology can be identified as visual literacy, technological literacy and computer literacy (Belshaw, 2011). The relation between technology and the terms can be shown in Figure 4 as follows:

Figure 4

Relation between Technology and Literacy Terms Over the Years

Technology	Years	Literacy Terms
	60s and 70s	
Television and video casette		Visual Literacy
	Until the end of the 80s	
Advanced versions of TV, video casettes, tapes etc.		Technological Literacy
	Early 90s	
Personal Computers		Computer Literacy
	Late 90s	
All recent developments in technology		Digital Literacy

Source: Author

The graph above summarises the relationship between technological advancements and literacy terms. Even though these innovations were not the motivation behind the development of these terms, it would not be logical to think that these matches are coincidences. The dates above indicate when those technological devices and the terms began to be popular. So, the dates presented do not indicate that these terms are outdated; instead, they continue to be relevant in current discussions on literacy.

What this implies is the continuing nature of digital literacy. This is covered by Martin (2008) as he describes digital literacy as "an ongoing lifelong process developing as the individual's life situation evolves" (p.166). As long as technology evolves, digital literacy will also change. It is a fact that digital technologies do not seem like they will stop developing, so digital literacy will continue to change. While they are changing, individuals must keep up with these changes continuously.

Similarly, Dudeney et al. (2013) defined digital literacy as "the individual and social skills needed to effectively interpret, manage, share and create meaning in the growing range of digital communication channels" (p.2). Digital communication channels, in other words, the digital "world", are continuously changing and expanding at an incredible pace. That is to say, digital literacy has a continuing and growing nature. The implications for the current study are twofold: firstly, that it must be informed by a close look at the particular technology to be utilised in the study (that is, mobile technology) and I, therefore, devote a section to this topic below; and, secondly, that my study must take into account the likelihood of continued change.

2.7.2 Digital Literacy Involves a Range of Skills Alongside Technical Ability

One significant observation emerging from a review of the many attempts to understand digital literacy is that the term subsumes a number of skills or discreet 'literacies'. Belshaw (2011) clarifies this point of view with these words: "Speaking of a plurality of 'digital literacies' makes more sense than endless attempts to define 'one literacy to rule them all'" (p.223). As mentioned above, earlier technology-related terms are still used and are covered by digital literacy. However, the term also subsumes a number of other skills. Eshet (2004) defined digital literacy shortly as a "survival skill in the digital era. It constitutes a system of skills and strategies used by learners and users of digital environments" (p.102). He also underlined the importance of employing different types of digital literacy to increase users' performance to survive in a range of difficulties encountered in digital environments. These skills, covered by different literacies, are technical, critical, creative, personal and social skills.

2.7.2.1 Technical Skills

Technical skills can be defined as the basic abilities needed to use digital devices. They can be seen as skills to be learnt from a manual of a digital device. These skills do not include complex procedures and are not hard to obtain. Saving files, editing a visual, sending e-mails or knowing what mobile applications can be used for specific purposes like instant messaging

or content sharing can be examples of technical skills. These skills are relatively easier to obtain (Buckingham, 2006). This view was also supported by Eshet-Alkalai & Chajut (2009). In their study, they found out that adult participants almost closed the gap between them and younger participants on tasks based on skills requiring more technical control. Thus, technical skills are not seen as important as other skills by researchers (e.g. Eshet-Alkalai, 2004; Buckingham, 2006; Martin, 2008, Belshaw, 2011).

Nevertheless, as Umberto Eco said, "If you want to use television to teach somebody, you must first teach them how to use television" (cited by Buckingham, 2006, p. 263). That is, they can be seen as the prerequisite skills for increased confidence and fluency of users and obtaining more complex digital skills. It is similar to the physical development of a human being; a person can walk after he crawls. Nevertheless, it should be kept in mind that solely technical skills are not adequate to use digital devices effectively (Eshet-Alkalai, 2004); in other words, to be digitally literate.

In this study, participants are expected to have optimal technical skills for using their mobile phones. Because they already have these devices and have used them for a while, they know how to use them basically, which is an advantage for the study.

2.7.2.2 Critical Skills

The importance of the critical approach to digital environments has been emphasised since the term digital literacy became well-known. Gilster (1997) regarded digital literacy as the critical thinking and evaluation of online content and the ability to practically apply online content to daily life. Also, Meyers et al. (2013) described critical capacity as one of the three main elements of digital literacy. Belshaw (2011) likewise counted critical skills in his 8C elements of digital literacy. Similarly, Aviram & Eshet-Alkalai (2006) highlighted the critical side of digital literacy by referring to information skill that can be defined briefly as filtering and criticising online information. Indeed, this skill has already been essential for people before

the digital era. However, the extensive amount of information and easy access to it, both provided by digital technologies, make critical skills necessary in this era (Aviram & Eshet-Alkalai, 2006). In a nutshell, digital literacy includes the ability to analyse and evaluate digital actions (Martin, 2008) and digital sources.

Being critical is of the utmost importance since students will sometimes be alone or with their peers when they use online sources, and they will need to filter and evaluate them on their own in this study. Students are already expected to have the critical capacity for evaluating digital sources and actions at a certain level.

2.7.2.3 Creative Skills

Digital affordances give people chances to show their creativity more than ever. Self-broadcasting, blogs, wikis and photo-sharing sites are just several of them. Hence, digitally literate people are expected to be creative to some extent in the digital era. Meyers et al. (2013) stated that "a person who is digitally literate goes beyond just being a digital information consumer to seeing themselves as someone engaged in the activity of digital information *creation*" (p.362). Eshet-Alkalai (2004) explained that participating in digital information and the environment with reproduction skill means creating a new work by drawing on pre-existing works. Similarly, Hockly (2012) explained that with remixing literacy (first suggested by Pegrum, 2011) "which includes the ability to recreate and re-purpose already-made digital content in innovative ways" (p.109). Both explanations focus on creating digital content by adding something new to this content or combining it with some other works to produce new work. Belshaw (2011) criticised this understanding of creativity in digital environments. He suggested that "the creative element of digital literacies is therefore about doing new things in new ways. It is about using technologies to perform tasks and achieve things that were previously either impossible or out-of-reach of the average person" (p. 212).

In light of these explanations, students are not expected to create something completely original in this PhD project. Instead, they will be advised to reproduce digital content since it is more suitable for the nature of mobile learning; however, it is welcomed to see completely original works as well.

2.7.2.4 Personal Skills

Martin (2008) described digital literacy and its elements by putting "individuals" at the core. Martin (2008) argued that digital literacy depends on the needs of individuals, so what it means and what features are more important than others can change from person to person in specific contexts. Also, he emphasised that digital literacy necessitates the self-awareness and self-reflection of an individual to develop the literacy level. Therefore, a digitally literate person must manage his digital actions in accordance with his/her needs in everyday life. The digital world and the need of a person will keep changing, so a person must adapt his/her digital engagements to his/her needs or vice versa. That is to say; a person must keep his digital id and 'traditional' id synchronised (personal literacy, Hockly, 2012).

It is expected that students will better understand their needs in learning English after this PhD project is applied, and they will be able to continue to determine why and how to use their mobile phones to improve their English skills.

2.7.2.5 Social Skills

Social skills include interpersonal relationships and an individual's social life in the digital world, where we can communicate and socialise with others in new ways. As Aristotle expressed many years ago:

> *Man is by nature a social animal; an individual who is unsocial naturally and not accidentally is either beneath our notice or more than human. Society is something that precedes the individual. Anyone who either cannot lead the common life or is so self-sufficient as not to need to, and therefore does not partake of society, is either a beast or a god.*

These words of Aristotle reflect the importance of socialising for a person and how socialising is changing, so we had better change ourselves, too, if we do not want to feel alienated. As we are neither a beast nor a god, we cannot ignore the new communication and socialising platform and must keep pace with its development. Belshaw (2011) emphasises the importance of this with these words: "To be 'literate' is only meaningful within a social context and involves having access to the cultural, economic and political structures of a society" (p.90). Eshet-Alkalai (2004) points out that a person must know how to communicate in different digital contexts and the ability to share knowledge and emotion appropriately, which are covered by cultural and communicative elements suggested by Belshaw (2011). Aviram & Eshet-Alkalai (2006) contend that the socio-emotional aspect of digital literacy is the highest and most complex level. According to Aviram & Eshet-Alkalai, it is hard to excel at this skill because it combines all skills except reproduction skill, which was suggested by Eshet-Alkalai (2004). In addition to these aspects of social skills, Belshaw (2011) added civic responsibility for being digitally literate. It refers to knowing the responsibilities of a "world citizen" and using technological opportunities to enhance social solidarity and civic improvement.

Communicative and social skills are important for this study. However, the more important aspect of these skills is participatory skills since students will need to work collaboratively in some practices and know how to work, create and learn with their peers. All these abilities required for this study are covered by participatory literacy.

In this section, skills included in digital literacy and their relations with the PhD project were demonstrated. In the following section, the sub-disciplines of digital literacies (the plurality of it) will be shortly explained and, in light of the explanations above, the literacies vital for mobile learning via mobile phones will be emphasised and why they are important for mobile learning will be clarified.

2.7.3 Fundamental Digital Literacies for Mobile Learning

As stressed in the previous section, digital literacy has sub-disciplines that are important to be digitally literate. These literacies are hard to compile because they are open to changes, and new literacies can likely be suggested with the development of the digital world. Hockly (2012) compiles these literacies as shown in Table 1 as follows:

Table 1

Main Digital Literacy Areas and Sub-Digital Literacies

Tablo 1Main Digital Literacy Areas and Sub-Digital Literacies

Main Digital Literacy Areas	Sub-Digital Literacies
Language-based Literacies	Texting Literacy – To read and use the abbreviated forms in text messaging
	Hypertext Literacy- To navigate and read online texts containing hyperlinks
	Visual and Multimedia Literacy – To communicate through visual and multimedia means.
	Gaming Literacy – To interpret game "mechanics" and communicate through them appropriately.
	Mobile Literacy – To use mobile devices effectively.
	Technological Literacy – To use technology responsibly and effectively.
Information-based Literacies	Search Literacy – To search effectively for information online.
	Tagging Literacy – To label and tag online materials.
	Information Literacy – To critically evaluate sources and information.
	Filtering Literacy – To manage information overload.
Connection-based Literacies	Personal Literacy – To manage online digital identity.
	Network Literacy – To filter information received from online networks.
	Participatory Literacy – To have an active role online and to create digital content with other participants.

	Cultural/Intercultural Literacy – To work with international people online.
(Re-) design-based Literacies	(Re)production (Remix) Literacy – To reproduce the pre-existing digital content in new ways.

Source: Hockly (2012) "Digital Literacy"

This classification of literacies can be criticised because some literacies like gaming literacy, technological literacy and, most importantly, mobile literacy can have much broader meanings than they are suggested by Hockly (2012). Nevertheless, the focus of this study at this point is not to compile or explain all literacies; it is to determine the fundamental literacies needed for mobile learning via mobile phones. Still, looking at that table to have an overall opinion about literacies is beneficial. Undoubtedly, all literacies are linked to each other, but some of them can be regarded as essential for mobile learning. Since the lack of literature in terms of determining these literacies for mobile learning, they will be suggested by the author of this thesis.

The primary literacy for mobile learning is the ability to effectively use a mobile or handheld device (categorised in Hockly's taxonomy under mobile literacy). It already covers the effective use of mobile or handheld devices. The question is what are the other fundamental literacies to develop the mobile literacy of students? The first of them is information literacy. As stated by Yarmey (2011), information literacy is one of the main abilities no matter what technological device is used. Mobile devices changed how and where information can be reached because they enabled students to access online information easily, quickly and ubiquitously (Parry, 2011). Yarmey (2011) also highlighted that the more ubiquitous smartphones are, the more they affect how students find, evaluate and use information online. Thus, information literacy is essential for this study to use mobile phones effectively because the practices will require students to find information individually or collaboratively.

The second fundamental literacy for enhancing mobile literacy is visual and multimedia. A smartphone can record audio and video, take images, combine them in different ways, and share them online with other people. Using multimedia, especially visuals, is indispensable to take advantage of these advanced features of smartphones in language education. Our students prefer visuals over texts and like multi-tasking and fast communication (Prensky, 2001), so it is expected that using visuals such as emoticons, stickers, pictures, or caps motivates students and makes language learning easier and faster for them. That is, the practices will include pictures, videos and audio, and students will use all of them to give answers quickly and in the way they like. Smartphones can only be effectively used if students can interpret, understand, use and share visuals and multimedia features of smartphones.
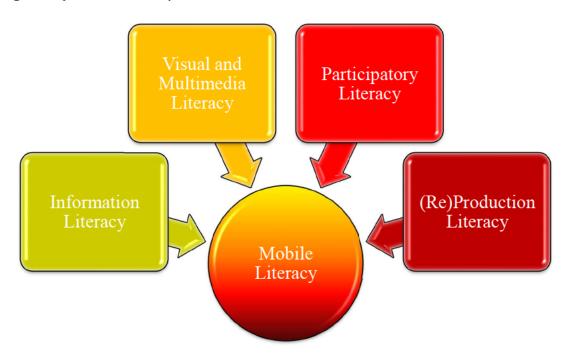
Language learning via mobile phones will be conducted in a collaborative and social context where students must work and socialise together. In this context, students must know how to participate in group work to produce digital content. This is the basis of participatory literacy. As learners advance to more complex levels, it becomes essential for them to engage with others online and share their reproductions. While this may vary based on personal preferences, having the ability to transition from one's social life to an online platform accessible to everyone showcases a high level of participatory literacy. In this way, participatory literacy is among the fundamental literacies for mobile language learning.

Last but not least, (re)production literacy is required to have qualified mobile learning language learning. In particular, a few tasks students will do in this study will require them to combine their skills to (re)produce something. Using the language they try to learn and the technology they are used to utilising will allow them to enjoy learning the language by reproducing a pre-existing work or creating an original one. These reproductions do not necessarily include excessive changes over something. For example, it can be enough if a student can make some changes to a picture sent by another student just by adding some text to

it in the target language, which can be applied quickly in a creative way, as expected from mobile learning.

Figure 5

Categories of Mobile Literacy

Source: Author

In summary, these literacies are fundamental to strengthening mobile literacy and language learning. It does not mean there is no relationship between mobile language education and other literacies. Mobile literacy is related to all other literacies because mobile devices, specifically mobile phones, can be seen as compact gadgets containing technologies that may require all other literacies. That is to say, these literacies are offered as fundamental ones for this study after the possible applications to be done are taken into consideration and, still, other literacies are useful and necessary.

It is observed that mobile literacy has been entirely or partially ignored in many studies involving mobile learning. This thesis attempts to develop a more in-depth view of mobile literacy and proposes other types of literacy that underpin mobile literacy. In line with this suggestion, questionnaires were prepared to find out how students perceived their mobile

literacy levels before and after this study. In addition, the teaching interventions were designed to require students to use mobile literacies.

Another critical issue related to digital literacy, and more specifically mobile literacy, is whether students have the skills mentioned here only because of their birth dates or whether these skills depend on other conditions. This issue has caused controversy, and it is essential to have a more detailed view as it is directly related to the conditions of students' mobile literacy levels. The results of this study may contribute to the discussion that is reported in the following section.

2.7.4 Digital Natives and Digital Immigrants

It has been argued that people born after 1980 have characteristic features because of the changes in their lives caused by their continuous interactions with digital technologies (Prensky, 2001). Prensky (2001) called these people "digital natives". As a result of this, in addition to digital natives, Prensky (2001) claimed that people who were born before 1980, in other words, when the technological impacts on life were not widespread, are digital immigrants. Prensky (2001) compares this difference between digital immigrants and digital natives with language learning:

> "*As Digital Immigrants learn – like all immigrants, some better than others – to adapt to their environment, they always retain, to some degree, their "accent," that is, their foot in the past. The "digital immigrant accent" can be seen in such things as turning to the Internet for information second rather than first, or in reading the manual for a program rather than assuming that the program itself will teach us to use it. Today's older folk were "socialised" differently from their kids, and are now in the process of learning a new language. And a language learned later in life, scientists tell us, goes into a different part of the brain*" (p.2)

As it can be understood from this explanation, Prensky (2001) claimed that the reasons for this difference are age and neural plasticity. If an individual grows up in an environment

surrounded by technological devices, their brains are likely physically different due to the digital input they receive (Prensky, 2001). According to Prensky (2001), digital natives prefer the fast flow of information, multitasking, graphics and games, in contrast to immigrants who prefer slow, step-by-step and serious education. These significant differences between natives (students) and immigrants (teachers) can cause serious problems in education systems because they were constructed according to the features of previous generations, and also, teachers cannot change themselves according to the skills of digital natives (Prensky, 2001; Tapscott & Barry, 2009, Rosen, 2010). If the explanation of Prensky is assumed that it is true, the implications are threefold: firstly, that pedagogical interventions need to be aimed towards the needs of digital natives; secondly, that teachers may struggle to deliver such teaching; but that in contrast, to come to the third point, that all participants of the study will be digital natives, who know how to use mobile phones in the best possible way.

Nonetheless, these assumptions may be wrong because of other factors determining people's comfort levels and knowledge of digital technology. A number of researchers (including Prensky himself in later work) have criticised those views of Prensky because of insufficient scientific evidence (Bennett & Maton, 2010; Helsper & Eynon, 2010; Jones & Healing, 2010, Thompson, 2013). These researchers do not deny that neural plasticity and age can be effective factors in determining digital natives. However, they find it risky to assume that there is a huge generational gap between students and teachers without empirical evidence. Furthermore, these terms have become popular in the press. They are reflected as the ultimate truth about generational differences, and their effects on education can cause a profound misunderstanding about generations. Finally, Helsper & Eynon (2010) worry about possible steps to be taken to change the education system in the UK by educational policymakers and practitioners in reaction to those claims before essential studies providing evidence for the features of digital natives.

Helsper & Eynon (2010) conducted a study exploring the determinants of being a digital native. These determinants are:

- "Age – the youngest generation who has grown up with technology and does not know any other context;"
- "Experience – those who have been on the Internet the longest, while they might not have grown up with the Internet when young, they have been 'submerged' in it for the longest period of time;"
- "Breadth of use – those for whom the Internet is integrated into almost every aspect of their everyday lives independent of their age or experience" (p. 506)

At the end of the study, they found out that breadth of use, experience, self-efficacy (going to the Internet first for information), and education are at least as important as age in explaining whether a person is a digital native. Still, according to the findings of their study, young people use the Internet more. However, the difference between old and young people is not unbeatable. As a result, Helsper & Eynon (2010) define digital natives as "someone who comes from a media-rich household, who uses the Internet as the first port of call for information, multi-tasks using ICTs and uses the Internet to carry out a range of activities particularly those with a focus on learning" (p.505).

Some other studies reached similar results with Helsper & Eynon regarding being a digital native or digital immigrant. (Bennet et al., 2008; Nagler & Ebner, 2009; Margaryan et al., 2011; Corrin et al., 2010) Whether there is a distinction between generations as digital natives and digital immigrants is a debate challenging to solve in the near future because of the lack of evidence, especially qualitative ones. Nevertheless, recent studies show that there is the possibility to define people older than 25 as digital natives, too. In this regard, instead of claiming there are two different generations, suggesting that every person can have different levels of digital literacy could be more sensible and beneficial.

In any case, the participants of this study will be 'digital natives' or will have a high digital literacy level because they are young, educated and have experience with digital tools, at least with their mobile phones for long hours every day. Even if they are not as it is assumed, the practices of teaching English will be very user-friendly and aim to develop essential literacies. Moreover, the teacher will be available to help them when they are stuck. Also, the effective use of recent mobile phones is straightforward and can be readily and quickly acquired by educated young people. To conclude, this PhD project will not be negatively affected by the debate over digital natives. The potential participants of the study will highly likely be very compatible with the study.

Another issue that is as important as students' mobile literacy levels is students' perceptions of mobile language learning. In order for students to transfer their mobile literacy skills efficiently, it is important for them to perceive mobile learning as an efficient way of language learning. As previously stated, the matter will be addressed by building upon the concepts formulated in the Technology Acceptance Model (TAM).
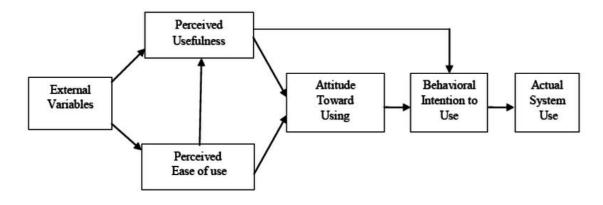
2.8 Technology Acceptance Model (TAM)

With the dramatic advancement in information technology (IT), understanding how individuals adapt to technology is a crucial requirement for a successful implementation of a new system such as m-learning. Thus, many researchers have focused on how individuals accept recent technology and what factors influence their adaption (Venkatesh et al., 2003).

Technology acceptance is defined as "a user's willingness to employ technology for the tasks it is designed for support" (Teo, 2011, p. 1). The TAM was first proposed by Davis (1989) to explain users' adoption of technology. This model explains how users' actual use of particular technology is influenced by four internal variables that include the intention to use, attitude towards using, and two cognitive beliefs: perceived usefulness (PU) and perceived ease of use (PEOU) (see Figure 6). PU is "the degree to which a person believes that using a particular

system would enhance his or her performance," whereas PEOU is "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p. 320). In the context of m-learning, PU can be defined as learners' perceptions that m-learning is beneficial for their academic performance and thus enhances the efficiency of learning. PEOU can be defined as learners' perceptions that m-learning is easy and convenient (Almasri, 2015; Chung et al., 2015; Park et al., 2012). Based on the previous discussion regarding mobile literacy, it can be argued that a positive PEOU is associated with learners' high level of mobile literacy.

Figure 6

Technology Acceptance Model

Source: Davis et al. (1989, p. 985)

According to the theory (Davis et al., 1989), the actual use of technology is determined by a process in which a multitude of variables are involved. TAM explained that: 1) User's actual use of the technology is affected by a user's intention to use; 2) users' intention to use the technology is affected by users' attitude toward using the technology and PU; 3) users' attitude toward using the technology is determined by users' PU and PEOU; 4) users' PEOU influences PU, which also mediates the effect of PEOU on attitude toward using the technology.

Also, TAM posits external variables in the model to explain their impact on internal variables: users' PU, PEOU, attitudes, and intentions. External variables significantly influence the user's intention to use and actual use through mediated effects on PU and PEOU (Davis et

al., 1989; Park, 2009; Chang, Yan, & Tseng, 2012). TAM established a basis for enlightening relationships among the external variables and four internal variables (users' PU, PEOU, attitude as well as intention to use) and actual use of technology (Chang et al., 2012; David et al., 1989). This model helps researchers and practitioners better predict and understand why particular technology may be accepted or rejected by users (Park, 2009). Thus, it is helpful for not only predicting but also explaining and increasing users' acceptance of technology (Davis, 1989; Davis, 1993; Davis et al., 1989).

2.8.1 TAM and M-Learning

TAM has become widely applied to many experimental studies related to m-learning in order to explain how learners adopt and use mobile technology (Almasri, 2013; Almasri, 2015; Cakir & Solak, 2014; Chang et al., 2012; Chung et al., 2015; Donaldson, 2011; Hsu & Chang, 2013; Jung, 2015; Park et al., 2012; Pindeh et al., 2016; Soleimani, Ismail, & Mustaffa, 2014; Suki & Suki, 2011; Wai et al., 2016). These researchers revealed that learners' PU and PEOU are significant factors in determining acceptance of the m-learning technology. Although PU and PEOU are important factors of m-learning adoption, external variables also significantly impact learners' acceptance of the technology. Thus, many studies extended TAM in order to explain and predict user's technology acceptance by integrating various external variables, such as self-efficacy (Cakir & Solak, 2014; Chung et al., 2015; Jung, 2015; Park, 2009; Park et al., 2012), content richness (Jung, 2015; Pindeh et al., 2016), compatibility (Cheng, 2015; Chung et al., 2015; Jung, 2015), subjective norm (Cakir & Solak, 2014; Park, 2009; Park et al., 2012), perceived playfulness (Elkaseh, Wong, & Fung, 2015; Pindeh et al., 2016; Suki & Suki, 2011; Tajudeen, Basha, Michael, & Mukthar, 2013), and perceived convenience (Bere & Ramb, 2013; Chang et al., 2012; Hsu & Chang, 2013; Moon & Kim, 2001). These external variables were widely employed depending on target technology, user type, and context (Almasri, 2015; Pindeh et al., 2016).

Jung (2015) investigated 189 EFL Korean teachers' acceptance of m-learning technology in their English teaching classes by applying the TAM model with five external variables: "instant connectivity, compatibility, interaction, content richness, and computer self-efficacy" (p.220). All of these external factors influence PU. The result showed that PU and PEOU positively influenced EFL Korean teachers' intention to adopt m-learning in their English classroom, which had a significant impact on their actual use (Mac Callum, Jeffrey, & Kinshuk, 2014; Tai & Ting, 2011). Korean teachers believed that usefulness and convenience were crucial factors in m-learning adoption in English education. The more users felt comfortable and confident using m-learning technology, the more they believed in its usefulness (Chung et al., 2015). Self-efficacy may be considered an intrinsic motivational factor which determines the degree of confidence in using m-learning successfully (Jung, 2015). PU can be considered an extrinsic motivational factor that heightens students' expectations for good academic performance (Wai et al., 2016). Therefore, self-efficacy, and intrinsic motivation, significantly impacted PU, an extrinsic motivation. Ultimately, both motivational factors increase students' intentions to use m-learning (Moon & Kim, 2001).

Moon and Kim (2001) extended TAM with perceived playfulness which can also be considered an intrinsic motivation related to technology acceptance. The result indicated that behavioural intention to use technology is highly related to the users' perceived playfulness (Tajudeen et al., 2013). In addition, perceived playfulness directly impacts the PEOU (Moon & Kim, 2001) and PU (Elkaseh et al., 2015). Thus, the individual's acceptance of the technology is significantly related to both intrinsic and extrinsic motivational factors. According to some recent studies (Elkaseh et al., 2015; Keong, Hakoush & Dhulfiqar, 2016; Pai & Yeh, 2014; Pindeh et al., 2016; Tajudeen et al., 2013), perceived playfulness positively affected the intention to use new technology. In the m-learning context, if users can enjoy using m-learning, they will have a positive attitude and perception towards it. As a result, they will adopt it in

their learning process (Elkaseh et al., 2015). However, according to Suki and Suki (2011), perceived playfulness was not proven to have a significant influence on adults' intentions to use 3G mobile services. The result mentioned that perceived playfulness might be a necessary condition but not a crucial factor in elevating users' intention to use 3G mobile services.

Pindeh et al. (2016) proposed a research model guided by TAM regarding users' acceptance of mobile apps as an effective medium for learning the Kadazandusun language. They extended the TAM model with three external variables: content richness, user satisfaction, and perceived playfulness. They proposed that content richness was an important external factor determining students' PU of mobile apps. According to the researchers, content richness refers to the relevant and sufficient resources that users can access to increase their activity involving a particular technology. They argued that content richness is a crucial factor in m-learning acceptance. These results are consistent with those of prior studies (Jung, 2015; Lin & Chen, 2015; Soleimani et al., 2014), which argued that m-learning is useful because it can provide plenty of updated, accurate and helpful materials and resources to users. As a result, content richness significantly influenced the students' PU of m-learning.

Chung and others (2015) explored Taiwanese EFL college students' acceptance of mobile English vocabulary learning resources. The result showed that students' intention to use m-learning was significantly correlated with mobile device compatibility, self-efficacy, students' PEOU, and PU. Interestingly, mobile device compatibility was the best predictor of students' intention to use m-learning, which significantly influenced PEOU. Compatibility refers to the degree to which students believe that mobile learning is related to their current lifestyle, values, needs, and learning experiences (Cheng, 2015). According to Jung (2009), compatibility had a significant impact on the PU of m-learning. The result indicated that Korean teachers perceived that m-learning not only matched their previous teaching environment but also suited to their teaching styles (Jung, 2009).

Chang et al. (2012) explored 158 college students' English m-learning acceptance in Taiwan by extending the TAM model with learners' perceived convenience. Perceived convenience is defined as a degree of convenience with regard to time, place, and execution while learners are participating in English mobile learning (Yoon & Kim, 2007). The result showed that students' PEOU positively affected perceived convenience, which was congruent with other findings (Bere & Rambe, 2013; Yoon & Kim, 2007). In the m-learning context, if students perceive that m-learning is easier to use, they will consider it more convenient. Furthermore, since perceived convenience is also positively correlated to PU (Yoon & Kim, 2007), if students perceive m-learning to be more convenient, they will believe it is more useful.

Bere and Rambe (2013) also investigated the relationships between perceived convenience and other variables in TAM. They examined 196 IT students' m-learning adoption using WhatsApp in South Africa. They introduced three different kinds of convenience of mobile learning: 'just enough learning,' 'just-in-time learning,' and 'just-for-me learning' (p. 53). Just enough learning means that the appropriate amount of information can be provided to learners suited to their cognitive ability at any given time. Just-in-time learning signifies the ubiquitous nature of mobile learning in which learners can be provided sufficient information and real-time feedback based on their needs. Just-for-me learning represents learner-driven learning in a suitable format where learners with different learning styles can use m-learning and plan and control their own learning (Schofield, West, & Taylor, 2011).

The result showed that students' PEOU of the WhatsApp m-learning system positively influenced students' perceived convenience of this technology. Moreover, perceived convenience positively affected the PU of the WhatsApp m-learning system. This result was consistent with previous findings (Chang et al., 2012; Hsu & Chang, 2013; Yoon & Kim, 2007) that PEOU has a direct impact on perceived convenience. Moreover, Perceived convenience has a direct impact on PU and also significantly influences students' intention to use technology.

According to Yoon and Kim (2007), perceived convenience not only refers to convenient access to technology but also includes the convenient use of technology.

This study focuses on mobile literacies as an essential element of mobile learning, which is parallel to perceived convenience but more comprehensive than it. As long as teaching practices are designed to allow learners to use their creativity, learners' mobile literacy levels will ensure that the content generated during mobile learning is rich and that their smartphones are easy to use for language learning. As a result, the PU of using smartphones in language learning will be positively affected, and this will lead to a more effective mobile learning experience. From the TAM point of view, this study added the teacher's presence with the roles of guide, model, coach, facilitator and observer and social events when deemed necessary as external variables. The role of the teacher and the desired interaction between students will be determined within the framework of social constructivism, collaborative learning and the engagement theory proposed in relation to them.

2.9 The Theories Forming the Design of Teaching Interventions

Social constructivism and collaborative learning are still inspiring and valid in language education; however, the principles of these concepts should be adapted to the newly emerging social environments, which have been digitally constructed. These digital platforms can enable us to learn collaboratively in new ways by using the up-to-date affordances of mobile technology. In this study, social constructivism, collaborative learning and the engagement theory, in addition to mobile literacies, underpin the teaching interventions in certain respects. Thus, it is essential to explain what social constructivism and collaborative learning are to understand the philosophy behind the teaching interventions in the study.

2.9.1 Social Constructivism

"Learning is a social process that occurs through interpersonal interaction within a cooperative context. Individuals, working together, construct shared understandings and knowledge". (Johnson, Johnson, & Smith, 1991, p. 11)

Students are the creators and consumers of knowledge. This notion goes side by side with the constructivist perspective in which "students form their own knowledge and the relationship between knowledge and reality" (Bredo, 2000, p.23). To establish constructivism in knowledge building and creation, Joseph and Uther (2009) stated that

> "the constructivist tradition argues that a learner actively constructs new ideas based around their existing knowledge. In addition, constructivism emphasises the importance of collaboration in learning or knowledge construction as a social process. Arguably, the mobile context has much to offer in the way of supporting learner interaction, collaboration, and the co-construction of knowledge. (p. 9)

Social constructivism, based on Vygotsky's (1978) sociocultural theory, is a psychological term used to describe the learning processes that occur as a result of students' analysing and interpreting data, their encounters, and knowledge as a form of learning. To further elaborate, active learning is key in constructivist theory. Students need to write, think, experiment, create, and devise to learn effectively, not just take notes in lectures. Similarly, Kukulska-Hulme and Shield (2008) note that

> "the mobile device is integral, adding an extra dimension to the learning experience by allowing learners to identify, edit, and share their own materials in a way analogous to Schneiderman's (1998) relate (identify), create (edit), and donate (share) philosophy" (p.280).

The relationship between the Engagement theory and the teaching interventions in the study will be explained in more detail later.

In terms of pedagogy and social constructivism, exploring collaboration, support, feedback and interaction on WhatsApp could be done by implementing the following instructional activities (See Figure 7) in Constructivist Learning Environments (CLEs) (Jonassen, 1999):

Figure 7

Learning and Instructional Activities in CLEs

Learning Activities	*Instructional Activities*
Exploration	Modeling
Articulation	Coaching
Reflection	Scaffolding

Source: Jonassen (1999, p. 231)

1. Modelling: an activity that focuses on the expert's performance when providing an activity that encourages the concept of how to do the task.

2. Coaching: an activity that focuses on the learner's performance when providing prompts, encouraging reflection and monitoring the learner's performance.

3. Scaffolding: an approach to support the learner in different areas of the learning environment

Similar to CLEs, the notion of scaffolding goes side by side with modelling and coaching in constructivist MALL environments. According to Wilson (1996), a constructivist classroom is "a place where learners may work together and support each other as they use a variety of tools and information resources in their guided pursuits of learning goals and problem-solving activities" (p. 5). Therefore, within mobile-assisted language learning environments, students are able to learn collaboratively using mobile devices.

Coming from a higher education teaching background and pursuing mobile technology integration processes in that realm, Franklin and Van Harmelen (2007) claimed that there was a relatively experimental and descriptive piece of evidence that shows the effect of Web 2.0 on

learners and teachers in formal, informal, work-based, and lifelong education. This shows that students can also use and interact with Web 2.0 tools via their mobile devices. They also investigated how universities and the corporate world both make the best use of Web 2.0 tools to enhance the learning process and to make businesses more professional and much more productive too. Based on a social constructivist approach, this notion is supported by Hall (2009), who stated that learners have control over their own learning progress. Therefore, there are many ways in which learning, along with communication, can occur in the cyberspace world.

Social constructivism is a comprehensive theory. This study utilises certain principles of this theory and incorporates some of its elements into teaching interventions. The principle that forms the basis of this study's teaching interventions is that knowledge and development are realised through social interaction. The teaching practices applied to the students were designed in such a way that the students could engage in social communication online and thus construct knowledge together. Another important constructive element in this study is the instructional activities that can be used. These instructional activities provided guidance on how the teacher should function in teaching interventions. This situation will be discussed in more detail under the heading of collaborative learning as Vygotsky's MKO (More Knowledgeable Other) concept. To wrap up, the structure of the study will be framed within the theory of collaborative learning which in turn aligns with social constructivism. Social constructivism has contributed to the basic principle of the study, which is that knowledge can be realised through social communication and engagement, as well as through the roles of the teacher in learning.

2.9.2 Collaborative Learning

According to Tu & Corry (2003), "collaborative learning engages students in knowledge sharing, inspiring one another, depending upon one another, and applying active social

interaction" (p.52). Students are most likely to be encouraged to engage in student-centred activities that can improve their learning. Jukes, McCain, and Crockett (2011) assert that learners need encouragement and timely non-judgmental feedback. They must be given opportunities to make mistakes, authentic audiences for presentations, and a wide variety of contexts and audiences to demonstrate their learning. They need to be encouraged that for some problems – there is no one 'right' way and that exploration of mobile devices, mobile environments, and techniques will improve their learning and understanding of the world in which they live.

One central part of mobile learning that cannot be overlooked is learner-learner interaction across multiple contexts. The three areas that the researcher plans to address in his study are technology integration, students' perceptions of mobile technology integration, and MALL. Therefore, the literature shows that contextual knowledge can play a role in collaborative learning. Collaborative online discussions using mobile devices stand as a good example in this regard. For instance, when a more knowledgeable person (e.g., a professor) joins online discussions, students positively engage in the learning process.

Similarly, when addressing technology, Vygotsky (1978) articulated the concept of a "More Knowledgeable Other" (MKO), who is a person with more highly developed abilities or a greater level of understanding. That can be noticeable in most mentor-mentee relationships, especially if applied to Mobile Web 2.0 tools. To explain this dynamic when relating it to web-based learning, studies (for example, Hill, Song, & West, 2009) have found that "when there is a strong example, or model, of how to reflectively interact with others in web-based learning environments (e.g., discussion board), then the class engages in the learning more effectively" (p.92).

Within the context of social learning theory, mobile technology integration applications are strongly linked to the following three concepts: First, collaborative learning and group work

usually takes place in contexts such as social networking, online learning, and virtual classrooms. Second, the concept of modelling responses and expectations from the teacher and the student is somewhat effective. For instance, as suggested by Gredler (2005), the teacher can provide feedback through the use of the tracking and insert comments features of Microsoft Word to edit a student paper. By the same token, the researcher argues that the concept can also be completed using a mobile device via mobile applications. Examples of studies that have used mobile applications for language learning can be found in the works of (Godwin-Jones (2011); Chang and Hsu (2011); Chen and Chung (2008); Chen and Li (2010); Fallahkhair et al. (2007); Liu (2009); Petersen and Markiewicz (2008); Petersen et al. (2011); Sandberg et al.(2011); Stockwell (2007, 2008, 2010); and Huang et al. (2012). Third, students can observe experts in action in such contexts as demonstrated through tutorials or experiments using mobile devices that are, for example, camera-supported and location-aware.

Collaborative learning is a technique where students work together in groups or teams to achieve mutual learning goals. This approach accentuates interaction, cooperation, and shared responsibility among learners (Shneiderman, 1998). It can be seen as a method that applies the social constructivist principles mentioned above. It involves learners working together to interact, share perspectives, negotiate meaning, and collectively construct knowledge. This creates a social context that aids in the construction of knowledge. In this social context, the teacher also takes place as a guiding and facilitating element. In this study, in parallel with the principles of collaborative learning, MKO, one of the elements of social constructivism, was adapted to the study. MKO's role involves modelling, coaching, and providing scaffolding, as in the instructional activities presented within the Constructive Learning Environment.

In this study, the connection between social constructivism and collaborative learning can be elucidated as follows. Collaborative learning is just one approach to implementing social

constructivist principles into practice. Social constructivism, on the other hand, is a larger theoretical framework that includes multiple perspectives and approaches to learning. Although collaborative learning aligns with social constructivism and encourages social interaction and knowledge construction, it is important to recognize that it is just a single aspect of this broader framework.

Shneiderman (1998), based on many years of teaching experience, combined the principles of collaborative learning and the possibilities of technology to develop a more concrete approach called the engagement theory. The instructional practices used in mobile learning in this study align closely with Shneiderman's Engagement theory, with some modifications.

2.9.3 Engagement Theory

The key idea of the engagement theory is that in order for students to learn effectively, they must be engaged in the classwork they are given (Kearsley & Shneiderman, 1998). Kearsley and Shneiderman (1998) designated three components to the theory called "Relate-Create-Donate", which are utilised to achieve student engagement (p. 20). The components are as follows: "(1) an emphasis on collaborative efforts, (2) project-based assignments, and (3) non-academic focus. It is suggested that these three methods result in learning that is creative, meaningful, and authentic" (Kearsley & Shneiderman, 1998, p. 23). Ultimately, in order for students to learn, they must be engaged in the learning process.

While Kearsley and Shneiderman (1998) believe that, in theory, engagement can be achieved without the use of technology, the use of technology in teaching and learning will be beneficial. They state "…we believe that technology can facilitate engagement in ways which are difficult to achieve otherwise. So engagement theory is intended to be a conceptual framework for technology-based learning and teaching" (Kearsley & Shneiderman, 1998, p. 20).

One of the most emphasised points of the Engagement theory is the importance of collaborative learning in technology-supported learning. It underlines that students can be kept more ambitious and motivated by collaborative learning and that they can learn a lot not only from their teachers but also from their peers throughout the process. Another point he emphasised is that the role of the teacher in these collaborative learning experiences should evolve from the classical 'sage on the stage' to 'guide on the side'. Teachers should guide students and evaluate them when necessary. They should also provide a motivating and supportive learning environment.

Two important elements stand out between the approach of Engagement theory and the approach of this study. Firstly, the projects that are considered to be realised in Engagement theory are much broader in scope compared to the possible teaching interventions of this study. The second difference is the way in which the engagement theory deals with one of the three important elements of 'donate'. Shneiderman (1998) gives an example of 'donate' and mentions a project that aims to help elderly people living in the neighbourhood. It is impossible to include such projects in this study due to their low feasibility and voluntary nature. Consequently, the Create-Relate-Donate method was adapted in this study to be Create-Relate-Participate. It is the realisation of teaching interventions that require collaborative learning activities on a much smaller scale than Shneiderman mentioned, with the creativity of the students and the previously mentioned MKO role of the teacher. The third step, Participate, which replaces Donate, refers to students' level of engagement and contribution to collective knowledge and creativity. This level of engagement can be realised not only with the people they collaborate with in their community but can also vary from contributing to a single person in their community to many people around the world, depending on students' desire and level of mobile literacy.

Independent of what has been discussed so far, the final issue that needs to be addressed in the literature is how listening and speaking skills can be assessed in an objective way. The following section includes elements that can be taken into account in listening and speaking skills.

2.10 Elements of Listening and Speaking

2.10.1 Listening

Listening is one of the four major skills of language learning (Listening, Speaking, Reading, and Writing) although it was given importance more recently (Oxford, 1993; Richard & Rodgers, 2001) when it is compared to the other three skills. Listening is one of two major skills to receive language input along with reading and the facilitator to obtain the other language skills (Vandergrift & Goh, 2012).

There is no single definition of L2 listening since it is an invisible mental process, and this feature of listening makes it harder to describe (Wipf, 1984). Nation & Newton (2009) supports this notion by describing L2 listening as "the least understood and most overlooked of the four skills" (p. 37). This nature of listening also makes the listening comprehension process harder than the comprehension related to the other input skill - reading.

Kang (2016) sees the continuous speech flow as the main reason causing the listening comprehension process to be analysed harder than reading comprehension. She compiled the statistically significant and empirically tested predictors of listening comprehension provided by Buck (2001) and Vandergrift & Goh (2012). Table 2 taken from Kang's thesis summarises these predictors and the related empirical studies well. As it can be seen in Table 2, these predictors are vocabulary, syntax/grammar, topics, speech rate, and multimedia.

Table 2

Factors that Affect Listening Comprehension

Factors	Empirical Studies
vocabulary	Bonk, 2000; Mecartty, 2000; Stæhr, 2009; Trofimovich & Isaacs, 2012
syntax/grammar	Conrad, 1985; Mecartty, 2000
prior knowledge/topic	Buck & Tatsuoka, 1998; Freedle & Kostin, 1999; Long, 1990; Macaro, Vanderplank, & Graham, 2005
speech rate	Buck & Tatsuoka, 1998; Griffiths, 1990ab; Griffiths, 1992; Jensen & Vinther, 2003; Zhao, 1997
multimedia	Parry & Meredith, 1984; Shin, 1998; Wagner, 2010; Wagner 2013

Source: Kang (2016)

In the light of the empirical studies compiled by Kang (2016) in the table above, how these predictors significantly affect listening comprehension can be summarised as follows:

1- It can be concluded that vocabulary knowledge can significantly affect listening comprehension while it cannot be strongly argued that grammatical knowledge is significantly correlated to listening comprehension (Mecartty, 2000). However, the grammatical knowledge of learners can determine what strategy learners can adopt while listening to passages. Learners at lower levels focus on syntactic elements while students at high levels focus on semantic elements (Conrad, 1985).

2- According to the studies about prior knowledge and listening comprehension, it can be argued that prior knowledge certainly affects the listening comprehension of learners; however, this relies on learners' experiences. That is to say, if they have prior knowledge that can help them understand conversations or listening passages more easily, the correlation between prior knowledge and listening comprehension is positive. This correlation can also be negative in the case of misleading prior knowledge.

3- Speech rate must be determined according to the needs of learners. Thus, learners can improve their listening comprehension optimally. The faster or slower speech

rate of listening activities can slow down the development of learners' listening comprehension.

4- Lastly, the corresponding empirical studies about using multimedia and listening comprehension show that using visual input in addition to audio input help learners have higher listening comprehension scores. Even though visual input increases learners' listening comprehension scores, it should be remembered that learners can have real-life experiences in which they can have audio-only input. Thus, learners need to practise audio-only exercises in addition to audio-visual exercises.

2.10.2 Speaking

Speaking, like listening, used to be ignored although it may be the most important one of four major skills (Egan, 1999). It was also not tested due to difficulties such as objectivity and time management (Clifford, 1987). This situation has already changed; however, it has still been discussed what way could be the best to measure speaking skills. As is expected from the complex nature of speaking skills, there is no exact solution for this discussion.

It is required to understand the components of speaking skills to find appropriate approaches to measure speaking skills. Luoma (2004) suggests that speaking skills consist of the sound of speech, spoken grammar, spoken words, and slips and errors. Bygate (1987) defines speaking as a process including stages that are planning, selection and production. These stages contain some complex speaking skills such as awareness of context, choosing the appropriate words and saying them in the appropriate ways and the necessary knowledge to use grammatical and pronunciation rules as facilitators. Speaking skills can be described in many different ways according to the philosophy determining the perceptions of speaking and the purpose of learning speaking skills. Thus, approaches to measure speaking skills can vary.

Kang (2016) states that "there are two distinct methods of measuring L2 learners' speaking performances: detailed linguistic features of the spoken language (e.g., fluency) and

overall effects on listeners (e.g., comprehensibility and intelligibility)" (p.12). She also highlights fluency as the most commonly measured linguistic feature of speaking, and she compiled some linguistic features used by other researchers to measure fluency.

The researchers listed in Table 3 used the linguistic features: syllables per second, words per minute, unfilled pauses, filled pauses, mean length of runs, repetitions, self-corrections and phonation time ratio. The linguistic features they used were not exactly the same; however, the logic behind using these features was similar. They all found significant results and proved that fluency could be measured using these linguistic features.

Most importantly for this study, it can be deduced from Brown et al.'s (2005) and Iwashita et al.'s (2008) studies that advanced English language learners' speech rates can be around 2.40 syllables per second, while intermediate English language learners' speech rates are around 2.00 syllables per second. These results can establish a basis for understanding whether the participants of this study can be seen as fluent or not.

Table 3

Linguistic Features to Measure Speaking Performance

Linguistic Features	Empirical Studies
syllables per second	Brown, Iwashita, & McNamara, 2005; Iwashita et al., 2008; Jamieson & Poonpon, 2013; Kang, 2013
words per minute	Lennon, 1990
unfilled pauses	Iwashita et al., 2008; Jamieson & Poonpon, 2013; Kang, 2013; Lennon, 1990
filled pauses	Brown et al., 2005; Iwashita et al., 2008; Kang, 2013; Lennon, 1990
mean length of runs	Iwashita et al., 2008; Jamieson & Poonpon, 2013; Kang, 2013; Lennon, 1990
repetitions	Brown et al., 2005; Lennon, 1990
self-corrections	Lennon, 1990
phonation time ratio	Kang, 2013

Source: Kang (2016)

As it was mentioned before, fluency can also be measured more generally. This approach focuses mainly on comprehensibility and intelligibility that Munro and Derwing (1997) defined as "judgments on a rating scale of how difficult or easy an utterance is to understand" (p. 2); and "the extent to which the native speaker understands the intended message" (p. 2) respectively. Although some studies used Likert scales to eliminate subjectivity (e.g., Trofimovich & Isaacs, 2012), this approach still relies on how the raters feel while listening to a student's speaking performance. It must also be noted that Isaacs and Thomson (2013) found out that L2 teachers and novice raters measured comprehensibility without any statistical differences. That is, they could partially succeed in eliminating raters' objectivity. These two different approaches to measuring fluency can be used situationally and/or as supportive measuring tools for each other.

It must be acknowledged that Kang (2016) substantially contributed to this thesis and facilitated the understanding of the components of listening and speaking skills that can be required to focus on. The tables prepared by Kang (2016) helped me to form criteria for measuring students' fluency, and it was inspirational for forming the pronunciation section of criteria to measure students' pronunciation performances. The purpose of these criteria is to serve as a helpful tool in avoiding subjective evaluation of students' performance, which can be a result of action research.

2.11 Summary

Regarding the use of technology in the classroom, education has changed and adapted to keep up with technology; thus, the use of computers and mobile devices has evolved greatly over the last thirty years, from tutoring programs via computers (Bax, 2003; Davies, Otto, & Ruschoff, 2013; Dina & Ciornei, 2013) to mobile-assisted language learning (MALL) and mobile learning (m-learning) with smartphone applications (apps) (Geddes, 2004; Hockly, 2013; Kukulska-Hulme & Shield, 2008; Sandberg et al., 2011). Overall, the studies reviewed

here support the use of technology to aid in second and foreign language acquisition, especially when taking student attitudes and engagement into consideration.

The scarcity or lack of technological equipment due to high cost, scarcity of continuous professional training, large-size classes and learners' lack of motivation, to mention a few factors, can all be alleviated by the availability of mobile phones that nearly all learners carry with them all the time.

Teachers can use texting platforms such as SMS and WhatsApp messenger to deliver educational content to their students for the latter to check outside the classroom. In this way, learning English will no longer be confined to classrooms. Since mobile phones are easy to carry, students can learn and practice English wherever they are and whenever they have free time. Students will have the chance to reinforce classroom lessons and practise and learn new materials. Mobile phones can also be useful in large classes. For instance, not every student can talk or ask a question in a class of forty or more students. Through SMS or WhatsApp messenger, students can either type, voice/video record their questions before and after class time.

The body of literature concerning technology in education is wide and varied with multiple components. The various theories and research presented here provide a foundation for the current study. Research has shown that attitudes, motivation, and other emotion-based factors are important constructs in second and foreign language acquisition. Numerous studies have promoted the benefits of the use of technology and especially mobile device in language learning classrooms, in regards to learner attitudes, achievement, and motivation. Across the globe, especially in Turkey, many people use smartphones a great deal in their daily lives. The existing literature regarding m-learning and the use of smartphones/apps support future research expanding the field and bringing greater understanding to all of the factors involved in and surrounding learning new languages.

CHAPTER 3: RESEARCH DESIGN AND METHODS

3.1. Presentation

This study aimed to help Turkish students overcome their problems while learning English listening and speaking skills by conducting teaching interventions assigned and completed on WhatsApp. These tasks were designed following the principles of theories and concepts discussed in the previous Chapter. However, they had not been tested in any study before. Although mobile learning of English or mobile-assisted English learning has been explored in numerous studies, it is still a new research field, making it open to unpredictable conditions and variables. Additionally, many studies related to the mobile learning of English had not yet tested their claims in a real context when this research was carried out.

The nature of the study led it to be dynamic and adaptive since it included using a relatively new teaching-learning tool -smartphones-. I needed to conduct all the interventions in person and closely observe students' reactions and attitudes towards them. Also, I was the students' model, coach, guide and facilitator; in other words, more knowledgeable other (MKO) in the research design. Under these conditions, an action research design was applicable and convenient. Before explaining the details of the methodology, it is helpful to explain what action research is.

3.2 What is Action Research?

As Tripp (2005) suggested, action research practices can be dated back to the ancient Greek empiricists since they used a cycle similar to the action research cycle, which will be explained later. However, the emergence of the term 'action research' is often credited to Lewin (1946). Lewin (1946) defined action research as "a comparative research on the conditions and effects of various forms of social action, and research leading to social action" (p. 35). Lewin also stressed that research-producing knowledge only for writing books is insufficient. He concluded that action and research are complementary rather than contradictory.
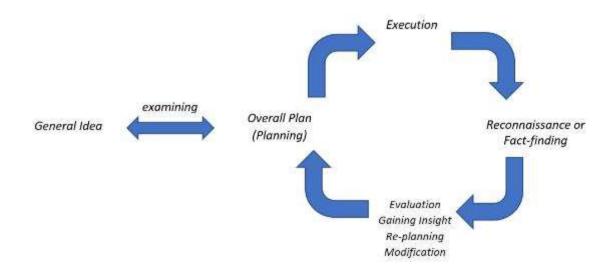
After Lewin's works including action research, action research was used in various fields such as community development, minority rights, political change, agriculture, banking, health and education. Corey (1949, 1953) was the first to use action research in education. He (1953) defined action research in education as "research undertaken by practitioners in order that they may improve their practices" (p. 375). Since then, some varieties have been used by researchers. Carr and Kemmis (1986) adapted an emancipationally oriented variety. Elliot (1991) focused on using action research for curriculum and teacher development. Sach (2003) preferred to call a teacher conducting action research "the activist professional". These examples show that action research may not have a standard definition and may be differently approached since it has been developed to use in different applications (Tripp, 2005). Although there are varieties in action research, all these varieties share a similar action inquiry cycle.

3.2.1 The Action Research Cycle

Lewin (1946) argued that the action research process starts with a general idea and the examination of it in terms of feasibility. If this period of planning is successful, it leads to an overall plan of how to achieve goals, and it can be expected that this period can also modify the general idea.

The next period is the execution of the overall plan. The action takes place in this period and must be followed by fact-findings or reconnaissance. Fact findings or reconnaissance consists of the evaluation of execution, gaining insights into the strength and weaknesses of specific techniques, replanning and modification. According to the findings, the action is planned again, and the overall plan can be modified. Then the process is redone after the necessary changes are made.

Figure 8

"Action Research Cycle"

The action inquiry cycle above demonstrates how action research must be conducted according to Lewin. This cycle has been used with various modifications, additions and/or different naming for the steps. However, they fundamentally follow the same process. Tripp (2005) explains this situation as follows:

> "…some people have recognised and conceptualised the cycle without knowledge of the other versions already in existence, and one can name the same cycle and its steps in many different ways. Also people have developed versions customized to particular uses and situations because there are many different ways of using the cycle and one can perform each of the four activities of the cycle in many different ways" (p. 446)

The cycle of action research can be similar in each action research project; however, it can be used for various situations and purposes. Because of that, it was inevitable to determine action research types/modes according to content, purpose and how people are involved in the process.

3.2.2 Types/Modes of Action Research

The classification of action research can be various. First, the types of action research offered by Chein et al. (1948) will be explained. Then, Berg and Lune's (2017) compilation of action research types will be stated.

Chein et al. (1948) suggested four varieties (types) of action research. The first type is diagnostic action research. As its name implies, the researcher diagnoses the existing problem. S/he is not involved in the actual situation. They work as a kind of consultant and offer some solutions to the people experiencing the problem in the actual situation. Adelman (1993) highlighted the weakness of this type and stated that "unless the proposed cures were feasible, effective, and acceptable to the people involved, however, this design of action was often wasted" (p. 13). The second type is participant action research. This type aims to upgrade the diagnosis action research by focusing on community involvement. People taking action must be active participants in the research from the beginning. The third type is empirical action research. The researcher must do the action and record what is done and happens so that s/he can accumulate knowledge in day-to-day work. The last type is experimental action research. It is the controlled application of various techniques in nearly identical social situations. Chein et al. (1948) argued that experimental action research is the most complex type and has a more significant potential for the advance of scientific knowledge since it can enable the testing of a hypothesis when the conditions are agreeable.

Some researchers other than Chein et al. (Grundy, 1988; McKernan, 1991; Holter and Schwartz-Barcott, 1993) have tried to outline the types of action research, and all of them listed three types of action research. Berg and Lune (2017) highlighted that categories suggested by these researchers for the types of action research are generally similar and can be collapsed. In this case, there are three types of action research. These are:

3.2.2.1 Technical/Scientific/Collaborative Mode

In this type of action research, the researcher does not act as a part of the group with which the practitioner works. Basically, the practitioner is a bridge between the group and the researcher. S/he provides information interchange between the group and the researcher. The researcher determines the conditions of the work and develops interventions to improve the conditions of the group by collaborating with the practitioner. The practitioner is the implementer of these interventions that the researcher developed in line with the group's needs.

3.2.2.2 Practical/Mutual Collaborative/Deliberate Mode

This type of action research differs from the technical mode in that the action researcher designs the plan, creates interventions and implements them. The researcher and the practitioner can be the same person, or a researcher and a practitioner can mutually do it. In this case, they need to work together. They need to review the situation, determine the possible issues, what causes them, and interventions to solve them. This mode tends to be more flexible than the technical one since the practitioner does not have to follow the researcher's strict plan and methods. Tripp (2005) highlighted this difference and imagined that the practitioner is like a crafter in this mode. He stated that "crafters set their own criteria for quality, beauty, effectiveness, durability and so on…"(p. 455).

3.2.2.3 Emancipating or Empowering/Enhancing/Critical Science Mode

This mode of action research has two primary goals (Berg & Lune, 2017). The first goal is to merge theoretical knowledge with real issues and experiences. The second goal is to free practitioners from confusion and help them comprehend the real problems. Theory and practice should support each other to accomplish that. This cooperation of theory and practice can develop social criticism. According to Grundy (1988), it consists of three parts: theory, enlightenment, and action. Berg and Lune (2017) argue that theory and enlightenment are the

elements to provide the emancipation and empowerment to the participants, and this makes action and change possible.

Each one of the action research varieties suggested by Chein et al. (1948) and action research modes compiled by Berg and Lune (2017) has their distinctive features; however, these varieties, types or modes of action research may not be strictly separated from each other. Chein et al. (1948) asserted that "there are, of course, no sharp lines of demarcation between them and they are not mutually incompatible. Characteristic features of two or more distinguishable varieties may sometimes be observed in a single project" (p. 45). Tripp also supported that "…action research projects seldom use only one mode, but continually shift from one kind of action to another" (p. 456). Thus, it can be argued that it is reasonable to follow one type of action research in an action research project as well as it can be possible to observe situational transitions from one type to another.

The aforementioned transition between types of action research also applies to this study. Due to its structure, the study was carried out with transitions between technical and practical modes. In the technical mode, even though researchers and practitioners are considered separate entities, the key focus is on adhering to a specific set of plans and principles to maintain strict monitoring of practices. In this study, although the teaching practices were prepared by adhering to certain principles as stated in the literature, there were situations where changes were required in the way the practices were carried out due to the structure and dynamism of the study. As seen in this study, in teaching interventions that require immediate action and creativity, similar to the metaphor of the 'craftsman' emphasized by Tripp, the boundaries created by the theories were sometimes exceeded, and what should be done according to the conditions was determined by the cooperation of the teacher and students. In other words, in a sense, as 'craftsman', standards were set and applied according to the conditions. It should be noted that these transitions were not planned or immediate like the act

of turning a light on and off, but occurred due to the conditions that arose in the natural dynamic flow of the study. This supports the proposition that it was an appropriate decision to conduct the study as action research.

3.2.3 Weaknesses and Strengths of Action Research

Action research has been controversial due to some disadvantages in terms of objectivity, generalisability and time management. On the other hand, it also has some significant advantages such as being innovative, dynamism, flexibility, and mutual benefits. First, the weaknesses and strengths of action research will be mentioned. Then, it will be explained why action research was chosen for this study and how the negative effects of the disadvantages of action research could be overcome will be discussed.

3.2.3.1 Weaknesses of Action Research

Objectivity

It can be argued that the subjectivity issue of action research arises from the over-involvement of the researcher and potential pressures on the researcher from the authorities. As explained above, the researcher is personally involved in the action research process in many cases. Since there is no systematic checking or mechanism to control the researcher's actions, the researcher may get biased in time, which can affect the analysis of the findings. (Kock, 2004). Another potential threat is the stress that the researcher may feel when he is conducting a study in an organisation where he works (Noffke & Somekh, 2005). The organisation can encourage the researcher to manipulate the finding according to their needs.

Generalisability

Generalisability refers to the degree to which the findings of a study may be applicable in other contexts. The results of the action research can be applicable to the population that is studied in a specific context. Action research is instrumental when a new intervention is tried

for a specific target group. The conditions of that specific setting may not be the same in other contexts, so, in most cases, action research offers solutions to local problems. That does not mean that an action research study cannot be relatable to other contexts that can share all or most of the conditions with the original study. The relatability matter will be discussed in more detail later.

Time Management

The action research cycle generally starts with a rough idea to solve a particular problem or more than one problem related to one another. After completing the first cycle, the research questions and methodology can be resigned, and these procedures can be done multiple times according to the purpose and/or conditions. Ultimately, this can lead to researchers experiencing an uncontrollable research environment and collecting a significant amount of data; however, this can take a long time and make all the procedures harder than desired.

3.2.3.2 Strengths of Action Research

Being Innovative

Action research aims to test new teaching practices in real settings. These interventions are designed based on theories, in other words, action research enables researchers/practitioners to interlink theory and action. Researchers/practitioners examine the problems in a specific context and can tailor teaching interventions according to the need in the specific context. These innovative applications of theories are designed to solve a local problem under certain conditions; however, these attempts to create new ways of doing things can be routine practices after they are tested in various settings by other researchers and time. As Tripp (2005) suggested the current routine practices were the innovations of the past. That means action research can be useful to create innovations of the present, which can be the routines of the future.

Dynamism and Flexibility

Action research is problem-focused. It forms a dynamic and flexible inquiry cycle which can be continuously adapted until the problem is solved. In this procedure, Researchers/practitioners can encounter numerous unexpected circumstances. The nature of action research enables them to take action to overcome these circumstances. It creates opportunities to change the research components such as the materials, schedules and the frequency of activities when required.

Mutual Benefits

The mutual and interactive reflection created by the action research cycle benefits both researchers and participants (research clients) involved in the project. It enables researchers to shape the project. They gain valuable experiences and insight into the participants and their problems. In addition to these benefits for researchers, action research also aims at improving the participants of the study and generating knowledge that can be used to improve these participants in a collaborative cycle.

3.2.4 Research Design of the Study

As mentioned earlier, this study is designed as action research since it needs to be dynamic, collaborative and practical. It is expected that an action research design helps the researcher to explore relatively new teaching interventions and can offer solutions to the problems caused by the obscurity of this new teaching/learning environment with the help of its flexibility.

Before explaining why experimental methods are included with action research in this study, it will be explained how research questions and social constructivism, collaborative learning and the engagement theory, which underpin the design of the teaching interventions applied on WhatsApp in the study, fit in with action research. As the engagement theory is an

approach based on collaborative learning, no further explanation of how this theory fits in action research will be added.

Upon examination of the research questions, it is seen that they aim to determine the affective, perceptual, and performance-related impact of specific mobile teaching interventions on a group of Turkish university students. While there are some anticipated outcomes from the study, it is important to acknowledge that there may be questions with varying answers depending on each student's background and circumstances. As such, it is important to consider all stakeholders involved in the study throughout the process.

Implementing action research was considered the optimal way to foster mutual collaboration and benefit in this study, given that the research was subject to unforeseeable changes and centred around the students significantly, and also, limited examples similar to this study were accessible when the project was done. In light of the prevailing conditions during the study period, it was determined that an action research approach with a limited number of participants was the most suitable methodology for the investigation. This decision was made after careful consideration and justified based on the research objectives and constraints involved. Thus, it is important to consider that the findings of the study may not have universal applicability, as they were obtained at a specific point in time and are subject to variation depending on the circumstances and the participants.

This study adopts the principle of social constructivism that the construction of learning takes place through interaction and collaboration between people in response to teaching interventions and the creation of a digital learning environment that aims to use the affordances of mobile learning, more specifically smartphones, in this direction. In addition, another concept of social constructivism adapted to this study is Vygotsky's MKO.

Social constructivism places great importance on collaborative learning and knowledge construction, which involves interactions among individuals. Action research frequently

employs teamwork and the concept of the community of practice, in which participants actively engage in joint learning. The participatory nature of action research aligns well with the collaborative tenets of social constructivism. In the context of action research, participants actively contribute to the research process by sharing their expertise, insights, and experiences. This approach acknowledges and values the diverse perspectives and knowledge of the participants, promoting a collaborative approach to knowledge generation. Although this approach makes it possible for students to learn from each other, what is meant more by expertise is the interaction of the MKO with the students.

The study aims to adapt collaborative learning to mobile learning so that it supports it with its features and benefits from its advantages. However, there may be some disadvantages in collaborative learning-oriented studies. Collaborative learning, in which individuals work together as a group, depends on interactions among its members. Group dynamics can have a significant impact on the outcomes achieved. Conflicts, imbalances in knowledge, or ineffective communication within the group can hinder the learning process and lead to unexpected results. It is, therefore, important to ensure that the group functions cohesively and efficiently to promote optimal learning outcomes. Active participation from all group members is crucial for an effective collaborative learning experience. If certain individuals are less engaged or do not contribute equally, it can negatively affect the overall effectiveness of the group's efforts. When collaborative learning activities lack proper guidance, facilitation, or structure, they can easily deviate from their intended learning objectives and lead to undesired outcomes(Shneiderman, 1998). Direction is essential to ensure that these activities stay on track and deliver the expected results. The dynamic nature of action research and its ability to react immediately to unexpected situations are well suited to overcome the problems encountered in mobile collaborative learning.

The inclusion of the MKO mentioned briefly above in the design of this action research is necessary for effective and immediate reaction to problems that may arise due to the collaborative and untested structure of the study. During the action research process, the participation of the MKO as an experienced practitioner can be highly beneficial. They can offer valuable expertise, insights, and guidance to the participants. Also, they can play a crucial role in providing support and guidance to the participants engaged in the action research. By offering encouragement, feedback, and mentoring throughout the research process, they help participants develop their skills, deepen their understanding, and overcome any challenges that may arise. This support can be invaluable in ensuring the success of the research project. Lastly, the MKO can facilitate collaboration among participants in action research. They can create an environment that promotes dialogue, cooperation, and shared learning. By leveraging their expertise, the MKO can encourage interactions, facilitate the exchange of ideas, and promote the co-construction of knowledge among participants.

The specific use of action research in this study could provide findings on whether the interventions were feasible, how the students reacted to them, and their attitudes and feelings about mobile learning of English. However, it was not possible to argue that these interventions improved their English speaking and listening skills since the students were already being taught English at the university, which means they were expected to improve their English regardless of the study they joined. In addition, it took place over an extended period. That meant the researcher was over-involved, which could raise a subjectivity issue in the study, because of the action research design, which was already vulnerable to this.

It was required to minimise subjectivity. In order to do that, it was essential to employ quantitative data collection methods to provide the study with objective results. A pretest-postest design was the most convenient when the study was conducted since it was possible to create a control group which could be equivalent to the experimental group except WhatsApp

interventions and SpeakingPal exercises that only the experimental group completed. Both groups were taught English under the same condition at the same university. Thus, a pretest-posttest design could give more ideas about the extent to which the interventions could make a difference.

This study not only aims at finding out whether the application of the language learning extension activities is feasible on smartphones, but it also seeks to determine if these interventions can make any concrete differences when administered as supportive practices in addition to traditional face-to-face learning. It was necessary to integrate a pre-test and post-test control group design for this purpose in order to reduce the possible subjectivity of action research. All in all, this study is action research benefiting from an experimental method to reinforce its findings. The design of the study enables me to argue the strong and weak points of the study extensively in light of data obtained quantitatively and qualitatively, which complete each other or/and shed light on the matters from different perspectives. This design provides an extensive and robust data pool; however, it was inevitable that there were limitations as well. These limitations will be explained at the end of this chapter.

The study benefited from the convergent research design, including both quantitative and qualitative research instruments. As Creswell & Creswell (2018, p.217) state, "The key assumption of this approach is that both qualitative and quantitative data provide different types of information – often detailed views of participants qualitatively and scores on instruments quantitatively…" This study required both qualitative and quantitative data to comprehend the reasons and results more accurately even though the use of experimental methods in actions research is uncommon since they may seem incompatible and controversial in terms of research paradigms, but as Bielska (2011) stated:

> "This controversy, however, can be minimised when the two approaches are perceived as complementary rather than contradictory and an experimental investigation is designed as part of a mixed methods study, where qualitative

and quantitative methods of data collection and/or analysis are combined to increase the strengths and eliminate the weaknesses of its component methodologies" (p.86).

This is the situation in this study. Experimental methods were required to integrate into this action research to broaden the potential benefits of this study and to understand the different dimensions of the mobile learning of English such as the students' perceptions, attitudes, motivations and actual performances, which are interrelated and boosting each other; that is, are complementary rather than contradictory.

The results of the different types of data support each other. Also, to respond to the need of the framework of the study and the different types of research questions, it was the best option to adopt a convergent research design. The research instruments used in the study were questionnaires, tests, interviews, observations and written and voice recordings. How all the instruments were employed and the research questions to which they are related will be explained phase by phase, as stated in Chapter 1.

3.3 Phases

The study was executed with students from various departments at Gazi University, Turkey, between September 2014 and May 2015. It was divided into three phases – preliminary, main, and post-study - to explain the procedure clearly. In addition to these phases, a pre-study phase was required to rest assured that the study was feasible. Every phase will be separately explained by covering aims, settings, participants and instruments.

3.3.1 Pre-study Phase

This study was based intensely on the use of smartphones. It was essential to have a better understanding of the overall trends of the students at Gazi University in terms of smartphone use so that teaching interventions, which will be explained in detail in the Main

phase, could be accordingly adapted to the most popular smartphone operating system and application(s). In addition, it was necessary to have more information about the conditions to be faced before and during the study. The purpose of this phase was to answer the question: What are the trends in smartphone use among the students at Gazi University?

In accordance with this purpose, an online questionnaire (see Appendix 1) was carried out. It included items to find out what operating system (OS, e.g. Android, iOS, Windows Mobile) and smartphone applications were popular among the students at Gazi University; how much time they spent while using their smartphones and what smartphone functions they regularly used; whether they had necessary data packages to have a continuous Internet connection and were satisfied with the cell coverage; and their experiences of learning English by using their smartphones and what they thought about learning of English via their smartphones.

The questionnaires were delivered online to about 1000 students from different departments and years. Unfortunately, it was impossible to know precisely how many students could be reached because the questionnaire was shared on the university and student Facebook pages. English instructors (lecturers) at Gazi University also shared the questionnaire with their students. It was delivered online because it was thought that more students could be reached when the questionnaire was applied. Moreover, it was not applicable in any other way at that time because the university was on the summer holiday, and the students were in many different cities.

The number of respondents was 151 by the end, which was not as high as expected. However, the results of the questionnaire still gave clear ideas for the rest of the study such as the most common operating system and applications used by the students. This pre-study phase helped me have concrete ideas instead of assumptions about the students' tendencies to use their smartphones and their learning experiences using their smartphones.

The questionnaire will be analysed in more depth in the following chapter. The following table summarises the Pre-study phase, and there will be a similar table at the end of every phase below.

Table 4

The Profile of the Pre-Study Phase

Instrument	Questionnaire
Participants (the number)	Students from Gazi University (151)
Setting	Online
Duration and Time	15 September 2014 – 30 October 2014
Question(s) to be answered	What are the trends in smartphone use among the students at Gazi University?

3.3.2 Preliminary Phase

This phase aims to find out how potential participants perceived their competencies of using smartphones (mobile literacies) and what they had thought about using their smartphones to support the process of learning English before they joined the project. It was also used to determine the members of the experiment and control groups for the next phase.

This phase included a questionnaire (See Appendix 2) containing general questions that were the same as the first questionnaire and more specific questions related to mobile literacies and mobile learning. Delivering this questionnaire as hard copies was preferred because the university was open, and it was much easier to collect all the potential participants for the main phase. A pilot study was carried out before applying this questionnaire to the target students.

The pilot of the questionnaire was applied to 138 students from various departments at the same university as the target students. Cronbach's alpha, a measure used to assess the reliability or internal consistency, was chosen to control the reliability and item selection of this questionnaire. It is accepted that if Cronbach's alpha is between $0.7 \leq \alpha < 1$, the internal consistency of a questionnaire is acceptable.

The questionnaire consists of three parts. The first part has the same questions as the online questionnaire aiming to collect information about the students' profiles. The second part includes questions about mobile literacies; the last part is dedicated to mobile learning of English. Due to the structure of the first section, it was not necessary to check its Cronbach's alpha. Since the second and third sections have different focal points, these sections were checked separately. In the first administration of the questionnaire, the Cronbach's alpha of the second part of the questionnaire was 0.74, while the Cronbach's alpha of the third part was 0.72.

Based on the results, the questionnaire was modified to contain 25 items instead of the original 37. Six items were removed from both the second and third parts of the questionnaire. The items that least fit the questionnaire were removed in accordance with the results. The removal of these items was not solely based on statistical data. Input from students and consultations with the supervisor also played a role in finalizing the questionnaire. After the consultations, the wording of some items and the titles of the sections were changed, and the instructions for every section were added. As a result, the questionnaire got the final form as seen in the Appendices.

Once the questionnaire was finalised, it was administered again to the pilot study group. The number of participants was 146. The second and third parts of the questionnaire were checked in the same way. The Cronbach's alpha of the second part of the questionnaire was 0.84 ($0.8 \leq \alpha < 0.9$), while the Cronbach's alpha of the third part was 0.82 ($0.8 \leq \alpha < 0.9$). Following these results, the questionnaire did not require further modification and was administered to the target students.

The questionnaire was carried out at the English Language Teaching (ELT) and English Language and Literature (ELL) preparatory classes of Gazi University. The preparatory classes contained over 150 students whose ages ranged from 18 to 25 years old. They had 25 hours of

English lessons every week; that is, they were intensely taught English. The questionnaire was delivered to 110 ELT and/or ELL students in total.

The results of this questionnaire provided insights into what the potential participants thought about using smartphones in learning English and to what extent they were aware of the literacies needed to use smartphones effectively in English learning. This also helped me determine volunteers to participate in the project. Here, 30 students (15 students for each group – control and experiment) were chosen among the 67 students stating that they wanted to join or might think about joining the project. All these students' lecturers were informed about the procedure and asked for help announcing the project again in their classes, and I kindly requested them to make a list of the students who really wanted to join the project. After the announcement, the number of potential participants to take part in the experimental group decreased from 67 to 32, three of whom were male students only. To provide heterogeneousness in the group insofar as possible, all of these three male students were included in the project. The rest of the students were taken from the different classes in equal numbers on a first-come-first-served basis. That is, 1 or 2 female students from each classroom, who were at the top of the list because they responded to the lecturers' announcements in their classes, could take place in the project. The other students who could not be included in the experimental group were offered to take place in the control group. They were clearly informed about how the students were chosen for the experimental group. Two of these female students wanted to quit the project after a week, and they were replaced with the two students from the voluntary student pool. The number of students in the experimental group decreased to 14 because a student had to sell her smartphone at the beginning of the second month of the study, which meant she could not continue. The ultimate number of students in the groups, how and why they changed, and the groups that were paired in the teaching activities will be explained in more detail in the 'Results' chapter.

The data gathered from the questionnaires were used to compare participants' self-perception about their mobile literacies and mobile learning of English, which could be possible in light of this questionnaire and the final questionnaire, which will be mentioned below.

Table 5

The Profile of the Preliminary Phase

Instrument(s)	Questionnaire
Participants (the number)	ELT/ELL students at the preparatory classes (110)
Setting	Preparatory classrooms at Gazi University
Duration and Time	November 2014 – 1 month (including the pilot study of the questionnaire)
Question(s) to be answered	How do a group of Turkish university students' perceptions towards mobile learning of English and their mobile literacies change by the end of the study?

3.3.3 Main Phase

The main aims of this phase were to determine whether the experimental group could perform better than the control group, how the students felt during and at the end of the project, and what they thought about the process. This phase of the study contains two IELTS preparation exams (pre-test and post-test), teaching interventions on WhatsApp, self-practice of the students in the experimental group on a smartphone application called SpeakingPal, a semi-structured interview, which was executed in the middle of the study, and meetings and social events.

3.3.3.1. The First IELTS – Pre-Test

At the beginning of the phase, 15 students in the control group and 15 in the experimental group undertook the listening and speaking sections of an IELTS preparation exam to determine their level before the project. As mentioned above, two students in the

experimental group were replaced after their requests, and the students replacing them took the IELTS as soon as they were included in the study. The first IELTS was taken from the British Council's Internet site, which gives the test as a sample. The results of this test and another IELTS preparation exam which were taken from 'Cambridge IELTS 9' and students took at the end of the project were used to determine whether students in the experimental group had improved their overall listening and speaking skills and their pronunciation of problematic English sounds (/ð/, /θ/ and /ŋ/) for Turkish students better than the students in the control group. The second test will be discussed below, and the results of the tests will be analysed in the next chapter.

3.3.3.2. Meeting and Social Events

After this exam, the first meeting with the experimental group was held to introduce the details of the project, which included an explanation of how WhatsApp would be used, the application to be purchased – SpeakingPal, which was purchased for each student – and the details and content of the future meetings were also discussed.

Regular meetings were also held to obtain students' opinions about the project. During these meetings, I took notes to develop the project in progress. Nonetheless, it may easily be observed that students were reluctant to stay for meetings after their university lessons, and most of them did not want to give any feedback or say something negative.

Another thing decreasing the effectiveness of meetings was the dominant group members. They used to take turns giving feedback while some students were not able to get the floor. Therefore, meetings were replaced with events such as going to a cafe, having dinners, having a picnic etc., during which I observed that the students felt much more comfortable and relaxed, tending to share their thoughts and feelings about the project. These events also became essential because several students were very passive in the project because they were too shy to talk to people they did not know so well.

I took short notes during the events or wrote down more detailed notes right after the events. They proved to be friendly environments in which every student felt more comfortable and said whatever they wanted, while a few students sometimes gave feedback through WhatsApp. It was also noted that the number of students joining the events varied from 6 to 14.

These meetings and then social events contributed to the study as they continuously provided feedback about the study. That helped me dynamically shape the study as needed, such as changing the day the tasks were assigned.

3.3.3.3. WhatsApp Interventions

As mentioned before, after understanding the general trends in smartphone use among students at Gazi University, it was decided to use WhatsApp as the main application to improve the students' listening and speaking skills. It was the most reasonable choice because it was the most popular application among the students. That is, most students were familiar with the use of WhatsApp and its interface. Another and more important reason for the WhatsApp choice was its features, which were suitable for the purpose of the project. The app enables users to send and receive messages, voice recordings, pictures, links and videos. Moreover, groups can be easily created to have conversations with more than two people.

There were three kinds of groups for learning/teaching interventions on WhatsApp, which will be called 'tasks' throughout the study. These groups were: private groups for each student, groups consisting of 3 or 4 students and a common group called 'Smartans' for all the students. I was present in all the group types as the More Knowledgeable Other that was important to enable the students to construct the knowledge together by establishing a collaborative learning environment. I implemented the instructional strategies of CLE, which are modelling, coaching and scaffolding. To illustrate, when the students could not do a task or were unsure about how to do it, as the MKO, I initiated the task and gave them a sample performance of how to do it. Also, I gave prompts to the students that encouraged them to

complete the tasks successfully, and I guided them when they needed. These instructional strategies adapted from CLE to mobile learning of English facilitated the learning. Thus, the MKO was one of the most important components of the designs of these groups. Last but not least, I, as MKO, explicitly taught the problematic sounds two times on WhatsApp common group - Smartans. I taught these sounds by sending them sample voice recordings of a native speaker and describing how the sound should be articulated. In addition, I directed them to reliable sites such as Oxford and Cambridge online dictionaries and raised their awareness that could improve their information literacy as well.

The students could ask their questions to me in their private groups. Instead of having a default chat page, I created a group including me and a student for each of the students so that another student could be added to their private groups whenever needed, and they could do the task as pairs. Most tasks were collaboratively done in the three or four-student groups. These groups were mainly used for completing tasks, and they were free to chat with their friends in the groups. The Smartans - the common group - was used for the announcements. All the tasks, meetings, events and reminders, along with the students' requests, were shared in the common group. The students also had some conversations about their lessons, exams and the events they wanted to organise and so on.
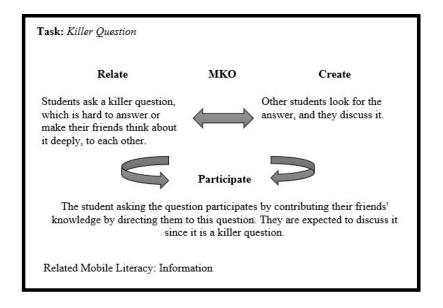
The students completed 16 tasks on WhatsApp and 60 lessons on SpeakingPal in total within six months. They sent and received voice recordings to do the tasks in the groups. Some of the tasks also included multimedia. In some tasks, they were required to send pictures or remix their own pictures, while pictures were sometimes sent to trigger a task. It was also aimed to see the level of the students' mobile literacies, which were mentioned in the previous chapter, to some extent while doing the tasks. It was also aimed to implicitly improve the students' mobile literacy levels with the help of these tasks.

All the tasks were designed to create a collaborative digital learning environment. These tasks also require the students to have mobile literacies, which were offered in the Literature chapter of this paper. The tasks were designed according to 'Relate – Create – Participate', which was adapted from engagement theory, as explained before. Prospective researchers can create their own task lists by creating the necessary environment on WhatsApp or another similar app as described below and design their tasks according to the principles suggested here.

Killer Question

The students needed to ask a question that is hard to answer or make their friends think about it deeply. This task was taken from the students' coursebook - Language Leader - . This was an appropriate choice to be the first task. It was easy to do since they already did it in their classes, so they were familiar with the task. It also aimed to give some students who could not take a turn for this task in their classrooms another chance to do it. This task was done in 3 or 4-student groups, and it required to have a certain level of information literacy since the students needed to search for the answer to some questions on the Internet.
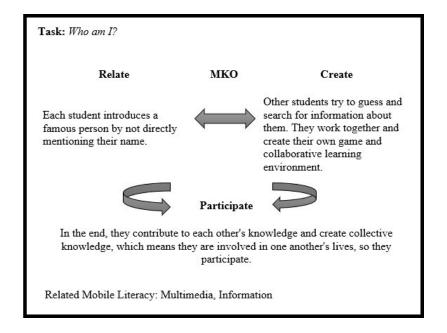
Figure 9

WhatsApp Intervention Design Sample - 1

Who am I?

It was more game-like since students need to guess whoever was introduced by their friends in 3 or 4-student groups. Thus, it's expected to attract students' attention more. The students were expected to use multimedia while introducing that person and the other students, who tried to guess who s/he was, were expected to search for him or her if they could not manage to guess who s/he was. Thus, this task requires to have multimedia and information literacies.
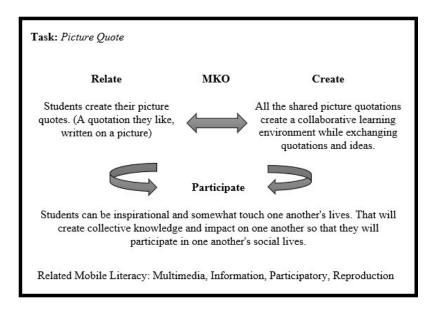
Figure 10

WhatsApp Intervention Design Sample - 2

Picture Quote

This task demanded to use more features of mobile phones and to have a higher level of mobile literacy. The students created a picture quote on their smartphones and discussed the quotation with their friends in the 3 or 4-student groups. To do this, they needed to download an appropriate picture or take a photo, then edit that picture or photo by using an app to place the quotation on the picture they wanted to discuss. This task involves reproduction, so it requires to have reproduction or remix literacy which is more complex than multimedia and information literacy as suggested before.

Figure 11

WhatsApp Intervention Design Sample - 3

How the students reacted to the tasks will be addressed in Chapter 4. The table showing all the tasks can be found in Appendices.

The voice recordings and what the students produced constituted one of the main data sets to analyse how the students' listening and speaking skills could be improved. The voice recordings of the students will be used to observe the participation rate of the students in the experimental group and whether they improved their fluency, which was one of the main focuses of the study, or not. The students' voice recordings were analysed according to the criteria in Appendix 5. A very similar version of these criteria was also used to measure the students' IELTS speaking exams to objectify their performances. The sections of the criteria will be explained below.

The Criteria

The criteria were formed after reviewing the literature explained at the end of Chapter 2 and by considering the needs of the study. The criteria (See Appendix 6) I have used to analyse the students' WhatsApp voice recordings and the IELTS speaking exams of the control

and the experimental group contained 5 sections, which were: fluency, pronunciation, grammar, vocabulary and conversational skills. Fluency and pronunciation are the focus of this study; however, I preferred to include the other 3 sections to observe if the implicit structure of the study could have contributed to their grammar, vocabulary and conversational skills as well.

Fluency

As one of the major aims of the study, fluency was the most important aspect of the criteria. It consists of four sub-sections that are repetitions, self-corrections, pauses and speed of talking. It is essential to explain what is meant by these sub-sections to comprehend how the students' voice records and the IELTS preparation exams were analysed.

Repetition, as it can be readily understood, looks for the number of repetition attempts a student does while speaking. Nonetheless, the important thing here is the rules defining what is counted as one repetition, also as a self-correction and a pause as well. Some samples from the students' IELTS preparation exams will be written to clarify it. The first example shows a simple repetition:

"The the most important problem is,…"

As it is seen, "the" is repeated here unnecessarily. The next example is important which is counted as repetition. The example is:

"We have to we have to do something about lessons"

In this example, the students repeated three words at once. Although she repeated three words, this was counted as one repetition only because she broke her sentence, so her fluency once. That is to say, it is counted as one repetition if a student repeats the exact same word or words in one utterance.

The other sub-section, which is similar to the 'repetition', is self-correction. When a student attempts to correct his or her grammar, vocabulary or pronunciation mistakes, this is

considered a self-correction instead of repetition even if the student partially repeats the same word or words. For example:

"They buy me <u>bought</u> me a lot of clothes"

As it is seen in the example the student changes the verb 'buy' with the past form of it: 'bought'. Also, it repeats the word 'me' while doing that. Nonetheless, this attempt of the students is counted as one 'self-correction grammar only because it is assumed that the student's purpose is to correct a grammar mistake, and the repetition of the words uttered before or after the part to be corrected naturally occurs to keep the meaning unity. That is, it is not expected to be corrected like the following:

"They buy me bought a lot of clothes".

The lexical corrections are that the students change, add or remove a word or words while speaking. Example:

"She can do she can <u>make</u> very delicious food."

Lastly, it is considered a self-correction in pronunciation if the students try to articulate a word or words with different a phoneme or phonemes when they repeat it.

Another sub-section is the 'pause'. Every 2-second interval between sentences, words or phonemes is taken as a pause. To be able to measure it correctly, I sometimes get help from Audacity, which is audio editing software, and from the chronometer gadget to be as accurate as possible. An important detail to state here is that if the student stops speaking for more than 2 seconds but less than 4, it is still counted as one pause to ease the standardisation. In the case of having a 4-second or longer interval, the total duration is divided by 2. For example, the student has a 5-second pause, this (5/2) equals to 2,5, so 2 pauses.

The last and maybe the most important sub-section of Fluency is the speed of talking. All the other sub-sections are the elements affecting the speed of talking. Thus, the speed of talking can be seen as the final result. The speed of talking is on the basis of syllables per second

(SPS) in this study. All the WhatsApp voice recordings of the experimental group and the IELTS speaking exams of the experimental and control groups were transcribed, and the total amount of time each student spoke was noted. To calculate the speed of talking of a student, the total number of syllables is divided by the total time in seconds. For example, a student's speed of talking in the last IELTS preparation exam was 1248(the total number of syllables)/449 (the total amount of time in seconds) =2,77 SPS (syllables per second) according to this.

Pronunciation

The second most important section of the criteria for this study is 'Pronunciation'. Although the title refers to the pronunciation of all the sounds, it is restricted to three problematic sounds for Turkish learners of English, which are the voiced /ð/ and voiceless /θ/ interdental fricatives, so-called 'th sounds' and the voiced velar nasal /ŋ/. These sounds are chosen since they have been reported as some of the most problematic English sounds for Turkish students of English as a foreign language in various studies (Demirezen, 2007; Demircioğlu, 2013; Geylanioğlu & Dikilitaş, 2012; Karakaş & Sönmez, 2011). In addition, after the trials to understand the difference between the correct and incorrect pronunciation of the problematic sounds of English for Turkish learners (/θ/, /ð/, /w/, /v/, /ŋ/, /ə /) by listening to their voice recordings. I deduced that relying on the voice recordings, these three sounds (/ð/, /θ/ and /ŋ/) are more distinguishable.

The number of correctly pronounced problematic sounds is divided by the total number of problematic sounds to determine how well the performance of the students in terms of these sounds.

Grammar

The 'Grammar' section consists of three sub-sections that are sentence constructions – simple, compound, complex and compound-complex -, the level, and the uncorrected grammar mistakes. The sentence constructions sub-section shows the total number of sentences and the

proportion of simple, compound, complex and compound-complex sentences to the total. The levels of the grammar structures used by the student are also shown in this section. It ranges from A1 to B2 and covers the grammar structures which are in the textbooks (Language Leader) of the students according to CEF (Common European Framework) levels. Finally, 'uncorrected grammar mistakes' simply indicates the total number of grammar mistakes made by the students and not self-corrected. Example:

"There **!** a lot of Turkish people…"

Vocabulary

This section looks for the TTR (type-token ratio) and wrong or missing words. The information of TTR of the students' IELTS preparation exams is necessary to find out if there is a correlation between TTR and fluency. Also, the number of wrong or missing words can give ideas about the overall levels of the students. Although the purpose of this study was not to increase the variety of the words spoken, as I stressed before, the implicit nature of the study may have affected the students' overall performances as well. These data are essential to find out if that actually happened or not.

Conversational Skills

This section of the criteria was designed for the students' WhatsApp voice recordings. It contains the sub-section: references to earlier turns, topic initiations and digressions. Nonetheless, after the analysis of the students' voice recordings, it was seen that the conversational skills were inapplicable due to the conversations on WhatsApp were mostly delayed conversations which means the students sometimes did not prefer to refer to the earlier turns and that could be trickily perceived as a digression. The comments of the students in the social events helped me to understand that it was not feasible in this study under those conditions. In addition to this, it was also not in the framework of the study and could distract the main focus. Thus, I decided to remove it from the criteria.

3.3.3.4. SpeakingPal

I also included SpeakingPal, an application dedicated to improving the listening and speaking skills of students. The major criterion in choosing the application was the suitability of the application with the purpose of the project, the easy use of the application and affordability. It has lessons consisting of short conversations. First, students listened to these conversations and they then repeated a part of the conversation or said a similar sentence offered by the application.

The application has an integrated voice recognition system that evaluates the pronunciation of the student and gives 1-3 stars according to the students' performance. Lastly, the students took a small quiz consisting of vocabulary and grammar questions at the very end of each lesson. On average, the students did 3 lessons in a week and 60 lessons in total. It was not possible to collect the students' voice recordings on SpeakingPal, so instead the students sent screenshots showing they had completed the lessons. It was aimed to enhance the English input a student could obtain and the time they spent practising English outside of the classroom. It has drawbacks, such as voice recognition failures and bugs causing the application to shut down. Nonetheless, the students did lots of speaking practice and listened to native speakers more than they had listened and practised.

WhatsApp interventions and SpeakingPal lessons were two sources to improve the students' pronunciation in this study. Although the study followed implicit teaching practices, it also included explicit teaching practices through WhatsApp and SpeakingPal as mentioned previously.

Figure 12

The Samples of SpeakingPal Screenshots

3.3.3.5. The Interviews

In the middle of the project, the students in the experimental group were verbally interviewed (See Appendix 4) to have information about what the students thought about the project and what points could be changed to make it more feasible and to increase the participation rate of the students. The interview is semi-structured and has 17 items. These items look for the students' thoughts about SpeakingPal and the WhatsApp interventions and the students' expectations from the project.

The first cycle of this action research was completed when the interviews were done. Evaluating the study to modify the plan and increase its effectiveness was crucial. The interviews enabled me to gain insight into the students' experiences and feelings about the study so that I could change inefficient task types with the task types that were more desirable by most of the students. Moreover, the number of SpeakingPal exercises and WhatsApp tasks could be redetermined. In conclusion, the interviews led me to partially redesign the

components of the study. The results of the interviews will be discussed in the following Chapter.

3.3.3.6. The Last IELTS – Post-test

At the end of the study, the students in the experiment and control groups undertook the listening and speaking sections of another IELTS preparation exam. This IELTS preparation exam was taken from *Cambridge IELTS 9*. The results of this exam and the pre-test were compared and arguably proved to be the most concrete data to show if the experimental group could improve their listening and speaking skills more than the control group. As it is stated above, the number of students for each group was 15 for the first IELTS preparation exam; however, one of the students had to quit the project, and another student never participated in any of the tasks. Thus, the number of students in the experimental group decreased to 13 in the last IELTS preparation exam. To have exactly paired groups, the number of students in the control group had to be decreased to 13. Two students from the control group, to be fair, were removed according to their names in alphabetical order, and these students were well-informed to avoid any misunderstandings.

All the students' speaking exams were recorded, and then I and a colleague of mine, who is an English instructor at Gazi University, graded them according to the official IELTS rubric. Getting a professional IELTS examiner to conduct and grade the exams was preferable, but unfortunately, it was infeasible since the IELTS examiners were not allowed to do this. In addition to that, all the students' speaking exams were transcribed and analysed by using the same criteria, which was used to analyse the experimental group's WhatsApp voice recordings, to eliminate the potential subjectivity of the internal examiners. Whether there is a significant difference between the experiment and the control group will be analysed in the following chapter.

Table 6

The Profile of the Main Phase

Instrument(s)	IELTS preparation exams, WhatsApp recordings, SpeakingPal Screenshots, the Verbal Interview
Participants (the number)	The experimental group (14-1=13) and the control group (15-2=13)
Setting	Smartphones and Preparatory Classrooms at Gazi University
Duration and Time	December 15th, 2014 – May 15th 2015
Question(s) to be answered	1-What teaching interventions are highly valued by a group of Turkish university students? 2-How do teaching interventions on WhatsApp and SpeakingPal lessons affect a group of Turkish university students? 3-How does teaching specific problematic sounds (/ð/, /θ/ and /ŋ/) on WhatsApp and using the SpeakingPal impact a group of Turkish university students?

3.3.4 Post-study Phase

A questionnaire (See Appendix 4) was designed to ascertain what participants thought about the project and how they saw themselves after taking the role in it. The final questionnaire and written interview were delivered to the students in the experimental group when they were at the university, and their answers were collected after a week. It included questions aimed at eliciting the students' attitudes towards the project. There were also questions to check students' self-awareness of development in terms of English language and mobile literacies. I observed that students did not feel comfortable enough to answer the questions freely in the verbal interview, although I encouraged them to do so. I, therefore, executed this questionnaire containing closed and open-ended questions at the end of the project to learn more about students' thoughts and feelings so that students could have more time to think about it and they could express themselves more freely than in the interview.
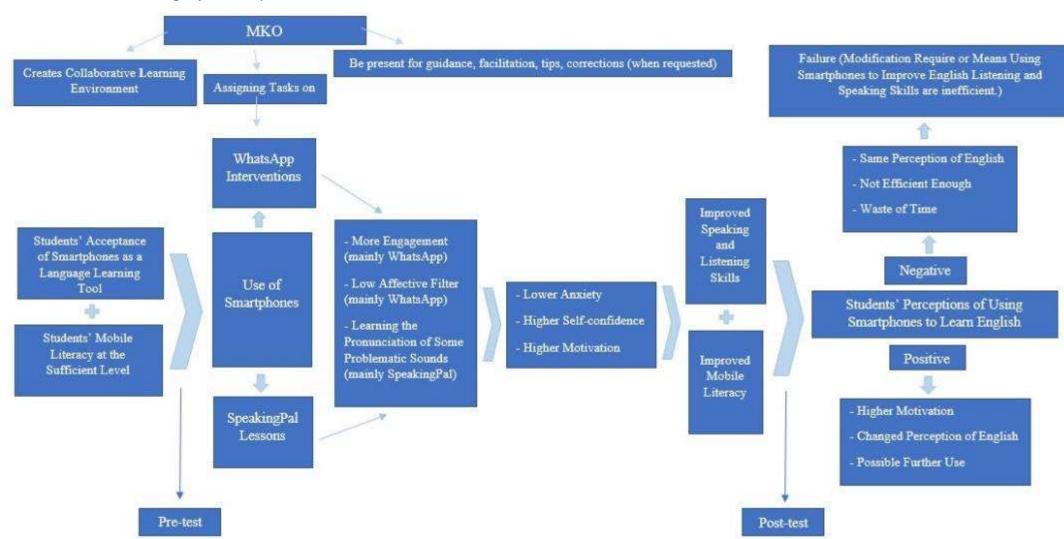
Table 7

The Profile of the Post-study Phase

Instrument(s)	Questionnaire
Participants (the number)	The experimental group (14)
Setting	Various places (wherever the student completed the questionnaire)
Duration and Time	May 15th 2015 – May 23rd 2015
Question(s) to be answered	1-What teaching interventions are highly valued by a group of Turkish university students? 2-How do teaching interventions on WhatsApp and SpeakingPal lessons affect a group of Turkish university students? 3-How does teaching specific problematic sounds (/ð/, /θ/ and /ŋ/) on WhatsApp and using the SpeakingPal impact a group of Turkish university students? 4-How do a group of Turkish university students' perceptions towards mobile learning of English and their mobile literacies change by the end of the study?

The following figure on the next page shows the research design of this study.

Figure 13

The Research Design of the Study

Note: MKO stands for More Knowledgeable Other.

3.4 Limitations

The study had some important limitations. First of all, the students had technical issues, especially SpeakingPal was faulty. The auto audio recognition could not recognise the voices properly and that decreased the reliability of that application and caused frustration among the students.

Secondly, I was going to get the students' exam results from the university; however, the university did not allow me to use their exam results in my thesis. If I could have used those exam results, that could have decreased the potential subjectivity problem of action research. This potential threat was overcome by integrating the pre-test and post-test method and using the criteria explained above. Constructing action research without the shadows of subjectivity was essential and it was the main reason to employ experimental methods in this action research as stated before. Those exam results could serve this as well.

This research design had a limitation in comparing the exam results of the experimental and control group. This study mainly aimed to find out if mobile phones and mobile learning could be integrated into their traditional face-to-face English learning procedure to improve the students' English speaking and listening skills. That is, it does not offer an alternative to face-to-face learning, rather it aims to support it. Still, it can be argued that the experimental group got better results since they were exposed to more English input. If the control group could have done the same tasks in a traditional classroom, then it could have been found out whether doing interventions on mobile phones could result in better than traditional classroom interventions or not.

Last but not least, it was impossible to exactly know if the experimental group did better just because they joined this project. They might practise on their own and do some other things to improve their English. I did not find it ethical to restrict their improvement and so there was

no condition like 'you cannot try to improve your English in any other ways if you accept to join the project'.

Table 8

The Summary of the Procedure

Phase	Pre-study Phase	Preliminary Phase	Main Phase					Post-study Phase
What?	A questionnaire	A questionnaire	The first IELTS preparation exam	An interview	Meetings/ Events	SpeakingPal lessons WhatsApp tasks	The last IELTS preparation exam	A questionnaire and a written interview
Who?	151 students from various departments at Gazi University	110 ELT and ELL students at preparatory classes of Gazi University	15 students-control group 15 students - experimental group	14 students-experimental group	Between 6-14 students - experimental group	14 students-experimental group (15 for the first month)	13 students-control group 13 students - experimental group	14 Students in the experimental group
When?	While designing the study	At the very beginning of the study.	At the beginning of the main phase	In the middle of the phase	Throughout the main phase	Throughout the main phase	At the end of the main phase	At the very end of the study
Where?	Online	At Gazi University	At Gazi University	At Gazi University	At various places	On smartphones	At Gazi University	At Gazi University

CHAPTER 4: RESULTS

4.1 Introduction

The results of the paper will be presented in relation to the four research questions, which are:

RQ1: What teaching interventions are highly valued by a group of Turkish university students?

RQ2: How do teaching interventions on WhatsApp affect a group of Turkish university students?

RQ3: How does teaching specific problematic sounds (/ð/, /θ/ and /ŋ/) using the SpeakingPal impact a group of Turkish university students?

RQ4: How do a group of Turkish university students' perceptions towards mobile learning of English and their mobile literacies change by the end of the study?
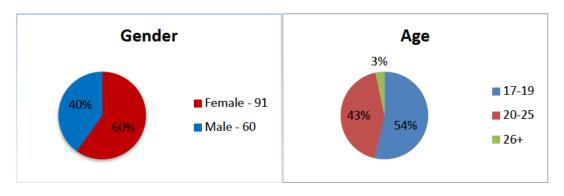
Before presenting the results related to the research questions above, however, the results of the questionnaire administered in the pre-study phase will be examined.

4.2 What are the trends in smartphone use among the students at Gazi University?

The answer to this question was essential to hold a more solid view of how the students at Gazi University tended to use their smartphones. It also gave an idea of the study's feasibility and helped me better understand how the students perceived the mobile learning of English.

Figure 14

The First Questionnaire: Gender and Age
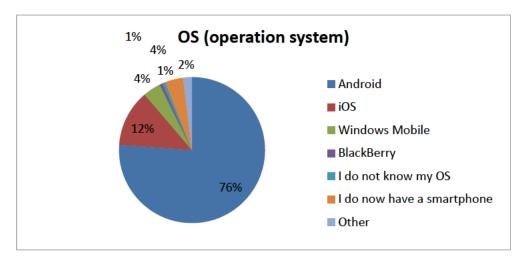
The female respondents were 50% more than the male ones. This was expected because the number of female students in the ELT and EFL departments is always higher than the number of male students. Although the questionnaire was conducted online and open to any students from Gazi University, most of the respondents might have been students from ELT and EFL departments due to two possible reasons. The first one is that some English lecturers from Gazi University helped me share the questionnaire with their students, most of whom were from those departments. The second reason is that the ELT and EFL students might have shown more interest in the questionnaire, which is highly related to their departments.

The graph shows that 54% of the respondents were 17-19 years old when the questionnaire was administered in 2014, which makes them Generation Z. 43% of the respondents are 20-25 years old and are Generation Y. It can be suggested that the majority of the students are digital natives if the age is taken as the only condition to be. By all means, age does not guarantee that the students are digitally literate; however, it can still be expected that they are familiar with mobile technology and related terms.

Figure 15
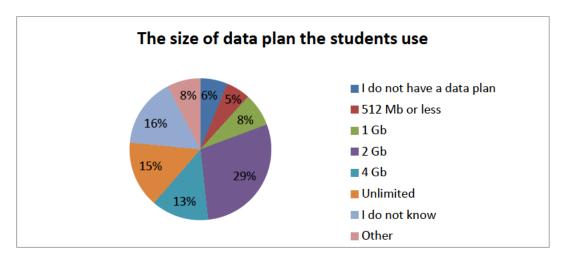
The First Questionnaire: OS (operating system)

It was essential to find out the most popular OS among the students. The graph clearly shows that Android is the most popular OS, and iOS, which is only used by Apple, takes second place. Windows Mobile was still on the market when the questionnaire was administered, and Blackberry was using its particular OS. The graph also shows that almost all the students know their OS and have a smartphone, which means the students have a very basic level of mobile literacy – technical skills- and have their own mobile learning devices.

Figure 16
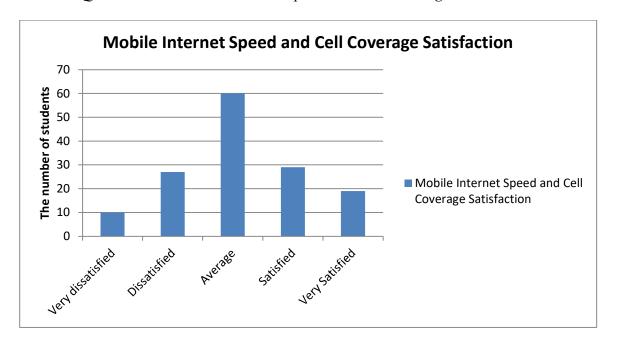
The First Questionnaire: The Size of Data Plan the Students Use

The mobile internet quality and data allowances are two factors to take into consideration in mobile learning if it is needed to enable students to use their smartphones' latest functions requiring an Internet connection. The graph shows that the majority of the students had data plans of 1 Gb or higher. This amount of data may be sufficient for mobile learning practices even though the students need to use their mobile Internet for their daily demands considering that the mobile learning practices in this study required a small amount of data.

Figure 17

The First Questionnaire: Mobile Internet Speed and Cell Coverage
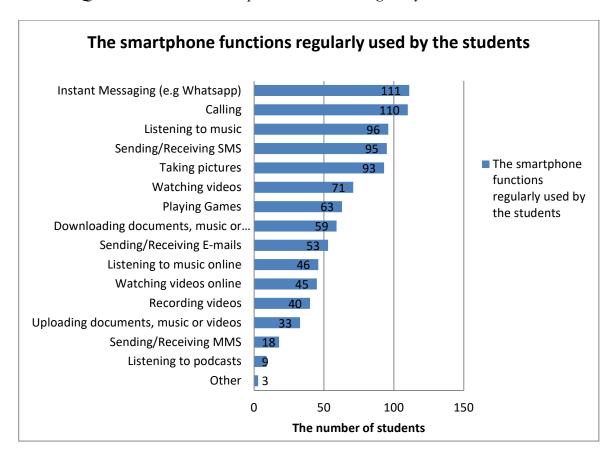
The more important factor in the mobile Internet is the quality rather than the quantity. As seen in the graph, the students are generally not sure if they are satisfied with the quality of their mobile Internet speed. This result showed that mobile Internet quality could cause some problems occasionally.

Another result of the questionnaire is that the students spend considerable time on their smartphones in a day. 107 of 145 (73%) of the students said they spend three and more hours on their smartphones daily. The question is what they do on their smartphones during this time.

Figure 18

The First Questionnaire: The Smartphone Functions Regularly Used

The smartphone functions regularly used by the students
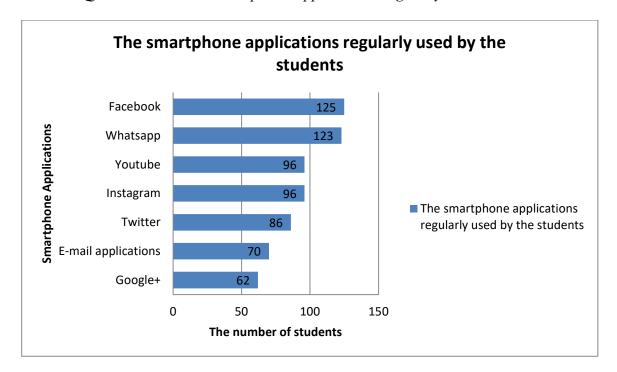
As it is seen, students predominantly use their smartphones for instant messaging and, also, calling, which is the most basic and oldest feature of all phones. It is interesting to see that the oldest feature of phones and one of the newest features of phones are two smartphone functions the students most regularly use. It can be argued that instant messaging has already become one of the essential communication tools today.

Smartphones enable users to benefit from their features via applications. Knowing which application was the most popular among the students was essential. Then, the next step would be to investigate whether that application was suitable for the purpose of the study or not.

Figure 19

The First Questionnaire: The Smartphone Applications Regularly Used
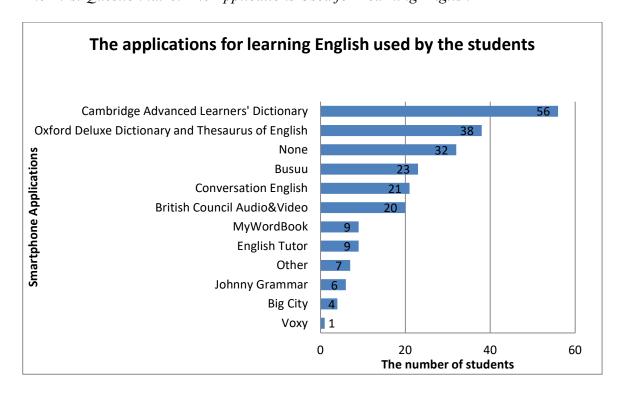
(The choices voted less than 50 are not included in the graph)

The graph indicates that students tend to use Facebook and WhatsApp more often than other applications. YouTube, Instagram, and Twitter are also considerably popular among the students. When all the features of these applications are taken into account, WhatsApp comes to the forefront because of the reasons mentioned in the previous chapter. As it is seen in both graphs, the instant messaging function and WhatsApp application to use this function stand out.

Another item of the questionnaire seeks to answer whether the concept of mobile learning of English via smartphones is entirely new for the students or whether they have used smartphones for this purpose before. 60% of the student (87/145) said 'Yes' to this question, and 57 students shortly explained how they had used their smartphones to support their English learning. It is seen in the comments that the students used their smartphones primarily as pocket dictionaries or just for listening. The graph below shows if the students have used the applications built explicitly for learning English.

Figure 20

The First Questionnaire: The Applications Used for Learning English

The applications for learning English used by the students

(Chart: The number of students by application)

- Cambridge Advanced Learners' Dictionary: 56
- Oxford Deluxe Dictionary and Thesaurus of English: 38
- None: 32
- Busuu: 23
- Conversation English: 21
- British Council Audio&Video: 20
- MyWordBook: 9
- English Tutor: 9
- Other: 7
- Johnny Grammar: 6
- Big City: 4
- Voxy: 1

Y-axis: Smartphone Applications
X-axis: The number of students (0, 20, 40, 60)

As it is seen in the graph, the students have used dictionary applications more than the others. This result is parallel with the students' comments. Dictionaries have been used in mobile phones for a long time, and even mobile phones that did not have advanced features already enabled users to have pocket dictionaries. Another significant result is that 32 students have never used any application for learning English. By all means, they may have used mobile Internet to support their English learning, but it can still be argued that they hardly take advantage of the affordances of their smartphone. Thus, it can be suggested that the students are unaware of the potential of their devices or/and their digital literacy levels are not as high as it is assumed they should be just because of their ages. It can also be claimed that they do not prefer using their smartphones for this purpose.

The students' comments about how they have used their smartphone for learning English and the applications they have used demonstrates that they tend to use their smartphones for learning words or listening. The results of item 9 of the questionnaire support that the students

mainly think smartphones are convenient for supporting vocabulary and listening. 81 and 64 students would like to improve their listening and vocabulary, respectively. On the other hand, the results show that they are not eager to use their smartphones for reading (35), grammar (22), speaking (29) and writing (14). Last but not least, only nine students do not want to use their smartphones to learn English. That may mean most students are open to adapting their smartphones to learn English.

Figure 21

The First Questionnaire: The Number of Students to Participate
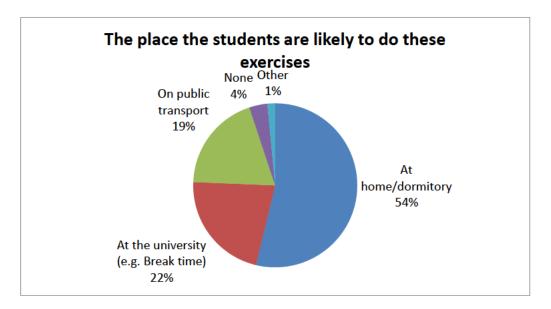
The graph shows that most of the students are not certain about joining a similar project; however, it can be suggested that most students are on the closer side to joining this kind of project. If the students who answered 'maybe' and above are seen as they are positive about participating in a project to use smartphones to support English language learning, it can be deduced that the majority of the students (120/145) are in favour of benefiting from their smartphones in English language learning.

The results of the questionnaire also show that most of the students (92/145) want to have three or fewer exercises on their smartphones weekly, and most of them (98/145) also want to spend less than 30 minutes on each of these exercises.

Figure 22

The First Questionnaire: The Place the Students are Likely to Do Exercises

The last graph shows where the students would prefer to do the exercises. According to the popular claim of mobile learning, they can do it 'Anytime, Anywhere!" nevertheless, it may not be so in practice. Although the students have the opportunity to use their smartphones potentially anywhere, it is seen that they prefer to use them at home or in dormitories. There can be some reasons for this, such as feeling more comfortable and free Wi-Fi, which will be discussed in detail in the next chapter.

The results of this questionnaire shaped the final form of the study design. They determined the parameters, such as the operating system and the smartphone applications to be used for teaching interventions. Furthermore, they helped find out if it is feasible to carry out this study or not with the information about technical features required for the study, such as the mobile Internet speed and cell coverage and the students' potential participation rate in the

study. Last but not least, the questionnaire also gave ideas about the students' mobile learning experiences and how they perceive the mobile learning of English.

4.3 What teaching interventions are highly valued by a group of Turkish university students?

Data on which teaching practices are more liked and performed by a group of Turkish students and which types of practices they are more inclined to use will be collected through interviews towards the middle of the study, and the answers to part 3 of the last questionnaire at the end of the study. Firstly, a compilation of the most common answers from the interviews will be shared, and according to these answers, which changes were made in teaching practices will be explained. Then, the positive and negative answers given by the students in the last questionnaire about teaching interventions will be compiled.

4.3.1 The Findings of the Interviews

The findings will be shared in the order of items in the interview (see Appendix 4). The most common answers to each item and notable answers for some items will be stated, and how these answers changed the components of the research design will be explained.

Items 1, 2 & 3

The majority of the students agreed that SpeakingPal helped improve their pronunciation. However, it was too dull because of the high number of repetitions and out-of-date jokes. It was sometimes frustrating to complete the lessons since the voice recognition of the app did not work properly, or when the Internet was slow, it failed to let the students complete the tasks. Also, the students wanted to do 2-4 tasks and spend 10-20 minutes a week.

Items 4, 5 & 6

The students highlighted that the tasks on WhatsApp were fun, improving, creative and helpful for their searching skills, in other words, information literacy. They wanted to complete

1 task weekly and spend 10-20 mins on each. Before the interview, the number of tasks I assigned was 2, which the students often could not accomplish on time.

Items 7 & 8

Most of the students said that they enjoyed tasks they could discuss with their friends, including information gaps or gaming elements. They liked these tasks when their friends answered their questions or commented on their ideas. However, a few students stated that they preferred to do individual tasks they could do without depending on their friends' reactions or attention.

Items 9 & 10

All the students tended to do these tasks in the early mornings or the evenings. Interestingly, all the students except two said they preferred to complete the tasks where they stayed, at home or in student dormitories.

Item 11

The two notable answers to this item were that some students lost their motivation when their friends did not give any reaction to their voice recordings or remixed works and also when they did not do their tasks. The other common answer to this item was that the students could have Internet coverage or data plan problems. Lastly, two students expressed that they could not know how to do the tasks.

Item 12

The answers to this item were various. One student expressed that some tasks did not attract some students. Another student stated that the time to complete the tasks could be inadequate. The other notable answers were that they delayed completing the task and then forgot to do it. Lastly, they thought talking with people they did not know well was hard. After these answers, the tasks tried to be modified to include more attractive elements such as

multimedia content. As mentioned before, the number of tasks decreased from 2 to 1. Lastly, more social events were arranged to let the students get more familiar with each other.

Item 13

Most of the students stated that they wanted to do tasks that they could discuss and share information with their friends, and they demanded to do the tasks about their interests.

Item 14

They commented that the project was OK, but it could be better to have more listening tracks and more stress on pronunciation. After the interview, I taught the pronunciation of problematic sounds for the second time, but in more detail, by explaining and directing them to reliable sources, they could use to improve their pronunciation on their own.

Item 15

The students wanted to do their tasks in pairs or groups of three. They also demanded to arrange more social events. Lastly, they wished there could be optional tasks for each weak so that they could choose the task they favoured more. In line with the students' answers, the tasks were (re)designed to enable them to do them in groups of three or four. More social events were held. Unfortunately, I could not address their demands for task options, but it was noted as a valuable finding.

Items 16 & 17

All the students stated that they were satisfied and happy with the project.

As a result of the interviews, the changes made to teaching practices were as follows:

 1- The number of SpeakingPal lessons and WhatsApp teaching practices was reduced.

SpeakingPal lessons were reduced from four to three per week on average. WhatsApp teaching applications, held twice weekly, were changed to once a week or once every ten days. As a result of this change, an increase in the participation rate of the students was observed.

They communicated with other group mates, albeit in a postponed manner, sometimes with the encouragement of MKO.

2- It was understood that students were more inclined to do teaching interventions such as 'Who am I? and 'I wonder', which included game-like elements where students could express more ideas, reflect their interests and play. By contrast, two students preferred interventions such as 'Introduce a country or a place' and 'Describe a charity', which can be considered more individualistic ('Introduce a country or a place' and 'Describe a charity'). Following this feedback, the interventions prepared were designed to encourage students to work together even more, where students can reveal their tastes and styles more and exchange ideas.

3- The MKO was in a relatively passive role to give the students more freedom and make them forget that an adult other than their peers was always present among them. However, it was found that a much more active role for the MKO was something the students wanted and needed. In particular, in order to prevent the demotivation of some students when they could not get any reaction from their friends when they did the tasks, MKO sometimes participated in the communication of the students in order to increase the interaction among the students. In addition, to observe the students' mobile literacy levels, fewer prompts were used, but it was seen that the students needed more prompts to get them to think of what they could do with their smartphones. Furthermore, the MKO completed some of the teaching interventions first in accordance with modelling.

4- When the students introduced themselves to each other, many of them asked for traditional social events to be organised. Consequently, the MKO organised social events twice a month. In these events, the students became familiar with each other, which increased the participation rate of doing the tasks and feedback was received naturally from the students in environments where they felt more comfortable. In addition, after a few events, students organised similar events themselves and invited the MKO to join them. These activities also

enabled the MKO to better understand the students and their common interests. Based on the general tendency that all students enjoy talking and expressing their opinions, such as watching films, talking about the things they would like to do most in the world or talking about some celebrities, appropriate interventions were adapted and implemented (i.e., 'Movie Comprehension', 'My Global Role Model Goes to...', 'Bucket List'). Similar examples of these interventions have already been available on many educational websites, and teachers have also been using similar interventions in traditional classrooms.

5- Since the MKO constantly communicated with the students through the general WhatsApp group 'Smartans' and groups of 3 and 4 students, the time given to some applications was extended. In some cases, the MKO provided additional prompts to facilitate the execution of the tasks. In cases where these interventions were not made, it was observed that the students naturally established daily communication in English in the general group 'Smartans'.

4.3.2 The Students' Comments on Teaching Interventions in the Last Questionnaire

In order to understand which interventions students perceived as better, a question dedicated to this topic was included in the final questionnaire-"Were some tasks better than the others? Which and why?"-. The answers to this question are important for a better understanding of students' attitudes towards teaching interventions.

It was observed, and as it can be deduced from the results of the interviews above, that the students were more motivated to complete the tasks when they were suitable for their learning preferences. The challenging part was finding tasks addressing all the students' preferences simultaneously. Some comments from the students on the question stated above supporting this argument are as follows:

S1: "Some tasks are better because of my interests. Some tasks attract more attention."

S4: "The task we introduced hometowns with photos. Visual things grab my attention."

S5: "I postponed the tasks I didn't like and missed the deadline."

S7: "The tasks we did together were better."

S8: "…recording videos was problematic for private reasons."

S9: "-Our global role model- was better than all of them because I could explain my ideas clearly in this task."

S11: "For me some tasks were better and more enjoyable but it depends on our interests, so all were OK for me but my favourite task was 'For and Against'."

S12: "Some tasks, of course, were better than the others. Some of them were like a game. For example, we introduced a person we admired and then the other friends tried to guess who he/she is. It was enjoyable."

S13: "I really liked -my Bucket list-." This student also states "I would not do as a group."

S14: "The task which was about movies was perfect. Watching a movie and explaining our feelings encouraged me to speak in English.

These are the students' answers to the question. It was expected that all the students described a task since the question asks their opinions about the tasks directly. The notable point is the variety of the answers. S1 does not specify a task, but she confirms that some tasks were better than others for her because of her interest. S5 explains how she missed some deadlines since she did not like some tasks. S7 favours the tasks to be done as groups, while S13 states that she would not prefer to do the tasks as a group.

Moreover, six students – S4, S9, S11, S12, S13, and S14 described six different tasks as their favourites, which are 'introduce your hometown, my global role model award goes to…, for and against, who am I?, my bucket list, and the movie comprehension' respectively. Another remarkable result can be that none of the students favours a task including reproduction such as 'picture quote or make a commercial'. Finally, yet importantly, S8 expresses that she was not

able to do tasks including recording videos because of personal reasons. This comment highlights that students' cultures, beliefs or any private conditions must be considered while designing tasks so that the students can get the maximum efficiency from them. The variety of learner preferences can cause troubles in many cases; however, the features of smartphones have the potential to help language teachers/learners solve this problem. Some implications about this matter will be suggested in Chapter 6.

As a result, most students like and want to do teaching interventions that allow them to share their tastes and ideas with others and to interact with their peers. However, even these general principles do not ensure that teaching interventions are designed to fully meet the expectations of each student. Although the diversity of students' interests and tastes makes it impossible to design interventions that are ideal for everyone, it is possible to design interventions that are as engaging as possible by taking into account the conditions mentioned in this chapter, which are largely in line with the principles of collaborative learning and engagement theory.

4.4 How do teaching interventions on WhatsApp and SpeakingPal lessons affect a group of Turkish university students?

It is expected that the effects of SpeakingPal lessons and teaching interventions of WhatsApp could be affective, perceptual and performance-related. This question will be answered on the basis of the pre-test and post-test results and the students' answers to some closed and open-ended questions in the final questionnaire. Firstly, the experimental and control group's pre-test and post-test results will be compared. As a result of comparing the exam results, performance-related results will be reached. Then, the students' responses to closed-ended and open-ended questions in the final questionnaire about how they were affected by the SpeakingPal and WhatsApp interventions will be examined.

First, the results of the listening sections of both groups' pre-test and post-test will be compared. Then, the results of the speaking scores, to be more precise, fluency scores, will be analysed. Lastly, the students' answers to items related to WhatsApp interventions and SpeakingPal lessons will be mentioned.

4.4.1 Listening Tests

The students in the experimental group were expected to improve their listening skills because of the increased English input with the help of SpeakingPal lessons and interactions on WhatsApp. In addition, the students intensely stated that the study improved their listening skills. Thus, it is expected that the students in the experimental group should have higher listening scores than the control group.

In comparing the listening test results of the control and experimental groups, the independent sample t-test, which is frequently used to compare two different groups, was used. In this comparison, the p-value was accepted as .05 in order to determine whether there was a significant difference between the two groups. In other words, if this value is below .05 in comparisons, it is accepted that there is a significant difference between the groups compared. In cases where the p-value is not below .05, some arguments can still be made by looking at the descriptive statistics in some cases due to the number of participants involved in the research.

Table 9

The Comparison of Listening Scores

Groups	N	Mean	p≤.05
Control Group 1. IELTS Listening Scores	13	4.38	.407
Experimental Group 1. IELTS Listening Scores	13	4.61	.407
Control Group 2. IELTS Listening Scores	13	5.26	.183
Experimental Group 2. IELTS Listening Scores	13	5.61	.183

The table shows that the means of both groups' scores are close to each other in both exams. It is seen that the groups have no significant difference between them in the first exam. It was assumed that the students had no significant difference in the first exam since it was the beginning of the year, and the students must have been at the same level.

The second exam results demonstrate that the groups got close scores again. When closely examined, it is seen that the experimental group increased their mean by 1 point while the control group increased by 0.88. However, it is not enough to argue that the study helped the students in the experimental group improve their listening skills more than the control group could. Moreover, the p-value is .183, which is higher than .05. That is, it is certain that there is no significant difference between the two groups.

The students' claimed that their listening skills improved because of the study. Nonetheless, the reflections of this improvement are not seen in the exam results. It would be unfair to ignore the students' comments about their improvements in listening skills. Thus, after comparing both groups' speaking fluency scores, their comments about their listening skills, SpeakingPal and WhatsApp teaching interventions will be stated. On the other hand, it is certain that both groups' listening exam results have no significant difference.

4.4.2 Speaking Tests

Both groups took IELTS speaking exams at the beginning and end of the study. To eliminate subjectivity, the criteria explained in the methodology were used to measure the students' fluency instead of using the rubric of the British Council for IELTS or a similar one. It is expected that the students in the experimental group will have higher fluency scores than the control group after the study since the experimental group stated that they practised English more than they would have done, and the study helped them improve their self-confidence and reduce anxiety. As a result of these developments, the experimental group's fluency should be better than the control group's.

The students' fluency was converted into numeric data (scores) to avoid unintentional subjectivity. All the students' speaking exams were transcribed, and then the total number of syllables they used while speaking was counted; finally, The students' speaking durations were measured. The total number of syllables was divided by the duration in seconds to calculate the syllables per second. (total number of syllables/duration in seconds = Syllables Per Second-SPS).

The criteria to analyse the students' speaking exam include four sections: fluency, grammar, vocabulary, and pronunciation. The vocabulary section includes Type Token Ratio (TTR). The grammar section includes sentence types: simple, compound, complex and compound-complex. Finally, the fluency section includes repetitions and self-corrections, which are also divided into three: pronunciation corrections, lexical and grammatical, and pauses. The criteria also include a part for pronunciation which will be explained in the next section.

After analysing all these sections and their sub-sections, It was concluded that there was no significant difference between the groups in terms of grammar, vocabulary, pronunciation and fluency. However, significant differences were observed in the fluency and pronunciation

sections when comparing the groups' current performances with their previous ones. These results will be explained further below in relation to fluency and pronunciation, which are the focus of the study.

Fluency is one of the focuses of the study, and the syllables per second (SPS) explained above forms the basis of the fluency section. The other sub-sections are the factors affecting the syllables per second in particular ways. Thus, the students' SPS scores, in other words, fluency scores will be analysed in detail.

Table 10

The Comparison of Fluency Scores - 1

		N	SPS Mean	P value $\leq$ .05
Pair 1	Control Group Test 1	13	2.13	.717
	Experimental Group Test 1	13	2.18	
Pair 2	Control Group Test 2	13	2.23	.177
	Experimental Group Test 2	13	2.47	

In comparing the fluency results of the control and experimental groups, the independent sample t-test was used. The table shows that the control group's SPS mean in the first test is 2.13, and the experimental group's is 2.18. They are almost equal. The P-value of the comparison of the first exams of the groups is .717. In the second exam, the difference between the mean of the control group's SPS (2.23) and the experimental group's (2.47) is more than they have in the first exam; however, the p-value is still higher than .05. Thus, it is impossible to claim that there is a significant difference between the control and experimental groups in terms of SPS in the second (final) test.

Table 11

The Comparison of Fluency Scores - 2

		N	SPS Mean	P value ≤ .05
Pair 1	Experimental Group Test 1	13	2.23	.000
	Experimental Group Test 2	13	2.47	
Pair 2	Control Group Test 1	13	2.18	.129
	Control Group Test 2	13	2.23	

This table shows the comparison of the SPS results of the first and last exams of each group. As each group was compared with its own performance, paired sample t-test was used to compare these results (p-value ≤ .05). The table shows that there is not a significant difference between the control group's first test and the second test since the p-value is .129 while there is a significant difference between the experimental group's first test and the second test as the p-value is .000. It means that the experimental group significantly improved their fluency; however, it cannot be claimed that the control group significantly improved theirs.

It can be suggested that the students' positive comments about the study support this result and vice versa. The students described some benefits of the study, and some of them may directly affect the students' fluency. This result also indicates that the study reached the purpose of improving fluency. The number of repetitions and self-corrections were also compared in the same way with SPS.

Table 12

The Comparisons of Repetitions

		N	Repetition Mean	P value ≤ .05
Pair 1	Experimental Group Test 1	13	115.3	.000
	Experimental Group Test 2	13	64.4	
Pair 2	Control Group Test 1	13	114.7	.181
	Control Group Test 2	13	89	

The students in the experimental group significantly decreased the number of repetitions, while those in the control group could not manage to do that. These results can be interpreted as the experimental group improved their fluency more than the control group. While the fluency of the experimental group increases, the number of repetitions reduces. That means while they are increasing their speed of talking without increasing the repetitions, they do not gain this speed because they repeat the same words fast while repeating them.

Table 13

The Comparison of Self-Correction

		N	SPS Mean	P value ≤ .05
Pair 1	Experimental Group Test 1	13	67.4	.000
	Experimental Group Test 2	13	42.3	
Pair 2	Control Group Test 1	13	68.2	.000
	Control Group Test 2	13	55.9	

The table shows that both groups decreased their self-correction attempts which is beneficial to increase fluency. However, the experimental group reduced the number of self-

corrections more than the control group could. All these factors contributing the fluency demonstrate that the experimental group improved their fluency more than the control group.

4.4.3 The Students' Answers Related to Effects of WhatsApp Teaching Interventions and SpeakingPal Lessons

In the analysis of the students' responses to both closed and open-ended questions, references to WhatsApp and SpeakingPal will be categorized into five groups: autonomous learning, awareness, self-confidence, MKO, and SpeakingPal. The findings related to SpeakingPal will further be classified into general, listening, and drawbacks. Additionally, the assessment of pronunciation data will be examined, specifically through analysing the questionnaire items related to pronunciation and the students' feedback in the subsequent section.

Table 14

The Comparison of Items: Autonomous Learning

	Item	SD	D	N	A	SA	p≤.05
SQ	Smartphones can provide me with self-learning opportunities.	0	0	2	8	4	0.55
LQ	I have become a more autonomous learner.	0	1	1	7	5	

The table shows that the students' thoughts about self-learning remained positive after the study. They believed that they became more autonomous. In other words, they thought they could take more responsibility for their own learning. A couple of the students implied this as follows:

S5: "I will use that kind of applications (SpeakingPal) to improve my skills after the project." and "I have learnt to use my smartphone more effectively for my skills."

S7: "With the help of the project. I started to watch videos in English. After the project, I will go on with that."

Table 15

The Last Questionnaire: Awareness

	Item	SD	D	N	A	SA
LQ	My awareness of learning English has developed.	0	0	0	4	10

This table supports the idea that the students became more autonomous as an increased self-awareness is a prerequisite to being an autonomous learner. That is, the students' comments suggest that the students discovered and experienced how to use smartphones to learn English, and they could comprehend how to benefit from the affordances of smartphones. These results are the indicators of being an autonomous learner. It cannot be claimed that the students certainly became autonomous learners; however, it can be argued that the students' awareness of using smartphones in learning English increased, and they took some required steps to be autonomous learners.

The students' answers to this close-ended item clearly show how the students felt at the end of the study. It can be suggested that this study increased the students' awareness, and it can be expected that this awareness can lead the students to become more independent, that is, autonomous learners.

Last but not least, one of the most important results, arguably the most important, is that the study improved the students' self-confidence, which is, in my opinion, indispensable for having better speaking skills, especially better fluency.

Table 16

The Last Questionnaire: Self-confidence

	Item	SD	D	N	A	SA
LQ	I feel more confident in using English.	0	0	0	5	9

The answers' distribution is almost identical to the answers for the awareness item. All the students, without any exception, agreed that the study improved their self-confidence. In addition, the students highlighted this fact many times in the answers to open-ended questions.

S1: "Tasks helped me improve self-confidence. In the past, while speaking English I was getting nervous but now I feel relax."

S3: "I feel more self-confident in listening and speaking."

S7: "In the beginning, I was nervous because I had some problem about speaking English. It was demotivating but later I got accustomed."

S8: "The tasks needed searching to have self-confidence."

S10: "For an extrovert person, it makes you sociable and more talkative. It encourages you to speak English as a natural behaviour."

S13: "First, I did not think the project would help us but then I changed my opinion. I have improved my listening and speaking skills. Firstly, I hesitated to speak but then I had self-confidence."

The majority of the students directly or indirectly mentioned the tasks or the study and the positive effects of it on their self-confidence. The tasks helped the students overcome their shyness and lower their anxiety, and as a result, they had higher self-confidence and lower affective filter. As S10 expressed, this study aimed to change the students' English perception. It encouraged the students to perceive English as a natural means of communication instead of a school subject to study. The students overcame their shyness, nervousness, and anxiety and

established the self-confidence required to speak fluently. In the next chapter, these results will be discussed in depth.

In addition to having fun, increasing awareness, enjoyable tasks, a creative and collaborative learning environment, and self-learning opportunities, there is still another important motivation source: the teacher, so-called MKO. All these factors can increase the students' motivation; however, all of them must be guided to create a more efficient mobile learning environment and to ease students' process to be autonomous, collaborative, creative and self-confident learners. Since the MKO is an important element of the design of WhatsApp interventions, it is appropriate to include data on the MKO here.

The teacher must take the role of Vygotsky's (1978) "More Knowledgeable Other" (MKO) in mobile learning. The effects of the teacher or (MKO) can be observed in the students' answers to the open-ended questions in the last questionnaire.

S4: "The motivational thing is that our teacher always supported us in everything we have done."

S9: "I got my whole motivation from my teacher."

S10: "Yasin teacher's behaviour and activities (events) are so motivational and supportive."

S11: "Our teacher himself was the motivation. He wanted the best for us. When we made a mistake, he helped us."

The answers indicate that the role of a teacher is still crucial to motivate and guide the students even though the latest technological advancements, especially advanced artificial intelligence, offer a wide range of learning/teaching opportunities without the need of having a teacher. Nonetheless, these comments support the opposite. In contrast, the teacher's role may be more crucial since the learning opportunities and ways increase incredibly fast. The most

important point is that teachers must improve their digital literacies to serve as a guide and a facilitator and to be MKO in the future. This point will be discussed further in the next chapter.

The students' answers about SpeakingPal will be categorised into three: 1- General, 2- Listening, and 3-Drawbacks.

1- General: this category refers to the students' answers which do not focus on listening or speaking skills. These comments are about the phrases and structures the students learned or the student(s)' learning preferences.

S4: "I learned how to answer to some ordinary (possibly she meant daily) questions."

S7: "There were some useful phrase."

S8: "Moreover, it included daily speaking structures which are helpful a lot."

S10: "SpeakingPal is a different program in many ways. I had a chance to practise on my own."

As seen from the students' quotation, the students refer to some useful phrases and structures. One of the students highlighted the chance to practise on his own, which is one of the purposes of employing SpeakingPal as a supportive learning instrument, as explained before.

2- Listening: This category covers the students' comments relevant to listening skills.

S2: ": I listened to dialogues and improved my listening skill and I repeated the dialogue."

S5: "In 'listen' part while I was listening, thanks to subtitles I've improved my listening skills

Although it was thought that SpeakingPal would contribute more to students' listening skills, there were few comments on this issue. The students' following comments relate to the drawbacks of Speakingpal

S1: "I would change it a little. I would try to avoid repetition. Making same sentences every time was not nice."

S5: "When I couldn't pass the previous one, I wouldn't be able to move on. Some of them were really boring to me. That's why I just didn't want to do them. Sometimes it cannot perceive my voice and keep saying "Try again" which is very annoying."

S8: "I would change the number of people speaking in the activities because the people were the same throughout the dialogues."

All the answers point out the monotony of SpeakingPal. Repeating the same sentence may improve the students' pronunciation. Nonetheless, it will not be more than adapting the audio-lingual method to mobile learning of English. It can be suggested that SpeakingPal can have beneficial effects on learners' listening and speaking skills; however, they will get bored and quit practising English by using SpeakingPal. The lack of real interactivity and the diversity of SpeakingPal caused most students to quit doing the lessons, and only four students managed to complete all the lessons in the schedule.

4.5 How does teaching specific problematic sounds (/ð/, /θ/ and /ŋ/) on WhatsApp and using the SpeakingPal impact a group of Turkish university students?

This study aimed to improve the students English listening and speaking skills, especially fluency, by positively changing the students' affective filter factors with the help of the advantages of mobile learning and smartphones. In addition to this goal, the study focused on treating three problematic sounds of English for Turkish learners, which are [θ], [ð] and [ŋ].

These sounds were taught in two ways: SpeakingPal and WhatsApp. Firstly, the students' comments about SpeakingPal will be shared, and then the students' performance in WhatsApp interventions will be analysed. Afterwards, the results of the related item in the

questionnaire and students' comments linking pronunciation development and WhatsApp interventions will be shared.

As a reminder, the students individually worked on SpeakingPal to improve their pronunciation by watching videos, including conversations and videos explicitly teaching how to pronounce English sounds. SpeakingPal enables the students to work on their pronunciation independently because of the voice recognition technology it includes; however, their practices and attempts to correct their mistakes are not recorded on their smartphones. It just recognizes the sounds and grades the students' performances in accordance with their accuracy. Thus, the only way to see whether the students completed the lessons and/or practised the sounds by using SpeakingPal is the students' statements or screenshots they took. Therefore, SpeakingPal does not provide concrete evidence about whether the students improved their pronunciation skills since their voices are not recorded. The purpose of integrating SpeakingPal into this study was to use it as a supportive learning instrument and to encourage the students to learn on their own and provide them to have the opportunity for self-learning as well as collaborative learning, which was provided with the WhatsApp interventions.

These students' comments show what they thought about SpeakingPal regarding pronunciation.

S1: "I learned the right pronunciation of many words. I liked app and enjoyed discovering it."

S4: "It really helps improving my pronunciation.

S5: "I believe that consonants, vowels, contrasts and English sounds were really good for my pronunciation. and I liked the lesson which is given by man about pronunciation. It was really fruitful."

S11: "Especially I learnt how to pronounce some words correctly. It was grading your speech and give you an opportunity to try it again and correct your mistakes."
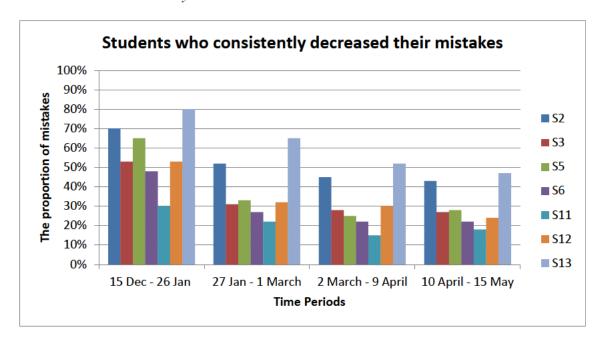
S14: "It has great effects on my skills. I learnt how to pronounce correctly. I liked people's pronunciation in SpeakingPal."

Despite the previously mentioned drawbacks of SpeakingPal, it seems to have gained the appreciation of some students in the pronunciation section. Although SpeakingPal has some errors and deficiencies, it can be said that it helped some students in terms of pronunciation.

Although the students' did not have any voice recordings in SpeakingPal, all their voice recordings sent on WhatsApp were transcribed and analysed. The number of mistakes the students made while uttering the problematic sounds was divided by the total number of problematic sounds in their recordings. How some students' performances on problematic English phonemes changed for each period will be shown in percentages in the following graphs.

The students were divided into four different groups according to the changes in their pronunciation performances throughout the study: 1) Seven students who consistently decreased their mistakes; 2) Two students who only participated in just two periods to analyse their pronunciation mistakes; 3) Three students whose number of mistakes fluctuate; 4) Two students who participated very little or not at all during the study.
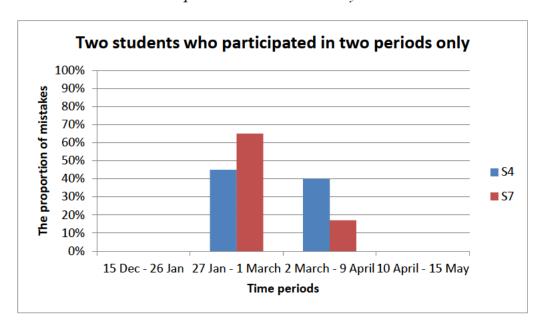
Figure 23

Students Who Consistently Decreased Their Mistakes

The graph shows that these students consistently decreased the proportion of mistakes they made while uttering problematic English sounds. The students were taught the problematic sounds on WhatsApp, and they completed the related lessons on SpeakingPal at the end of the first period. In parallel with that, it can be seen that the proportion of mistakes sharply decreased after the first period. The students were once again taught how to pronounce these sounds at the end of the second period, which was the second and the last time the students were explicitly taught these sounds in the study. The decreasing trend continued in the third period, although it was not as remarkable as in the second period. In the last period, there was a minor change, either a slight increase or a decrease in the proportion of mistakes.

Figure 24
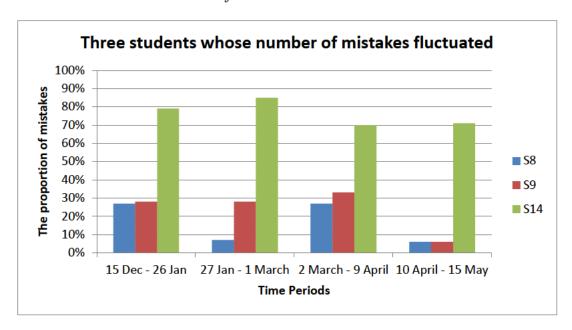
Two Students Who Participated in Two Periods Only

These students showed the same trend as the other students above; however, we do not have enough data to speculate on their performance changes in the first and fourth periods. If the performances in the second and third periods are considered, one of the students slightly decreased the proportion of mistakes while the other did so drastically. That is, the former student displayed the same trend as the students mentioned above between the second and third periods, whereas the latter student's performance change was similar to Group 1 students' performances between the first and the second period.

Figure 25

Three Students Whose Number of Mistakes Fluctuated

As observed, 9 of the 14 students continually improved their pronunciation performances; however, 3 of the 14 students did not show the same tendency. Each of these students had different reasons for showing different trends.

S8 was very eager to do all the tasks on WhatsApp and completed all the SpeakingPal lessons by the end of the first period, although she was only expected to finish them by the end of the study. This student significantly decreased the proportion of her mistakes in the second period. Surprisingly, she went back to the same level in the third period. The possible reason for this regression may be a health problem which caused her to become less motivated and participate much less in the study. After we held a meeting at the end of the third period, she notably decreased the proportion of mistakes.

Unlike the rest of the students, S9 did not improve in the second and third periods, while she drastically reduced the proportion of her mistakes in the final period. According to my field notes, at the end of the third period, I discovered that this student did not listen to any WhatsApp voice recordings about pronunciation and did not complete the related SpeakingPal lessons. I

requested her to find and listen to all of the related voice recordings and complete the SpeakingPal lessons. That is possibly the reason why she improved her pronunciation in the last period.

Lastly, S14 could not improve his performance, although he listened to the WhatsApp voice recordings and completed the SpeakingPal lessons. It can be understood from his voice recordings that he changed his mistakes to further mistakes while trying to utter some words, and he also continued to make the same mistakes. For example, while he was mostly pronouncing [θ] and [ð] as [t] and [d] respectively in the first period, he sometimes mispronounced these sounds as [f] and [s] in the second period; however, he decreased his mistakes in the third period; that is, after these sounds were explicitly taught for the second time.

The graphs indicate that all the students tended to make fewer mistakes in the problematic sounds. The common result for all the students is that they decreased the proportion of pronunciation mistakes at the end of the study. However, there are exceptions and different trends during the periods.

Firstly, the students' comments on Speakingpal and pronunciation were included. After that, the students' problematic sound performances while doing the tasks on WhatsApp were analysed. Finally, the items related to pronunciation in the questionnaires and the students' comments that link WhatsApp tasks with their improvements in pronunciation will be shared.

Table 17

The Comparison of Items: Pronunciation

	Item	SD	D	N	A	SA	p≤.05
SQ	Smartphones can be used to improve my pronunciation skills.	0	0	4	4	6	0.23
LQ	I think that I have improved my pronunciation skills.	0	0	0	7	7	

It can be seen that most of the students had already agreed that smartphones could be used to improve pronunciation. Four students had been neutral about whether smartphones could be used or not. As a result of the study, these students, who were unsure if smartphones could help them improve their pronunciation, thought that they improved their pronunciation skills thanks to the study. All the students, including the student who did not do any of the tasks or lessons throughout the study, thought that the study was beneficial for his pronunciation skills. The students' comments on SpeakingPal, the analysis of the students' voice recordings – specifically for the problematic sounds-and the students' answers to the questionnaires establish a solid basis to prove that the study improved the students' pronunciation of the problematic sounds ([θ], [ð] and [ŋ]). In addition to these results, the students associate WhatsApp tasks with pronunciation and some of their other improvements.

S5: "While doing tasks, I searched for the pronunciation of the words and tried to pronounce them correctly".

S8: "Listening to friends' voice records, realizing their mistakes and be careful not to make same mistakes."

S13: "First, I did not think the project would help us but then I changed my opinion. I have improved my listening and speaking skills."

S7: "After learning pronunciation of some sounds, I felt more confident."

S15: "I practised English sounds each time I send a voice recording on WhatsApp. I felt more confident."

It is important to note that two students associated learning pronunciation with self-confidence. The students' answers to the related items in the questionnaires and the open-ended questions were completely positive. This does not mean that the study exactly improved their pronunciation skills; however, it can be argued that the students were happy to work on pronunciation on their smartphones.

It can sound contradictory that even though all the students' thoughts and evidence obtained from the WhatsApp voice recordings support the conclusion that this study improved the students' speaking fluency and pronunciation of the problematic sounds in particular, this still does not show that smartphones exactly improve those skills of the students.

There are some limitations to analysing the students' pronunciation of the problematic sounds in WhatsApp recordings. In IETLS exams, the students had to speak longer without any preparation. Also, all the students pronounced many samples of problematic sounds, which increased the reliability of the results as the students pronounced a similar number of problematic sounds, unlike the problem in WhatsApp recordings, in which some students had very limited samples of these sounds, and that could mislead the analysis of the results.

The results of the WhatsApp voice recordings are shown as proportions instead of numbers so that all the students' results can be compared as if all of them got scores between 0-100. Nonetheless, that cause reliability problem as the number of problematic sounds each student uttered varies excessively, which can lead to a wrong analysis of scores. To illustrate, S14 pronounced 93 problematic sounds in total and correctly pronounced 27 of them between April 10 – May 15, while S6 pronounced only nine problematic sounds and correctly pronounced seven of them. It is hard to argue that S6 would have pronounced the problematic sounds in the same proportions if she had pronounced 93 problematic sounds since they are

foreign learners of English. In the results, it is assumed that should a student correctly pronounce 7 out of 9 problematic sounds, she would correctly pronounce approximately 78 out of 100 problematic sounds, while S14 would score 29 out of 100.

It can still be seen that these results are notable; however, it is far from providing accurate results even though the students' comments support these findings. Apart from the problem explained above, one of the students' comments about sending recordings to WhatsApp is also remarkable and reduces the reliability of the results by putting a question mark in the minds.

S5: "I was trying to do my best while I was recording my voice and I was trying to pronounce the words correctly."

It is probable that the students may sometimes have sent voice recordings after preparation. Another point is that the voice recordings are generally not longer than 30 seconds, and it can be expected that a person can pronounce sounds with a better focus while uttering short sentences. Because of these reasons, comparing the students' pronunciation performances with those in the control group in the final IELTS preparation exam will be more reliable. Therefore, the students have a similar amount of time to speak, and so the number of problematic sounds they pronounce can be closer to one another.

4.5.1 The Comparison of the Pronunciation of Problematic Sounds [θ], [ð] and [ŋ]

A different way to analyse the experimental group's pronunciation of the problematic sounds [θ], [ð] and [ŋ] will be applied to the students' exam results as well. The total number of correctly pronounced problematic sounds will be divided by the total number of problematic sounds = X. Then it will be multiplied by 100, which generates the pronunciation score of a student. It must be remembered that two different examiners, one of them was the researcher and the other was a lecturer from Turkey, listened to and evaluated the students' voice

recordings separately. Then, they discussed the differences between the results they obtained. After that, they reached the final scores. This procedure increased the reliability of the scores.

Table 18

The Comparison of Pronunciation Scores – The final test

Groups	N	Pronunciation Score-Mean	p≤.05
Control Group	13	10.9	.282
Experimental Group	13	15.5	

The analysis shows that the experimental group's mean of the pronunciation scores is 4,6 points more than the control group's. Although there is a difference between the groups, it does not mean that the experimental group did better than the control group because the p-value of this comparison is .248, which is higher than .05. In other words, there is no significant difference between the pronunciation scores of the experimental and control groups.

Table 19

The Comparison of Pronunciation Scores - 2

		N	Pronunciation Score-Mean	P value ≤ .05
Pair 1	Experimental Group Test 1	13	3.7	.000
	Experimental Group Test 2	13	15.5	
Pair 2	Control Group Test 1	13	4.1	.000
	Control Group Test 2	13	10.9	

The experimental and control groups scored similarly in test 1, and both groups significantly improved their pronunciation of problematic sounds in test 2. As it is seen in Table 17 and Table 18, the mean of pronunciation scores of the experimental group is higher than the control group. It is seen that while their first exam results are almost the same, there is a difference in the second exam. The mean of the experimental group's pronunciation scores is almost 30% higher than that of the control group. It can be stated that the experimental group improved the pronunciation of the problematic sounds more than the control group; however, whether this difference between the two groups is enough to give mobile learning credit for this difference is a question.

4.6 How do a group of Turkish university students' perceptions towards mobile learning of English and their mobile literacies change by the end of the study?

One of the most important aspects of mobile learning of English is the students' perceptions towards it. Their perceptions of mobile learning and the motivation to use it for their English learning are significant in making mobile learning of English feasible. Another important factor that makes mobile learning feasible is mobile literacies that determine how effective and versatile students can use their smartphones for mobile learning, as proposed in this study.

Two questionnaires were administered at the beginning and the end of the study to measure how the students' perceptions of mobile learning of English and their skills to use their smartphones changed after participating in the project.
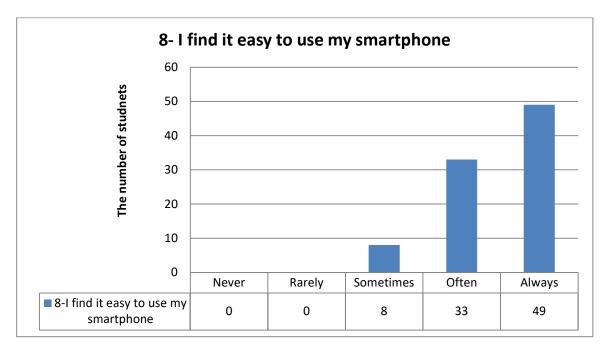
The results of the first part will be stated shortly as it has the same items with the online questionnaire, and it has similar results. Then, the second and third part of the questionnaire will be reported. Finally, each item in the second and third parts of the questionnaire will be compared with the items corresponding to them in the final questionnaire.

110 students answered the questionnaire, 93 of whom were female, and the rest was male students. 106 of these students were 17-19 years old. Similar to the online questionnaire, 70% of the students had Android-based smartphones, while 11% had iOS. The majority of the students were satisfied with their mobile phone network coverage, and almost all of them (98/110) had Wi-Fi at their homes or dormitories. The only different result from the online questionnaire was the data plans. 16% of the students participating in the online questionnaire do not know about their data plan; this proportion increased to 26% among the students taking the second questionnaire.

The second part of the questionnaire aims to realise how the potential participants evaluate themselves in terms of mobile literacy. Thus, this part consists of items related to the mobile literacies offered in Chapter 2. As a reminder, those literacies are technical (item 8), visual and multimedia (items 9&10), information (11&12), participatory (13&15) and (re)production literacy (14)

Figure 26

The Second Questionnaire: Item 8

	Never	Rarely	Sometimes	Often	Always
8-I find it easy to use my smartphone	0	0	8	33	49
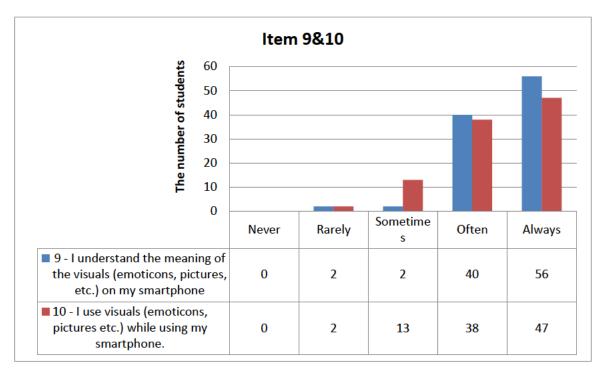
The graph clearly shows that the majority of the students feel confident while using their smartphones. What 'to use my smartphone' refers to is the technical aspect of mobile literacy. That covers the fundamental functions of smartphones, which anybody can learn from a user's manual.

Figure 27

The Second Questionnaire: Items 9 & 10

	Never	Rarely	Sometimes	Often	Always
9 - I understand the meaning of the visuals (emoticons, pictures, etc.) on my smartphone	0	2	2	40	56
10 - I use visuals (emoticons, pictures etc.) while using my smartphone.	0	2	13	38	47
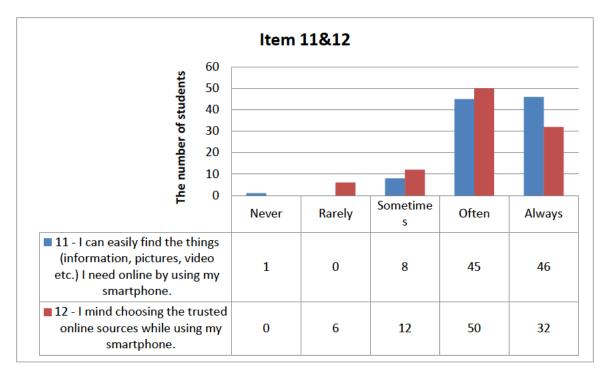
The next two items – items 9 and 10 – related to visual and multimedia literacy, have a similar distribution of answers. The graph above demonstrates that the vast majority of the students believe that they recognise and use the visuals on their smartphones; however, it can be stated that the frequency of their use of visuals is slightly less than expected when these two items are compared.

Items 11 and 12 aim to understand how the students see their searching skills via smartphones. The former item looks for the simple form of information literacy, whereas the latter aims to understand if the students activate a 'quality-control' system and try to choose the most trustable source for any information they seek for. At the very least, it aims to realise

whether the students know that all the information they can obtain on the Internet may not be reliable due to the various reasons mentioned in the former chapters.

Figure 28

The Second Questionnaire: Items 11 & 12

Item 11&12
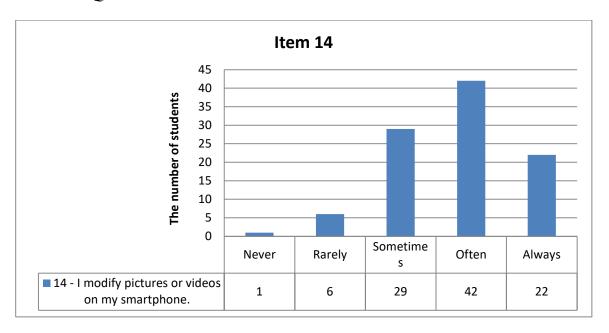
	Never	Rarely	Sometimes	Often	Always
■ 11 - I can easily find the things (information, pictures, video etc.) I need online by using my smartphone.	1	0	8	45	46
■ 12 - I mind choosing the trusted online sources while using my smartphone.	0	6	12	50	32

The results indicate that the students think they are able to use their smartphones to search online and to do this frequently. They are also aware of the differences among the online sources in terms of reliability, and it is also seen in the graph that the students sometimes may not mind the reliability of the sources.

Figure 29
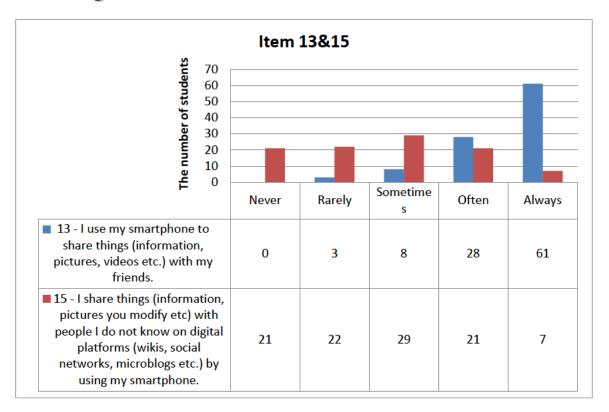
The Second Questionnaire: Item 14

The graph above demonstrates the answers to the item representing the (re)production literacy, which is seen as one of the most complicated literacies, as it was stated in the Literature Review chapter. The answers show that more than half of the students modify pictures or videos on their smartphones 'often' or 'always'. In other words, they reproduce something on their smartphones. In addition to these students who often or always reproduce something on their smartphones, 29 students stated that they sometimes use their smartphones for this purpose.

Figure 30

The Second Questionnaire: Items 13 & 15

	Never	Rarely	Sometimes	Often	Always
■ 13 - I use my smartphone to share things (information, pictures, videos etc.) with my friends.	0	3	8	28	61
■ 15 - I share things (information, pictures you modify etc) with people I do not know on digital platforms (wikis, social networks, microblogs etc.) by using my smartphone.	21	22	29	21	7
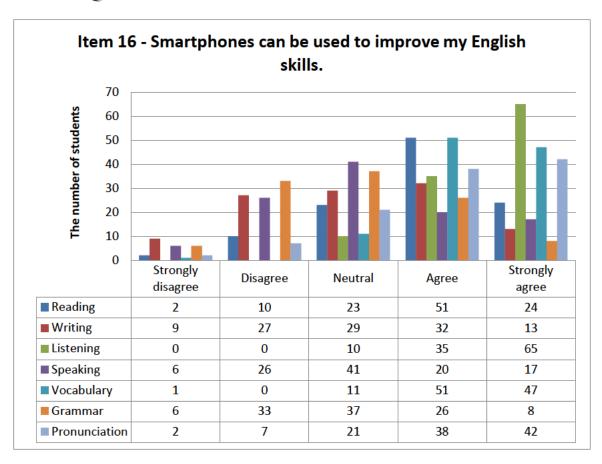
As for the last component of mobile literacy, which is participatory literacy according to this thesis, the answers to item 13 demonstrate that the majority of the students share things with their friends; however, when it comes to sharing things with people, they do not know they are not as eager as they are when they share with their friends. 21 students chose 'never' for Item 15, whereas there were only two 'never' for the rest of the items. According to the students, this is the most difficult or the least preferable task to do.

The third part of the questionnaire seeks to understand how the students perceive the mobile learning of English overall and whether they would be voluntary to join this kind of project. The third part of the questionnaire does not cover the entire probable advantages or disadvantages of mobile learning of English, which were discussed in the literature review section. It merely focuses on gaining insight into the students' imagination about mobile learning of English, in other words, how the idea sounds to them without experiencing this kind of learning environment before.

Figure 31

The Second Questionnaire: Item 16

Item 16 - Smartphones can be used to improve my English skills.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Reading	2	10	23	51	24
Writing	9	27	29	32	13
Listening	0	0	10	35	65
Speaking	6	26	41	20	17
Vocabulary	1	0	11	51	47
Grammar	6	33	37	26	8
Pronunciation	2	7	21	38	42
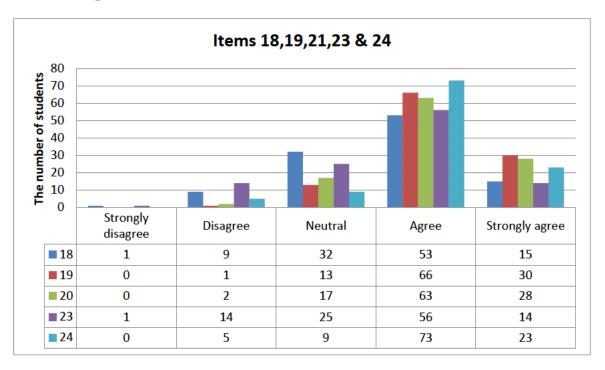
Three language components – vocabulary, grammar and pronunciation – were added to four language skills to enable the students to think of more potential uses of the smartphones; however, I did not prefer to expand on the skills more on the purpose of reducing the complexity of the item for the students. Furthermore, giving place language skills separately provided more insights about which skills the students tend to employ smartphones.

The listening and vocabulary outshine the other skills as all the students chose 'neutral, agree or strongly agree for both except 1 'strongly disagree' for vocabulary. On the other hand, writing, grammar and speaking skills are the least chosen ones among all the skills. Last but not least, pronunciation is the other skill the students considered as one of the skills to be improved via smartphones even though it is closely related to speaking.

Figure 32

The Second Questionnaire: Items 18, 19, 21, 23 & 24

The graph above shows the answers to items involving positive statements about mobile learning of English. These items, in short, are about the potential features of mobile learning of English that are time-saving (item 18), fun-to-use (item 19), innovative (item 20), interactive (item 23), and self-learning (item 24). It is seen that the students imagine smartphones can be used for English learning and agree on these positive features of them. Still, it must be noted that smartphones' time-saving and innovative features are the least favourable among them. Although most of the students thought that smartphones could be effective in English learning, the number of students who wanted to join the project was almost equal to those who did not want to. 41 students volunteered to join, while 37 students did not prefer to join. In addition to them, 26 students wanted to think of joining the project; two students demanded more information about the project, and four students did not answer at all.

All the students' answers to the questionnaire, which was applied at the beginning of the study, were shared. The next part will focus on comparing the experimental group's answers to this questionnaire and the questionnaire that was only applied to them at the end of the study.

4.6.1 The Comparison of the Experimental Group's Answers to Both Questionnaires

A way from the general to the specific was followed to answer the question about the students' thoughts and perceptions of the mobile learning of English. Firstly, the trends among the students from the various departments were specified. The data obtained from the online questionnaire were used to determine some fundamental elements of the study. The second questionnaire applied to a more specific group - the students from the ELT and ELL preparatory classes-. The items in this questionnaire were also more specific and more focused on the purposes of the study. It provided detailed information about the potential participants, what they thought about mobile learning of English, and how competent they consider themselves in using their smartphones effectively. At the very end of the study, the last questionnaire was applied to an even more specific group – the experimental group -. The last questionnaire included items corresponding to the items in the second questionnaire, through which the participants' answers to the corresponding items in each questionnaire could be compared.

The students' answers to the items corresponding to each other will be compared to comprehend how their thoughts about mobile learning of English listening and speaking skills and their mobile literacies changed. The comparisons will be categorized into mobile literacy and mobile learning of English. The students' answers to these open-ended questions will be examined after the comparisons of close-ended items.

4.6.1.1. The Items about the Mobile Literacy

As it is stated above, the questionnaires conducted at the very beginning and the end of the study have items corresponding to each other; however, in these parts of the questionnaire, which are related to mobile literacies, different wording was preferred in the scale to ease the participants' understanding. The items in the questionnaires could not be exactly the same. Since they were conducted at the beginning and the end of the study, the structures of the sentences

were different. Thus, a frequency scale was used in the first questionnaire to match the sentences and purposes of the questionnaires, while an agreement scale was used in the last questionnaire. Still, it is probable to compare both questionnaires because they are suitable for using values from 1 to 5. For example, 'strongly agree' and 'always' will be replaced with 5, and 'strongly disagree' and 'never' will be replaced with 1 and so on. That is, the values of the answers rather than the scaling words will be compared.

Before sharing the results, clarifying the sections in the table is beneficial since it may seem complicated at first glance. SQ and LQ in the tables represent the Second and Last Questionnaires, respectively. 'Value' shows the numbers used in replace of scale choices (i.e., 5 for strongly agree and always, 1 for never and strongly disagree) as it is expressed above. Lastly, although it is clear that 'the number of the students' section shows the distribution of the students' answers, there is one thing to be noted: the number of students for the SQ is 13 and for the LQ 13+1. The reason is that one of the students who participated in the study did not have a smartphone when the SQ was conducted. This student's answers were not included in the statistical calculation of the items to have the exactly paired answers. Still, her answers are shown in the tables to see if she differs from the rest of the group.

A paired samples t-test was used to compare students' responses to these two different but closely related questionnaires, and the p-value was taken as .005 as in the previous comparisons. The comparisons of all the items related to mobile literacy can be seen in the table below.

Table 20

The Comparison of Items: All the Items Related to Mobile Literacy

		Mean	N	p≤.05
Pair 1	SQ 8	4.46	13	
	LQ 1	4.07	13	0.054
Pair 2	SQ 9	4.61	13	
	LQ 2	4.46	13	0.502
Pair 3	SQ 10	4.23	13	
	LQ 3	4.23	13	1.000
Pair 4	SQ 11	4.61	13	
	LQ 4	4.0	13	0.055
Pair 5	SQ 12	4.07	13	
	LQ 4	4.0	13	0.794
Pair 6	SQ 13	4.76	13	
	LQ 5	4.23	13	0.089
Pair 7	SQ 14	4.30	13	
	LQ 6	3.92	13	0.175
Pair 8	SQ 15	3.23	13	
	LQ 7	2.92	13	0.656

The table demonstrates that the students' answers to both questionnaires are so close to each other, and the overall results of the comparisons of these items are that there is no significant difference between any of them. This result could be because the students were already positive about their mobile literacies and had the same or similar thoughts after the study.

The last questionnaire (LQ) has seven items about mobile literacy (See Appendices). These items are about the general use of smartphones and the proposed mobile literacies in the literature review chapter, which are visual and multimedia literacy (two items), information literacy, participatory literacy (two items) and reproduction literacy. All the means of the

students' answers to the items are more than four except two items that are related to remix and participatory literacy. Nonetheless, the items which have differences to be close to being significant will be stated below. The suggested items are: 1) The general use of smartphones, 2) Information literacy and 3) Participatory literacy. After each table related to these items, students' comments that can be associated with these items in the open-ended questions in the final questionnaire will be included.

Table 21

The Comparison of Items: General Use of Smartphones

Questionnaire	Item	Values					p≤.05
	Items related to the general use of	1	2	3	4	5	0.054
	smartphones	The Number of the Students					
SQ (Second)	I find it easy to use my phone.	0	0	1	5	7	
LQ (Last)	It has been easy to use my phone.	0	0	2+1	8	3	

The students participating in the project already thought using their smartphones was usually easy. After the project, most of the students stated that it was easy to use their smartphones in the project as well. Nonetheless, it must be noted that the number of 'neutral' increased by two, and the number of 'strongly agree' decreased by four. It can be assumed that using their smartphones in the project was more challenging than several students had expected; however, the majority of the students thought it had been easy to use their smartphones. It is also notable that the student who never had a smartphone before the study chose neutral, unlike most of the students. The other items are those related to information literacy.

Table 22

The Comparison of Items: Information Literacy

Questionnaire	Item	Values					p≤.05
	Items related to information literacy	1	2	3	4	5	0.055
		The Number of the Students					
SQ (Second)	I can find things (information, pictures, videos etc.) I need to go online by using my smartphone.	0	0	0	5	8	
LQ (Last)	I have improved my online searching skills.	0	0	4+1	3	5	

As seen in the table, the p-value of these items after comparing them using a paired samples t-test I .055, which is a little higher than .05. That still means there is no significant difference between them; however, they can still be discussed. Before the study, it was seen that more students were confident that they could use their smartphones to search. Although the fact that five students thought that their search skills did not improve suggests that the study partially failed to achieve the desired success in terms of information literacy, the comments made by some students on this issue report the existence of a contrary situation. Some students highlighted their increased awareness about searching as follows:

S3: "Something by searching ourselves, they made us more active, and we learned."

S13: "I can listen to lectures from my smartphone, and I can search for information by using it.

S14: "I got used to searching about a topic and learned much important information."

Notably, the students stress 'searching' in their sentences and see it as acquisition. They mention searching independently of learning English. Thus, it can lead me to think that directing them to search for something online to improve their searching skills inductively was successful and beneficial. On the other hand, it must be remembered that information literacy is more than searching for something online, as explained in the literature review. It is nonetheless an important and required step to develop their information literacy. Additionally, some students stated as follows:

S3: "I became aware of some programmes (applications) that help me in learning English."

S5: "SpeakingPal is really a good application for my listening and speaking skills. I didn't know that application before the project but thanks to the project, I have learned it and I will use that kind of applications to improve my skills after the project."

S12: "I noticed there are a lot of applications. I downloaded and used them."

It is deduced from the students' answers that they not only learned about the applications introduced during the study but also discovered some other useful applications themselves. They discovered the potential of the features of smartphones generally and also in terms of learning English; moreover, they also explored some applications dedicated to learning English online on their own, which can be the result of improved information literacy and awareness. In contrast to that, the same students, S5 and S12 reported that they could not do some tasks since they failed to search and find something required to do the tasks.

S5: "Some were requiring searching and I postponed them."

S12: "Sometimes, I couldn't find any photos related to tasks."

İnformation literacy is not only about using smartphones to search for something online but also covers other skills such as choosing reliable and safe sources and knowing where to find what he or she needs. Without these skills, students may think that it will take too much

time and they cannot do it, and similarly, unless they know where to look, that may be frustrating for them. It is possible that a student can lose his/her motivation, and his/her attitude can change towards the use of smartphones for language learning. It is seen in the comments that one of the students postponed doing a task because it required her to search for something online. The other comment also indicates that the student was not able to find a photo to use in a task, and, as a result, it is probable that these students could not do a task at all or could not complete it in the way she desired.

Table 23

The Comparison of Items: Participatory Literacy

Questionnaire	Item	Values					p≤.05
	Items related to participatory literacy	1	2	3	4	5	0.08
		The Number of the Students					
SQ (Second)	I use my smartphone to share things with my friends.	0	0	1	1	11	
LQ (Last)	It has been enjoyable to share things with my friends.	0	1	0	7+1	5	

The next items are those related to participatory literacy, as shown above. As it is seen, that p-value is higher than .05, which means the answers are not significantly different; however, it is still one of the notable results. The students' answers to the second questionnaire clearly show that they enjoy using their smartphones to share things with their friends. On the other hand, the answers to the last questionnaire demonstrate that the students did not enjoy sharing things with their friends in the study as much as they did with their friends out of the study. It must be remembered that the students had not known each other before the study, which may have caused a decrease in the mean value. Lastly, one student did not enjoy sharing

things during the study. This student never tried to do any of the WhatsApp tasks and sent only a few voice recordings in the common group. Thus, the student's answer to this item is consistent with how he reacted in the study. There can be various reasons behind this attitude, such as low motivation, high affective filter and the student's unfulfilled expectations from the study.

Most students expressed positive opinions about working collboratively, discussing the tasks and sharing ideas with their friends, and listening to their friends' ideas.

S5: "I got new friends. I liked having conversation with them. Besides having fun, I improved my listening and speaking skills.

S7: "Chatting with friends, watching videos in English, Discussing them were useful for our skills. The tasks we did together were better."

S9: "I like interacting and texting with other mates. It was like a conversation."

S11: "Working cooperatively, discussion about a topic and hearing new comments was good chance to broaden our horizons."

All the samples shared above are the answers to the question, 'What did you like about the tasks?' The students' answers show that one reason they enjoy using smartphones for doing tasks to learn English is to socialize online. To socialise means 'to participate in social activities; mix socially with others' according to Oxford Living Dictionaries. However, mixing socially has gained a new meaning in recent years. It is very common to see people prefer to socialise on digital platforms rather than physical places. Similarly, it can be suggested that the students enjoyed the tasks mostly as they may have perceived them as chances to socialise with their friends, which fits one of the purposes of the study. This matter will be discussed further in the next chapter.

The students' mostly shared thoughts about working collaboratively and interacting with their friends on WhatsApp groups support the idea I offered in the literature review that

participatory literacy is one of the fundamental literacies of mobile literacy. Participatory literacy certainly covers more than the students' comments above. Participants should be able to create digital content together. Although the students created digital content such as voice recordings together, it is hard to say that this content was complicated (some types of content may also be the subjects of reproduction literacy). Furthermore, they should be able to join other groups on digital platforms and share these digital contents with others at a high level of participatory literacy. Nonetheless, it is not obligatory, and it is also improbable to know if a person's participatory literacy level is actually not at that level or s/he just does not prefer to do it. The students also had some criticisms that can be related to participatory literacy.

> S5: "Sometimes no one did the tasks including me. Sometimes one of them did but others didn't make comments about it. I would try to do something for these situations." (Participatory literacy)
>
> S5: "When my group members didn't do their task I wouldn't like to do either. This was demotivating for me." (Participatory literacy)
>
> S8: "Sometimes the other members of the project who did not do the task or participate in the project properly could discourage me. (Participatory literacy)

The comments made here show that the potential disadvantages of collaborative learning mentioned in the previous Chapter are also expressed by some of the students. In the cases of these disadvantages, the dynamic structure of the action research and the MKO were used to take precautions and eliminate the reasons leading to the blockage of collaborative learning. However, it must be admitted that the desired effect could not be achieved in some cases. Although the MKO encouraged the students and guided them as a model at the points where the students had difficulties, there was nothing much he could do when the students did not want to interact.

Mobile literacies such as visual and multimedia, information and reproduction are individual concerns. What is meant is that the lack of these literacies can mostly slow down a student's own progress in language education. Nevertheless, participatory literacy is different from other literacies in terms of that matter. As seen in the examples above, some students' comments on challenging and discouraging things during the study target participation problems. It is understood that the students felt discouraged and less motivated when they did not get the reaction they expected from their friends. Also, they sometimes did not prefer initiating the task when another student did not.

Participatory literacy is certainly not the only multi-layered literacy. Reproduction literacy is also somewhat as complicated as participatory literacy. The item about reproduction literacy in the close-ended part of the last questionnaire (6. It has been easy to modify or create things on my smartphone) is one of the items whose mean is below four (3,85). Even though the majority (10/14) of the students chose an option above neutral, it can still be counted as one of the least favourable features of smartphones when it is compared with the answers to other items.   In parallel with this assumption, only one student mentioned creating things on her smartphone.

S1: "I learned lots of things like making videos, presenting my ideas with technology."

One of the reasons the students did not prefer to comment on modifying or creating something new is that they may not have liked using their smartphone for that purpose. The second reason could be that the level of reproduction literacy was low, or it did not even exist for most of the students. While they were modifying or creating something for some tasks they got frustrated as a result of the gaining process of reproduction literacy.

As it is described in the Methodology, some tasks required the students to create an image or video, or they needed to search for some information online. If the students had weaknesses in any required mobile literacy for a task, that task could be challenging and

frustrating. Thus, s/he may have preferred to delay or totally ignore the task. Some students highlighted these points as follows.

S7: "Sometimes tasks were a little hard." (This can be about mobile literacy overall)

S5: "I am not good at technological things. That's why while I was trying to make video or something like that I had difficulties." (Reproduction literacy)

The students' comments indicate that they had problems related to various literacies. The first comment may appear it is about the tasks' language level at first glance; however, it is implausible since all the tasks were appropriate for the students' language levels. The students' exam results also support this opinion. The student who remarked that the tasks were hard had similar results with the rest of the students. It can be suggested that the difficulty of the tasks was not because of the language level. This suggestion is also supported by the fact that the student did not have a smartphone before the study. She just began to use her smartphone for the first time when she participated in the project. That leads to thinking that the students who do not spend enough time with their devices may experience more problems in the practice of mobile learning of English.

Similarly, one of the students mentioned that she was not good at using technological devices by referring to making videos. It must be remembered that reproduction literacy as a sub-literacy of mobile literacy not only covers being capable of (re)creating content in smartphones; it also includes the creativity required to employ the suitable affordance(s) of smartphones. However, to reach this level of reproduction literacy, first, a student needs to comprehend what and how a student can do to (re)create things with his/her smartphone.

The students had other criticisms and problems besides these criticisms. These negative findings can shed light upon the potential difficulties in case of the lack or absence of mobile literacy in mobile learning of English and how to overcome these difficulties.

The students' negative comments related to the other mobile literacies can be divided into technical problems and the study schedule – time-. As technical issues and the schedule can be attributed to mobile literacy in some ways, the comments about these will be described along with the mobile literacies.

 The technical problems cover issues such as the internet connection, voice recognition, operating system updates, etc. A few students had trouble with such issues. Some examples of the technical problems are stated below.

S3: "Just internet connection." (What were the challenges you experienced during the project?)

S5: "Sometimes it cannot perceive my voice and keep saying "Try again" which is very annoying." (About SpeakingPal)

S10: "SpeakingPal didn't work after Lollipop 5.0 update."

S10: "I had a chance to practise on my own. But, I think it's rating system has an issue. I would change it firstly."

The students did not intensely complain about the technical issues; however, these comments show that some technical problems can still cause to slow down or hinder the language learning process, and some of these issues can remain as the drawbacks of using smartphones for language learning. On the other hand, these problems may not be about the deficiencies of smartphones or technology. The students may have had faulty products, or their mobile literacy level may not have been at the desired level in this aspect. One way or another, technical issues are likely to be potential drawbacks of mobile learning in the future.

As stated above, another problem addressed by the students is the schedule of the study. This study was carried out along with the students' formal curriculum at the university. Thus, the schedule was tried to be prepared in accordance with it, and also, the frequency of the tasks

and the number of SpeakingPal lessons were shaped in line with the students' requests during the interviews. Even so, some students expressed their frustration as follows.

S4: "After school I was so tired maybe it was all my fault but I couldn't do some of the tasks."

S7: "Sometimes I had problems with the restrictive time." The same student also stated: "Sometimes tasks were a little hard. Time was restrictive."

S8: "The number of tasks should be less -a task in two weeks."

These comments show how difficult and complicated it is to tailor the curriculum to every student's desires and capabilities. I tried to give them enough time, and when most of the students could not complete the task, the duration of the tasks was extended. Furthermore, I closely followed their curriculum and arranged the schedule of the study according to their important dates such as quizzes and mid-terms. As I stated several times, the students' thoughts about the number of the tasks and lessons and the time required to complete them were always considered. It can be assumed that the problems about the time could arise from four reasons:

1- The schedule could be unachievable. That can be a weak reasoning as most of the students did not have any negative comments about this issue, and, also, the precautions were taken to make sure not to overload the students.

2-The students may have lost their intrinsic motivation towards the study. Even though the students were chosen on a voluntary basis, the students may have lost their interest in the study from time to time, which can be due to some reasons such as problems in their private lives, their other responsibilities, and the lack of extrinsic motivation such as official exam results.

3- The students' learning preferences may have taken a role. Some students might have delayed specific tasks because they did not address their learning preferences and 'tastes'.

4-The low level of mobile literacy may have caused the students to ignore and postpone some tasks.

Except for the criticisms of these problems, students' approaches to the issues related to mobile literacy are generally positive. The results also suggest that most of the students already had these literacies at the beginning of the study, and they improved their associated skills as a result of the interventions in the study. This assumption is supported by the students' answers to the open-ended questions. These answers centre upon the increasing awareness of the students about the affordances of smartphones. Some students' answers regarding the increasing awareness about the affordances of smartphones are (some grammar and vocabulary mistakes in the students' original answers are corrected without changing the meanings of the sentences) :

S1: "I think I can use my smartphone more smartly, wisely and effectively in my learning process.

S4: "I was always using dictionary in my smartphone. Now I can do more than looking at dictionary."

S5: "I have learned to use my smartphone more effectively for my skills."

As can be understood from the students' comments, some focus on understanding the general potential of smartphones in learning English. In this section, all the results related to mobile literacy are summarised.

4.6.1.2 Items about Mobile Learning of English

The second and final questionnaires include items about the advantages of mobile learning of English. All the results of the second questionnaire are shared above. This section will describe and compare the experimental group's answers to both questionnaires. More

importantly, it will be examined whether their answers to open-ended questions in the last questionnaire support the results of the close-ended questionnaire or not.

Table 24

The comparison of Items: Time-saver

	Item	SD	D	N	A	SA	p≤.05
SQ	Smartphones can be a time-saver in learning English.	0	0	3	8	3	0.42
LQ	Smartphones are time-saving in learning English.	0	1	0	8	5	

It is seen in the table that the number of 'Strongly Agree' (SA) increased from 3 to 5 and the number of the neutral decreased to 0 although the student who never participated in any tasks changed his answer from Neutral to Agree and one student is from agree to disagree It can be suggested that the students' had thought the smartphones could be time-saver while learning English and after their experience in the study, their thoughts were even reinforced. A couple of students highlighted this advantage of smartphones as follows.

S6: "We didn't waste our time. It was a great experience for our skills."

S11: "The project didn't take our time. I tried to do all tasks and nearly did most of them. Briefly, positive side is that the project was not time-consuming."

It should be noted that the students complained about the restrictive time, which is shared above because it is also connected with mobile literacy, whereas these students stressed the time-saving feature of the study. Therefore, it should not be argued that smartphones and mobile learning are time-saving in any case. To benefit from this advantage of mobile learning and smartphones, it must be rest assured that students are ready to use their smartphones for language education. In other words, their mobile literacy must be sufficiently developed.

Table 25

The Comparison of Items: Fun to Use

	Item	SD	D	N	A	SA	p≤.05
SQ	It can be fun to use smartphones in learning English.	0	0	1	5	8	
							1.00
LQ	Smartphones are fun to use in learning English.	0	0	2	3	9	

Another advantage of mobile learning put forward by the researchers, as explained in the literature review, is that mobile learning is fun to use. As it is seen in the table, the students' thoughts before and after the study are almost the same, which means they had fun while using their smartphones in the study just as they had thought before joining in it. Their expressions supporting this are below.

S5: "Besides having fun, I improved my listening and speaking skills."

S8: "I don't think there is a negative side of the project. It was enjoyable and helpful for skills."

S11: "Of course without any doubt in my mind, I would join as I see how enjoyable and beneficial the project was.

The answers above were given to different questions such as "Would you join the project again? What were the negative and positive sides of the project?" and so on. Some of the students preferred to answer different questions with this common point: to have fun and to enjoy.

Should students enjoy the learning process, it is expected that they will be more motivated for future interventions and more eager and open to learning. In this context, they will have a more positive attitude towards using smartphones in learning English listening and speaking skills. They will also have lower anxiety and higher self-confidence. That is, the

language learning process has a chain effect. All the affective factors are related to each other and considerably affect one another negatively or positively.

The students must gain new skills or improve the ones they already have besides having fun, or else it is impossible to suggest the use of smartphones in learning/teaching English speaking and listening skills. The other items to be examined below are about the students' development. These items look for whether the students thought that they improved their creativity, collaborative skills, self-learning skills and self-confidence.

Table 26

The Comparison of Items: Creativity

	Item	SD	D	N	A	SA	$p \leq .05$
SQ	Smartphones can encourage me to use innovative ways to learn English.	0	0	0	8	6	0.63
LQ	I have become a more creative English learner.	0	0	2	6	6	

The items matched above are not identical, but they serve the same purpose: whether the smartphone can lead students to use more innovative ways to learn English and help them become a more creative English learner. It can be assumed that the students must have tended to agree with the statement that smartphones can encourage them to use innovative ways to learn English because innovation and smartphones are overlapping each other in different ways, and innovation can recall smartphones or vice versa to people's minds. The table shows the students thought that the study contributed to their creativity. One of the students drew attention to this point.

S11: "Tasks propel us to think differently. I mean they make us more creative. Briefly, it is helpful for not only learning English but also our personal development."

Although there are not many comments on creativity, the students also expressed how working with their friends was enjoyable, informative and broadened their horizons, which are good signs and these imply that the students may have improved their creativity as a result of the cooperative learning.

Table 27

The Comparison of Items: Cooperative Learning

	Item	SD	D	N	A	SA	$p \leq .05$
SQ	Smartphones enable me to study English interactively with my peers.	0	0	2	9	3	0.23
LQ	Smartphones enable me to study English cooperatively with my peers.	0	0	0	10	4	

The results show that the students strongly believe that smartphones can be used to study English cooperatively with their friends. All the students, including the student, who never did any tasks or joined a chat, agreed on this. The students' answers to open-ended questions strongly support that smartphones can provide an efficient and collaborative learning environment for English learning. Some of the students' thoughts related to this point are shared with the results of the participatory literacy above. In addition to those comments, some other comments that can be connected with cooperative learning are as follows.

S5: "I like meeting new people and having conversation with them. This was a motivation for me."

S6: "We can share our opinions with the others and it was very beneficial for us.

S7: "Motivational thing was my friends. If I had to speak people who I didn't know, tasks would be terrible. Fortunately, we were friends." This student also stated that: "The tasks we did together were better.

It can be deduced that almost all the students like working collaboratively with their friends. Some people may have different learning preferences, or they may be introverted and do not prefer to work collaboratively with others. However, it is undeniable that people need to socialize and have to work together in most cases. As it is suggested in this paper, the new generation, so-called digital natives, prefer to socialize in virtual platforms as well as physical environments. This trend should not be ignored; in contrast, it must be adapted to English learning as it was tried in this study.

On the other hand, learning preferences cannot be ignored. Some students can want to learn alone whenever they have that chance. Apart from that, all the students need to learn how to learn and become less dependent upon a teacher or a guide; in other words; they must be more autonomous learners since there cannot be an MKO around them all the time. Smartphones can be one of the best candidates to help students be autonomous learners.

While designing the study, it was desired to benefit from the features of smartphones helping establish a virtual platform enabling students to experience a collaborative learning environment that does not deprive them of the possibility of self-learning. Thus, as it is mentioned in the methodology, it was preferred to include WhatsApp interventions and SpeakingPal in the study in order to have the opportunity to improve the students' collaborative and individual learning skills.

This section summarises the experimental group's answers to items in the questionnaires about mobile literacies and the benefits of mobile learning of English. Their relevant answers to each item are withdrawn from the answers to open-ended questions in the last questionnaire and examined together with the results obtained from the close-ended items.

CHAPTER 5: DISCUSSION

This study aimed to integrate smartphones into learning English as a foreign language to help improve the students' speaking and listening skills by benefiting from the advantages of mobile learning and smartphones. It also aimed to eliminate the disadvantages of mobile learning and to employ the advantages of mobile learning by putting it on a solid foundation in the light of theories described in the theoretical framework. The whole positive and negative sides of this procedure will be discussed in this chapter according to the results and in the order followed in the previous chapter.

5.1 TAM and the Questionnaires

The first and the second questionnaire were designed to have a better understanding of students' Perceived Usefulness (PE) and Perceived Ease of Use (PEOU) before the application of the study while the last questionnaire served the same purpose after a group of students experienced the study. Firstly, the results of the online questionnaire will be discussed. Then, the second and the final questionnaires will be discussed together just as their results are compiled in the previous chapter.

5.1.1 The First Questionnaire

This online questionnaire not only included questions seeking answers to students' tendency to use their smartphones and how they perceive the mobile learning of English in general terms, but also included some 'technical' questions such as OS (data sizes, operating system, and cell coverage. Although these questions are not directly related to the mobile learning of English, and PE & PEOU, they are still important as they ease or hinder mobile learning.

At that time when the online questionnaire was administered to have an idea about the students' general knowledge about the technology and use of smartphones, we could see that some students misunderstood and got confused when they were asked about the size of data
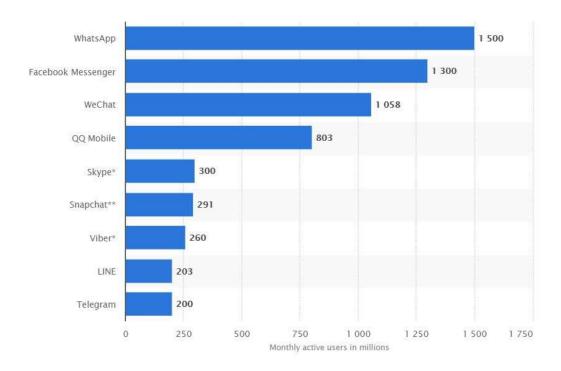
plan they used. Looking at the answers to the questions, one can see that a minor group of students claimed to have an unlimited or high number of data allowances although the maximum data package was only 4 GB and unlimited data allowance was an inaccessible feature for any smartphones in Turkey in those years. This result is also important since it shows that supposedly digital natives did not know basic information about the technology. It may be suggested that while designing a mobile learning environment, assuming all the students are familiar with the basic terms of technology can be misleading.

Related to these data allowances, another remarkable fact is that today after 4 years, we can easily observe the great rise in the size of data plans both in Turkey and around the whole world. "All-you-can-eat" plans, which mean to say unlimited data allowances, in the UK today set a perfect example of how people depend on mobile technology more and more and how actively smartphones are started to be used in every part of our lives, which adds different meanings and value to the study. These developments largely eliminate the disadvantage of mobile learning. It is a high possibility that the issue of data allowances will be no longer a problem in the progress of time since the data required for this study proved that mobile learning of English can be put into practice even though the students had data allowances as little as 1 GB.

On the other hand, the results obtained from the same online questionnaire in the pre-study phase related to the most common operating system and applications used by the students are verified after years. While Windows Phone pulled out of the market and Blackberry disappeared in the course of time, android phones, which were stated to be regularly used by 76% of the participants, and iOS continue to preserve their validity today. Furthermore, WhatsApp, which was approved then by 85% of the participants, did more than surviving through the years. According to Statista (2018), it is the most popular mobile messenger app in

2018, which matches with the results of this study. WhatsApp was the second most popular application among the students (123/145) just after Facebook (125/145).

Figure 33

The Most Popular Mobile Messenger Applications - 2018

(retrieved from https://www.statista.com/statistics/258749/most-popular-global-mobile-messenger-apps/)

Another important point drawing attention is to choose common platforms or applications which can be used in both dominant operating systems. It is known that there are some different applications for each OS. Also, some applications can have different versions for both OS. Clearly, WhatsApp was one of the best choices in terms of compatibility with both OS. These data highlight the importance of following the trends in technology to be able to design smartphones for mobile language learning more and it can make the mobile learning practices more durable against the test of time although it is a tough challenge to overcome with this speed of technological developments.

The first questionnaire also demonstrated that the students use their smartphones mostly as a pocket dictionary, which is far from using the potential of smartphones. It evidenced that some students' Perceived Usefulness can be pretty limited. It is certain that the students' perception and their awareness in terms of the possible advantages of mobile learning and using smartphones must be enhanced. It can be proposed some students have a limited idea about how smartphones can be used to improve their English skills and they were unsure about the benefits of it. 76 of 145 students, almost half of them, chose 'maybe' for the question about whether they would participate in a project to use smartphones to support English language learning. This result also approves most of them did not know what to expect from using smartphones in English learning.

Another important result of the first questionnaire is about the mobility of the learners. It is certain that smartphones are completely mobile and the practices prepared for mobile learning are ready to be mobile; however, the mobility of the learning mostly depends on the mobility of the students. More than half of the students imagined themselves doing their mobile tasks at home or in dorms. Unless students can overcome this restrictive habit, it will diminish the advantages of mobile learning and smartphones such as portability, ubiquity and flexibility. In theory, smartphones, so mobile learning can provide students with anytime, anywhere learning. Nonetheless, as long as the students' perceived usefulness and perceived ease of use are not positively affected by MKOs (More Knowledgeable Others) and their attitudes towards using it are not altered in a positive way, some characteristics of mobile learning such as synchronous, un-tethered, spontaneous, informal and instant suggested by many researchers.(Kukulska-Hulme & Traxler, 2007; Mehdipour & Zerehkafi, 2013; Traxler, 2005; Uğur, Koç, & Koç, 2016) can no longer be valid. Consequently, unless students'/learners' awareness of the qualities of mobile learning is improved, mobile learning can be meaningless without these characteristics. It can be strongly suggested that students' awareness and habits

of using their smartphones for learning a language must be improved and altered in the context of mobile learning of English. In the opposite case, it will mean dropping the advantages that smartphones and mobile learning can bring to foreign language learning. More importantly, it can cause serious problems in the future, when smartphones occupy more spaces in our lives, so in education.

The questionnaire sought the answer to the question "What are the smartphone use tendencies among the students at Gazi University." As it is discussed above, the results of this questionnaire are still valid although it was conducted 8 years ago and the rapid changes in mobile technology. Thus, it answered the question sufficiently and directed the researcher to the most suitable options to execute the study. Furthermore, it gave ideas about a few crucial factors such as the mobility of the learners/students and their perceived usefulness and perceived ease of use.

5.1.2 The Second and Final Questionnaires

It was essential to comprehend the students' perceptions of mobile learning of English and using smartphones before and after they experienced the study. Therefore, the questionnaires were administered at the very beginning and the very end of the study. While the second questionnaire enabled me to gather data from more students, the final questionnaire helped me have more detailed data to answer the research questions since the final questionnaire includes open-ended questions, and it, therefore, contributed to gaining more insights about the students' perceptions. The discussion on the results of the questionnaires will be

5.1.2.1 Discussion on Mobile Literacy

Mobile literacy can be seen as the manual of smartphones in language learning contexts. Nonetheless, it is a known fact that most people do not read the manual since they are boring. Even if they read, it is controversial that they can learn all the features of a device from the

manual. Thus, they explore the features of a device on their own until they think that they have learnt the whole features or the features they think essential for themselves. The results of the second questionnaire have similarities with this example since the answers in the second questionnaire show that the majority of the students think that their mobile literacy is adequate according to their answers.

Since literature about literacies fundamentally required in mobile learning of English listening and speaking skills did not exactly exist, it was offered by the researcher, in other words, what literacies are required to constitute mobile literacy, were compiled. These literacies are visual and multimedia literacy, information literacy, reproduction literacy and participatory literacy.

According to the results of the second questionnaire, it can be easily claimed that the majority of the students thought that they had almost all the literacies required to have a high level of mobile literacy required to have an effective learning experience on smartphones. The only literacy they may have some problems with is the advanced level of participatory literacy. In support of this result, Aviram & Eshet-Alkalai (2004, 2006) defined socio-emotional skills, which equal the high level of participatory literacy in this study, as the most complicated and hardest one to excel at. The question is whether the students were really as qualified as they thought in terms of mobile literacy or they just supposed that they were so just like a person who supposes s/he perfectly knows how to use a device.

It can be argued that the students probably did not evaluate themselves accurately based on their answers to the item about what English skills could be improved by using smartphones. Only 37 of 110 students thought that smartphones could be used to improve English speaking skills; however, this study itself shows that the fluency of the students in the experimental group improved significantly while the control group's did not, which will be discussed later.

The students' perceptions of smartphones about using it in language learning were really positive although they did not think that they could be used for every skill. The majority of the students perceived smartphones as a time-saving, fun-to-use, innovative, interactive and self-learning opportunity. Thus, it can be deduced that the students' perceived usefulness of smartphones was positive; however, their perceived ease of use of smartphones was not equally positive for every skill.

It is seen that the answers of the students in the experimental group tended to be similar to the majority of the students in the second questionnaire. In the last questionnaire, it is seen that the students' positive perceived usefulness remained the same. In addition to their positive perceived usefulness, their perceived ease of use also changed in a positive direction.

According to the students' answers to the second questionnaire, the students were already confident to use their smartphones effectively. Nonetheless, the students' comments analysed in the previous chapter clearly show that they improved their mobile literacies and the results also suggest that they were not able to do or delayed some tasks since their mobile literacy levels were insufficient. Thus, it can be assumed that some students sometimes ignored the task or preferred to delay it instead of trying to improve their skills. On the other hand, they still improved their mobile literacies when they completed the tasks and interacted with their friends, which is supported by many comments in the previous chapter.

It can be deduced from many students' comments that the mobile learning of English on WhatsApp or a similar application is intensely based on participatory literacy. Students socialise on WhatsApp groups, work collaboratively, communicate, and share their ideas and so on. In short, they can do most of the social interactions they do in their lives on WhatsApp. Thus, the students must improve their participatory literacy to have proper social relations and to create an inspiring and friendly learning environment. In order to do that, the students must learn how to behave and react and must get familiar with the emerging 'customs' of online

socialising. It can also be suggested that the students must understand the meanings of visuals such as emoticons to idealise their social skills and to decrease the misunderstandings that can occur because of the limited use of body language.

To experience effective learning, the context must be meaningful, authentic and appropriate for learners (Kukulska-Hulme & Traxler, 2007) and, in addition, it must be personalised as much as possible. This study could provide students with this learning environment. WhatsApp tasks and all the social interactions in that digital-social learning environment facilitated authentic and situated learning. The students could create their own material, they could direct their own interactions and connect their social life with English learning as it is seen and suggested similarly in other works (Shih, 2011; Yunus & Salehi, 2012). Moreover, they were free to search and share their own content and personalise their own learning since there were no strict rules or limits. Accordingly, in addition to participatory literacy, the students must be able to use their smartphones to search for things and (re)create content to fully benefit from the advantages of the smartphone. Some students' comments support that the tasks requiring searching for information or content online increased their awareness in terms of smartphone features and searching skills. In addition, they used their smartphones to create their own content and shared them with their friends on WhatsApp. By this means, authentic and situated learning can only be realized provided that the students can effectively, securely and independently search to broaden their horizons and enhance their knowledge, and, also, they can (re)create their own content to express themselves in the way they want. To sum up, information literacy and reproduction literacy are indispensable to exploit the affordances of mobile learning in a language learning context and they must be regarded as one of the key players in mobile learning. In the absence of them, two important advantages of using smartphones or mobile learning – personalised learning and authentic and situated learning cannot be fully realised.

These students were supposedly digital natives; however, they sometimes had problems completing the tasks because they found some of them harder than the others. Especially the student who started to use her first smartphone when she joined the study complained about the difficulties in her comments. As Helsper & Eynon (2010) argues, it can be asserted that digital or mobile literacy is more about the experience and the breadth of use rather than the age. The idea that the age alone is not enough to be a digital native is supported by many other researchers as well (Bennet et al., 2008; Corrin et al., 2010; Nagler & Ebner, 2009; Margaryan et al., 2011). Moreover, the students did not favour the tasks requiring a higher level of mobile literacy in their comments. It can be claimed that this can only be about the students' learning preferences; however, my observation, also, supports that some students did not enjoy tasks requiring complicated literacies.

Based on my observations and the evidence from other studies, I suggest that to have a high digital literacy or mobile literacy, in other words, to have high digital competence, the first condition is to use the technology continuously for various purposes. Also, to be distinctively competent, the person needs to be talented just as s/he needs to be in sports, arts and so on. Thus, an older man who was born before the '80s can be more competent than a Z generation should s/he transfer her competencies to digital platforms and I strongly believe that a person can do that as long as s/he practises enough. To illustrate, a person can be a digital 'novice' at the beginning; however, after enough practice, s/he can be a digital 'apprentice', and after some more, a digital 'expert' and at the end can be a digital 'master'. The conditions to improve a person's digital competence are to practise and to transfer his/her competencies to the digital platform. Should a person can manage these, s/he can be a digital expert at the end. To be a digital 'master', it requires distinctive talent and dedication.

The literature review and the results offer that digital literacy, so mobile literacy evolves and extends at a great pace and they are multi-layered. The results strongly suggest that mobile

literacy forms one of the most important layers today because of the increasing popularity of mobile devices and their features facilitating an extra learning environment for language learning. The more purposes mobile devices are used for, the greater the range of phenomena that mobile literacy covers. It can be assumed that it will be a kind of 'small' umbrella term for new literacies and it will have a crucial place among literacies, insomuch that Parry (2011) sees teaching mobile web literacy as important as basic literacy. This situation supports how beneficial this PhD project can be for mobile language learning.

As it is stated above, just as digital literacy is multi-layered, mobile literacy is so because it contains much of the latest digital technology development. Visual and multimedia literacy, information literacy, participatory literacy, and reproduction literacy are significant to benefit from mobile phones at maximum since their features are complementary to mobile learning of English via smartphones. This study includes various results supporting this as discussed above. Therefore, training or activities for future studies must be prepared to teach English via smartphones and to develop these literacies and they must be taken into consideration in each stage.

Because of the 'slippery' nature of digital literacy caused by fast changes and developments in technology, the key literacies for mobile learning of English via mobile phones can be altered or some new literacies can emerge. Thus, recent technological developments and trends must be closely followed to make the necessary changes for future studies.

Lastly, it must not be overly assumed that students are digital natives or digitally literate and they will not have any problem during learning English via smartphones. Some studies discussed before (Bennet et al., 2008; Corrin et al., 2010; Helsper & Eynon, 2010; Nagler & Ebner, 2009; Margaryan et al., 2011) showed that young people may not use technology effectively and, sometimes they may only use some simple features. Hence, this kind of possibility must be taken into account and the attitudes and features of students must be

analysed carefully. Instead of approaching them as digital natives, it will be more appropriate to comprehend their digital levels ranging from digital novice to digital master as stated above.

5.1.2.2 Advantages of Mobile Learning

The study attempted to provide the students with the advantages of mobile learning in language learning such as time-saving, fun-to-use, collaborative and interactive learning, supporting autonomous learners, creative and dynamic learning environment. In addition, it sought to improve the students' awareness in terms of using their smartphones in language learning and to boost their self-confidence by increasing the English input the students get and encouraging them to produce more English output in return. The students' answers showed that they felt and experienced all these advantages in the study.

The students' perceived usefulness was already high at the beginning of the study. Nonetheless, perceived ease of use was not at the expected level when the students' answers to items about mobile literacies are taken into consideration. Still, it can be seen as a normal reaction since the students did not know each other and that was the first time they experienced that kind of learning environment.

To change their perceived ease of use, WhatsApp was used as a digital collaborative teaching environment and the students had an opportunity to realise their intention to use in this environment by getting non-judgemental feedback and inspiring each other just as Tu (2004) and Jukes, McCain, and Cockett (2011) asserted.

In this digital environment, with which the students were already familiar as they were already using WhatsApp in their daily life, the students could engage with the tasks collaboratively without an academic focus so that they could improve their English listening and speaking skills as well as their mobile literacies meaningfully and creatively as Kearsley & Schneiderman (1998) suggested.

It was observed that the students' participation rates were the lowest at the beginning of the study and increased in the second and third periods. The more the students used their smartphones and work collaboratively with their friends, the more they could explore the features of smartphones and lower their affective filters. They reduced their anxiety while speaking in English and had higher self-confidence. Consequently, they could improve their English listening and speaking skills according to them, which was partially supported by the exam results.

All these advantages can be seen as the sources to increase the students' motivation and to change their attitudes positively. In relation to that, it can be suggested that the students' perception of English changed with their attitudes. It could be observed that they started to see English as a means of communication rather than a course they needed to pass for their academic success, which was a very similar attitude with Korean learners in the study of Kim (2013). It can be suggested that should smartphones can be integrated into the university's curriculum or a similar institute's and be administered in an organised manner, smartphones can be effective to change students' motivation, attitudes and perceptions of English positively because of the chain effect.

Last but not least, it is so important to have a More Knowledgeable One in the process of mobile learning of English. Leaving the students with their smartphones or with their friends only can cause the process to get stuck. The guide and facilitator role of the teacher or an MKO remains the same in the digital context as well. The students' answers strongly suggest that the teacher plays a significant role to keep the students' motivation high and the teacher or MKO should smooth the students' 'digital paths' from time to time to keep them on the right track. It is also certain that MKO must be a digital master or expert, that is, his/her mobile literacy must be developed enough to guide the students. Thus, teachers must improve themselves in terms

of mobile literacy to be ready for the possible common mobile learning implementations in the future.

5.2 Pronunciation of the Problematic Sounds (/ð/ /θ/ /ŋ/)

The findings lead me to believe that the approach positively affected how the students pronounced the problematic sounds. The analysis of the students' voice recordings suggests that the students made fewer mistakes, especially after key dates, i.e. when they were explicitly taught problematic sounds in WhatsApp groups and the time they completed the related lessons on SpeakingPal. The results demonstrate that most of the students reduced the proportion of mistakes after they were explicitly taught how to pronounce the problematic sounds. However, in the fourth period, the students were not taught these sounds directly beforehand, and they did not show as much improvement as they did in the second and third periods. It can be deduced that the students need to revise how to pronounce these sounds until they have enough self-awareness to notice their own mistakes and to know how to manage these mistakes and reduce them. They can be guided in this through the use of smartphones. This guidance can be manually provided by teachers in various ways such as WhatsApp, as in this study; however, it might be more practical to develop an application to periodically send notifications about pronunciation to the students and automatically guide them until they no longer need it or, at least, need it less.

The students' answers to the questionnaires support the idea that the study was effective in improving their pronunciation skills. All the students without exception agreed that the study was really useful for their pronunciation and most of them highlighted the improvements in pronunciation as one of the major benefits of the study; that is, smartphones support advances in language learning. It is noteworthy that the students highlight SpeakingPal in terms of pronunciation. Although they also mentioned improvements in pronunciation as one of the benefits of the WhatsApp tasks, the students more often link pronunciation with SpeakingPal.

That may be because of two major reasons: first of all, the students may want to learn pronunciation from native speakers and the way in which SpeakingPal teaches the sounds with native speakers manages this very well and fulfils the students' expectations in this regard. The other reason is that SpeakingPal is visually very rich. Although I think that the quality of the videos and pictures could be better, it still enables the students to see how to pronounce a sound with the help of videos and pictures.

Based on the evidence presented here, it can be argued that mobile learning can contribute a lot to the teaching/learning process of pronunciation for EFL learners. Due to their affordances such as recording, listening to voice recordings, watching videos, speech recognition and portability, smartphones have come into prominence as suitable devices to integrate mobile learning into traditional learning for teaching/learning pronunciation. The positive changes in the students' performances in the pronunciation of the problematic sounds, their answers to questionnaires and their comments emphasizing how the study was advantageous in learning pronunciation indicate that smartphones must be seriously taken into consideration in the teaching/learning of pronunciation.

5.3 Fluency

The study reached this purpose of it. The study improved the students' motivation and changed their attitudes and perceptions about mobile learning of English and the purpose of learning English positively. The students began to speak in English outside the classroom. Their anxiety reduced and they did not feel shy while speaking in English. All these improvements boosted the students' self-confidence. The results imply that the students improved their fluency more than the control group since they had a lower affective filter and higher self-confidence as a consequence of mobile learning of English. Faith & Eva (2018) and Gürler (2015) also reached the same conclusion that self-confidence and fluency have a positive correlation. It can be suggested that self-confidence is a crucial factor to increase the students' fluency. Also, the

mean of the students' fluency is 2.47 sps and according to Iwashita (2008), the students reached the fluency of an advanced English learner. It can be recommended that mobile learning of English can be an effective addition to learning English as a foreign language.

CHAPTER 6: CONCLUSION

The primary objective of this research study is to analyse the impact of specific mobile teaching interventions on the emotional, perceptual, and academic outcomes of a cohort of Turkish university students. The research aims to provide insights into the efficacy of these interventions and their potential to enhance the students' English learning experience.

Should we need to summarise the primary purposes and most important findings of the study, it aims to:

1- Comprehend how the students perceived the teaching interventions on WhatsApp, using specific principles, and which interventions could be more effective. This action research process showed that most of the students preferred teaching interventions with an element of 'curiosity' in which they could interact with their peers and construct knowledge together, in line with collaborative learning. Nevertheless, an important finding was that almost half of the students had a different favourite 'task'. This can be seen as an indication of how students can have different approaches and perceptions. Another important finding is that the role of the MKO is more important and influential than it was thought before the study started. This role is critical to maximise the benefits of collaborative learning and eliminate the disadvantages of collaborative learning.

2- Figure out the various effects of these WhatsApp interventions on a specific group of students. WhatsApp interventions were expected to improve students' overall listening skills and speaking fluency. In addition, it was expected to decrease the students' affective filters and consequently increase their motivation and self-confidence. As a result of this situation, it was thought that increased self-confidence would contribute positively to students' listening and speaking skills. The results revealed that these expectations were partially met. It was seen that there was no difference in the listening skills of the students as a result of this study. On the other hand, When the performance

of the control group in the first exam is compared with the performance of the control group in the last exam, it is seen that there is no significant difference between them. However, as a result of comparing the first and last exams of the experimental group, it is seen that the students in the experimental group significantly increased their fluency performance. The students' comments at the end of the study also indicate that the study contributed positively to the self-confidence and motivation of the students.

3- Explore the effects of teaching three problematic English sounds (/ð/ /θ/ /ŋ/), which are difficult for a group of Turkish university students. In light of the data, it can be said that teaching these three English sounds that students have problems with through SpeakingPal and MKO increased the students' success in pronouncing these sounds. Accordingly, although it cannot be supported by data other than the students' comments, the students thought that their English pronunciation improved in general due to SpeakingPal lessons and WhatsApp interventions. In addition, some students who thought that their pronunciation had improved expressed that their self-confidence had increased for this reason.

4- Investigate how these students' perceptions of mobile learning of English and mobile literacies considered necessary for mobile learning changed as a result of the study. The questionnaires conducted at the beginning and end of the study showed that students' perceptions of mobile English language learning, which were positive before the study, remained positive at the end of the study. This was also the case for the students' skills in using their mobile phones. In addition, some of the students who thought that they were using their smartphones effectively enough before the study stated that they used their smartphones even more effectively and that their awareness of what they could do with their smartphones increased as a result of the study. Finally, some students said that they postponed doing a few WhatsApp teaching interventions because they did not

know exactly how to do it and as a result, they did not do it. This can be seen as an indicator of how important students' mobile literacy can be in any mobile learning application. On the other hand, it can also be argued that in some cases, the MKO could not recognise these deficiencies and did not entirely fulfil the role that he should have undertaken at the points where students had difficulties.

The general aims and findings of the study can be summarised in this way. These findings will be detailed under the following headings.

6.1 Students' Preferences for WhatsApp Interventions

A number of teaching interventions that can be used on WhatsApp and similar smartphone applications, which were called tasks when assigned to students, were designed. The design of these teaching interventions tried to provide the benefits of collaborative learning and the features of mobile learning and smartphones that can bring these benefits to the forefront and the use of a number of affordances and multimedia features of smartphones that can increase students' motivation. For this purpose, the engagement theory proposed by Kearsley and Shneiderman (1998) provided an outline for the creation of these interventions. Again, as Shneiderman (1998) point out, collaborative learning, which can have many benefits, can also have its dangers. This danger can generally be listed as the inability of students to communicate with each other and their distancing from being able to work together, just as a few of the students experienced during this study. In order to eliminate this danger, the concept of MKO from social constructivism has been adapted to the design of these interventions.

The majority of the students did not want to do more than one of the tasks seen in this study more than once a week. The fact that these tasks enabled students to express themselves, exchange ideas with each other and work together was the preference of the majority of the students. According to some students, it was even a source of motivation. On the other hand, a few students stated that instead of these tasks that required a certain level of interaction, they

preferred tasks that focused more on individual work and were more like doing a presentation. As emphasised earlier, the students showed an attitude that was generally in line with the principles of collaborative learning. However, it was seen that they could be interested in a wide variety of tasks due to their fundamental differences of interest.

It was observed that students were less likely to do tasks that required reproduction, or it took longer time for them to do since they postponed them. That may mean that although they could be done quickly with smartphones, students sometimes saw them as difficult to do. This is in line with the statements of some students. This may suggest that students can have a lower level of reproduction literacy, which is referred to as high-level mobile literacy in this thesis, than is generally thought. This backs the idea that the condition of being a digital native is not based on the date of birth, as supported by many studies. In addition, it can be claimed that the ability to interact with all the people in the digital world in the general scope of participatory literacy, which is another complicated mobile literacy, was low in the students participating in this thesis and that this study could not develop students in this direction as a result of the process. In the last task that required sharing the videos they recorded with people they did not know (the task that encouraged them to upload videos to YouTube), only one student uploaded a video to YouTube. The other students preferred to share them only on their WhatsApp groups. This could be due to the students' low level of participatory literacy, as explained, or it could be just that students did not prefer to do so. Unfortunately, not enough data was collected on this topic to discuss the exact reason.

6.2 The Effect of WhatsApp Interventions and SpeakingPal Lessons on Students

It was found that the interventions via WhatsApp did not improve students' overall listening skills but contributed to their speaking fluency and pronunciation to some extent. In addition, it is seen in some students' comments that it helped some students overcome their shyness and anxiety over time and increased their self-confidence and motivation.

Before the study, it had been expected that the experimental group would perform better in the listening exam as the natural result of more English input because of the teaching interventions on WhatsApp and lessons on SpeakingPal. The statistical results showed that the experimental and control groups did not significantly differ in listening scores. This may indicate that the inputs received by the students are not an effective way to improve their listening skills when teaching interventions do not focus on improving listening skills.

Based on the students' comments, it can be said that the tasks completed on WhatsApp improved their mobile literacy and made them continue to have a positive attitude towards mobile learning of English. On the other hand, some students gradually stopped using SpeakingPal due to technical problems, repetition of similar exercises, humour, and dialogue styles that did not catch the students' attention. Although the students mentioned many times the positive contribution of this application to their listening and speaking skills, especially their pronunciation, it could not reveal its full potential due to its technical deficiencies and boring design.

The fact that students requested and showed great interest in face-to-face social events to trigger more intense interactions showed the importance of social events and getting to know each other better, even in mobile learning applications. After these social events, it was observed that the participation rate of students in WhatsApp tasks increased.

It can be argued that these WhatsApp interventions decreased the students' anxiety levels, increased their self-confidence, and, according to the students' statements, improved their speaking skills. Although there is no direct concrete evidence that there is a relationship between the increase in the students' self-confidence and the development of students' speaking fluency with these interventions, the fact that students' feedback like these and similar feedback come from students strengthens the thoughts that mobile learning can be beneficial in this way.

Finally, the problems experienced by some students and the loss of motivation and decreased participation rates when they did not receive reactions from their friends provide data that collaborative learning can sometimes be difficult to manage well. Although MKO solved many similar blockages and provided the necessary support to the students when they were lost, it could be argued that MKO could not manage some situations properly and that the participation rates of the students could have been higher if he had managed them.

6.3 The Pronunciation of the Problematic Sounds

The problematic sounds (/ð/, /θ/ and /ŋ/) were taught by MKO on WhatsApp, and the students needed to complete lessons about these sounds on SpeakinPal. The students' positive answers about how they improved their pronunciation after their mobile learning experience and their exam results supported their thoughts about pronunciation. As a natural consequence of teaching problematic English sounds to the students, they were expected to improve their pronunciation of these sounds. When the pronunciation performances of the experimental group in the first exam and their performances in the last exam were compared, a significant difference was observed, whereas no significant difference was observed when the first exam of the control group was compared with the last exam of them. It is likely that this study contributed to the observed developmental differences. It can be suggested that mobile learning of English can contribute to the improvement of pronunciation.

As a natural consequence of teaching problematic English sounds to the students, they were expected to improve their pronunciation. When the pronunciation performances of the experimental group were compared with the performance of the experimental group in the first exam and the performance of the experimental group in the last exam, an effective difference was observed, while no significant difference was observed when the first exam of the control group was compared with the last exam of the control group. Since the difference between these two groups can be shown as the participation of the students participating in the experimental

group in this study, it can be said that this difference in development is probably due to this study.

In addition to this, although it was not reflected in practice in a very obvious way, some students thought that their pronunciation improved, which increased their self-confidence. As a result, they said that they were less nervous and more comfortable when they spoke English. The study design does not provide a definitive measure of how much it contributes to speaking fluency, but it is considered one of the anticipated outcomes.

6.4 Students' Perceptions of Mobile Learning of English and Mobile Literacies

It was found out that the students tended to see themselves as digitally literate and have the required skills to benefit from mobile learning efficiently, and they had positive attitudes towards using mobile phones for learning English; however, it should be noted that most of the students did not use to think that smartphones could be used for improving their speaking skills. On the other hand, they thought that smartphones could be used to improve their pronunciation.

After the students had WhatsApp interventions and SpeakingPal lessons, their attitudes towards mobile learning remained positive, and even became more positive for a few students. This could be seen as the interventions and their experiences throughout the study met their expectations.

The students' answers to questions related to mobile literacies showed that they were confident about using their smartphones effectively, and that they knew what they could do with their devices. However, it was seen in their answers to the last questionnaire that they discovered more uses for their smartphones than they had thought of before.

It can be concluded that the students could develop their mobile literacies, and how they see their smartphones changed after the study when their answers to the questions were analysed. This can show that the interventions on WhatsApp and SpeakingPal lessons mostly positively impacted the students. This leads me to think that mobile learning of English in the

context of learning to speak is feasible and beneficial. However, it should be cautiously approached since it is hard to generalise the results of this action research since it had a specific context. That will be addressed again when the limitations of the study are discussed.

In summary, the aims of this study could be partially realised. The results show that the students could improve their mobile literacies and their awareness of them and kept their positive attitudes towards mobile learning the same. Mobile learning of English can also boost their self-confidence and motivation by creating a collaborative learning environment that increases their engagement with the language outside the classroom. It can be said that the use of WhatsApp interventions and SpeakingPal positively affected students' speaking fluency and pronunciation but had no effect on their general listening skills. In addition, from the students' comments about WhatsApp interventions, it can be said that a collaborative learning environment could be created by using these interventions on WhatsApp in the study and that this environment achieved its purpose to some extent. As a result, it is possible to say that not only performance-related skills of the students but also affective and perceptual changes that may positively affect these skills and their general perception of learning English were observed.

6.5 Strengths of the Current Study

The backbone of any educational task is intrinsic motivation and readiness, which greatly affect its efficiency. It is important to understand the strong link between success and inner motivation in order to create a positive learning environment. This environment is mainly powered by m-learning and collaborative learning. When students are willing to do extra work outside of school to improve themselves, it serves both the purpose and quality of their study. In today's globalized world, extra-curricular activities are increasingly significant. Terms such as accessibility, functionality, flexibility, and practicability are emphasized in the "right here,

right now" era. Improving language skills requires extra input, and one alternative way to achieve it is to use smartphones.

Applications and other mobile tools serve as a practical extension of the learning environment outside the classroom. Their intensive school program often does not provide adequate space and time for practice and production, so even the idea of having an opportunity to practice the knowledge they gain in school is a positive and rewarding experience for students. The offer of making it possible thanks to their smartphones can attract them.

Furthermore, it should be noted that I was all the time available during the project and actively motivated the students. That proves another positive side of the study in this regard because the participation of the teacher, namely a more knowledgeable person, in any collaborative work, makes the students positively engaged in this language learning process by empowering the concept of Vygotsky (1978), a "More Knowledgeable Other" (MKO), who is a person with more highly developed abilities or a greater level of understanding. The students' own answers and their performances in line with these answers verify. In a project like this, the teacher needs to have a high level of digital literacy, which will empower and ensure him/her to guide the students on a multi-directional interaction needed platform.

6.6 Applicability

For four main reasons, it can be said that the applicability of action research has decreased. These are:

1- Action research is centred on comprehending and enhancing distinct local contexts. The interventions and discoveries are customized to the particular features, necessities, and dynamics of the examined group or setting. Consequently, the results and deductions may not be directly relevant or transferable to other contexts with different characteristics or circumstances.

2- The sample size is typically smaller when conducting action research than other research methods. The focus is on gaining thorough insight and comprehension within a specific context rather than seeking generalized results. This limited sample size can make it difficult to draw wide-ranging conclusions or apply the findings to a larger population.

3- The researcher often takes on an active role or works collaboratively within the setting being investigated. However, this level of involvement can potentially introduce bias or subjectivity into the research process, as the researcher's personal views, experiences, and actions may affect the results. Consequently, the outcomes may be unique to the researcher's position and engagements within that specific context. (It was previously emphasised that quantitative methods were used in this study to minimise this effect.)

4- It is common to engage in a series of repeated cycles that involve planning, taking action, observing outcomes, and reflecting on the results. As the process unfolds, interventions and strategies may shift and adjust based on insights and feedback from those involved. As a result, any findings that emerge may reflect a dynamic process that cannot be easily generalized or reduced to a static outcome.

Although these items considerably reduce the generalisability of action research, it has a unique value with its own characteristics. Through the implementation of action research, a thorough comprehension of particular issues and context-specific insights can be attained. This results in actionable recommendations that have the potential to enhance practices within the analyzed context. Furthermore, even though the generalisability of action research studies such as this study is low, they can be related when there is a similar context and can be applied in whole or in part. Dzakiria (2012) stated this as "*If X produces Y, and if Y is related to Z, do Y it may change Z*" (p.45). Consequently, a different researcher who examines the circumstances

of this action research can determine how comparable the context of this study is to their own and subsequently decide to apply the research in a general approach, although not necessarily in the exact same manner. Ultimately, action research, such as this one, can serve as a source of motivation for other researchers or educators.

6.7 Limitations

The research design had some inevitable limitations and the nature of the study was also susceptible to some other limitations, which were mostly technical issues, as well.

The first of these limitations was the difference in exposure time to the language between the control group and the experimental group. According to the results, the experimental group could improve their pronunciation of problematic sounds and fluency more than the control group could do. It can be argued that it is already expected that a group who are exposed to the language and use that language more than another group can improve their skills more than the other group, no matter how they are exposed to that language - face-to-face or mobile-.

At this point, it can be beneficial to remember that the aim of the study was not to offer an alternative to traditional face-to-face learning or to prove that mobile learning can be more effective than face-to-face learning in teaching speaking skills. It was to improve the students' certain skills including the skills required to use their mobile phones for an effective mobile learning experience, which are mobile literacies and to improve the students' pronunciation of certain problematic sounds of English for Turkish students and their speaking fluency by integrating mobile learning to their curriculum. That is, this limitation did not prevent this study from reaching the aims. However, it could add another important dimension to the study.

It could be possible to see whether the interventions of mobile learning can be better than the traditional classroom or vice versa. The current design of the study limits to find out this important aspect of mobile learning which is the comparison of the effectiveness of mobile

learning with the effectiveness of traditional learning. It should be noted that it is essential to have a group that has no other English exposures than mobile learning interventions and another group that has traditional face-to-face English only to make it possible to compare these two groups to see which one is more effective, mobile or traditional learning. Even if the research was designed in the way that is described above, another limitation would emerge which is how it would be possible to ensure that the students in two different groups had the same amount of language exposure; however, they still could do the same tasks. After that, their language levels and how they felt while doing these tasks could be compared. I must admit that it could provide more depth if the groups could be created that way. Unfortunately, at the time, I did this study, I had no opportunity to design the groups in that way.

The other limitations caused by the design of the research may not be as crucial as the limitation discussed above; however, they are still important and worth noting and discussing. One of these limitations is how the students send their voice recordings. It was expected that the students gave reactions spontaneously or they joined the conversations or discussions without any preparation, just like a person does in daily life situations, except when they needed to prepare something to do the tasks. The students can get prepared before sending their voice recordings which can create a conflicting situation with the research design since the more realistic speaking skills of the students and how comfortable they are with using English can only be observed when they send their voice recordings without any preparation. I had to rely on the students' comments and feedback about this since it was impossible to detect when the students saw the interactions on WhatsApp and how they reacted to them - by getting prepared or not-

The study could not be fully integrated into the existing curriculum. Working with the university administration in cooperation was necessary to realise this. Although the university administration allowed me to do my study at the university, they did not want to create a hybrid

curriculum for the students. The students in the experimental groups were volunteers and what pushed them to join the project was their intrinsic motivations. Nonetheless, it was observed that the students might have lost their intrinsic motivation from time to time since they had to deal with the exams they needed to pass and delayed doing the tasks when they had their mid-term exams. The full integration of mobile learning could let the students do their tasks more comfortably and also, their intrinsic motivation could be supported by extrinsic motivation.

Besides numerous positive feedback from the students related to the mobile tools to be used during the project, there were inevitably some drawbacks the students suffered from. As one of the tools in this study, the SpeakingPal app showed certain drawbacks, some of which were bugs, program crashes, and low voice recognition accuracy. It is obvious that these technical issues can be reduced by considering the improvements in technology, but again in the case of technology, there can always be unexpected and/or unreasonable technical problems, which is a fact future studies should not overlook. Back to the point of SpeakingPal, the students emphasize that it shows a droning repetition, or in other words, it falls into repetition, which makes the students lose interest and/or decrease their motivation after a while. The same profiles, same topics, and same sentence styles might banalize the tasks according to the claims of the students. Students also expressed that so many of the jokes in the app are out of date and not witty or catchy. These statements show us how important it is for any technological tools to follow and catch up with the latest trends.

6.8 Suggestions & Implications

The following suggestions and implications are for teachers who want to employ smartphones to improve their students' speaking skills and for researchers who want to do a similar study and try to design the tasks for it.

6.8.1 Initiators and Followers

One way to increase student participation, especially in smaller groups, is to assign initiator profiles that change weekly. These individuals would be responsible for engaging other participants and guiding everyone within their groups. This approach can boost interest, motivation, and involvement. However, it is important to consider the possibility of other students in the same group becoming passive or disengaged. In such cases, it may be necessary to have follower profiles that can support the initiators. Depending on the characteristics of each group, a formula of "one initiator and three followers" or "one initiator, one follower, and two participants" can be implemented. It is worth noting that this study emphasizes intrinsic motivation rather than extrinsic rewards. Therefore, any approach should not impose threats or pressure on students, as it may undermine learning outcomes. This addition may reduce the workload on the MKO to some extent.

6.8.2 Online Socializing Vs In-person Socializing

Students often highlighted the socialization opportunities provided by projects as a significant benefit of studying. This trend can be attributed to modern-day society's preference for socializing through digital platforms rather than in-person interaction. While physical gatherings and face-to-face communication are still preferred by some, online interaction has become a convenient, comfortable, and satisfying alternative. Mobile learning, facilitated by smartphones, has made it easier for students to chat, share documents and audiovisuals, and engage in online socializing. However, this does not mean that students do not value in-person interaction.

The positive effects of social meetings cannot be underestimated and are equally important to the success of the project. In a distance education context, where students come from different countries and have little opportunity for face-to-face interaction, ice-breakers and online meeting platforms can help create a sense of belonging and foster a positive learning

environment. Ultimately, by balancing both online and in-person interaction, students can derive maximum benefit from their learning experience.

6.8.3 Variety of Tasks and Weekly Task Pools

In Chapter 4, when students were asked about their preferred task during the project, it was surprising to find that every student who commented had a different task in mind. This could be due to individual differences, language proficiency, learning styles, socio-economic background, and cultural influences. Students enjoy tasks they feel competent in, leading to a more positive learning experience. Thus, it is crucial to support and motivate students throughout the project. The variety of answers inspired me to create a task pool with different types of activities for each assignment period, allowing students to choose a suitable task that best fits their preferences and work on it with greater motivation.

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APPENDICES

Appendix 1

The First Questionnaire

Smartphones and Learning English

You are being invited to participate in this research study. Before you decide to take part in this study, it is important to read the following information about the study. Please read all details given below about the study carefully and decide whether you want to be involved in this study or not. Please do not hesitate to contact me if anything is unclear or/and you need to know more about the study. You can find my contact details at the end of the form.

Title of the Project

Improving Listening and Speaking Skills of Learners of English as a Foreign Language via Mobile Phones

Introduction

This research project is conducted to investigate how mobile phones can be used to improve students' foreign language skills. Listening and speaking skills will be focused on in this study.

Procedure

In this online questionnaire, you will be asked to answer 15 questions and it will take about 5 minutes. It is aimed to know more about the trends of mobile phone use among university students and what you generally think about mobile learning.

Risks

There is no risk to complete this online questionnaire.

Confidentiality and Anonymity

All data obtained with this questionnaire will be confidential and anonymous. They will be kept in a secure location to which only the researcher will have access.

Participation

Participation is voluntary in this study. It is up to you whether to take part in this study or not; however, keep in mind that this is an online questionnaire. Once you submit your answers, you cannot withdraw it anymore.

Questions about the Research Project

If you have any questions about the project, you may contact Yasin Goktas by sending e-mail to the following addresses:

Consent Form

Project Title

Improving Listening and Speaking Skills of Learners of English as a Foreign Language via Mobile Phones

Project Summary

The main purpose of the project is to investigate how recent mobile phone technologies can be used to improve Turkish university students' language skills (listening and speaking in this project). The project focuses on making use of distinctive features of mobile phones such as being time-saving, ubiquitous and highly portable to enable students, who may have different learning styles, to be more autonomous and it aims to provide students with supportive, constructive, collaborative, interactive, creative and flexible language learning practices improving speaking and listening skills of students by adapting mobile phone applications to foreign language education.

By submitting this questionnaire online, you agree that:

- You have read and understood the Participant Information Sheet.

- All your questions about the study have been answered satisfactorily.

- You take part in this phase of the study voluntarily.

1) Gender
( ) Male
( ) Female
2) Your age
( ) 17-19
( ) 20-22
( ) 23-25
( ) 26+
3) What OS (operating system) do you use on your smartphone?
( ) Android
( ) iOS
( ) Windows Mobile
 ( ) Other: _____
( ) I do not know
( ) I do not have a smartphone
4) What size data plan do you use?
( ) I do not have a data plan
( ) 512 Mb
( ) 1 Gb
( ) 2 Gb
( ) 4 Gb
( ) Unlimited
( ) I do not know its limit
( ) Other: _____
5) Are you satisfied with your mobile internet speed and cell coverage?
( ) Very dissatisfied   ( ) Dissatisfied   ( ) Neutral   ( ) Satisfied   ( ) Very Satisfied
6) Do you have Wi-Fi at home or dormitory?
( ) Yes
( ) No
7) What do you regularly use your smartphone for?
You can choose multiple items. Please specify if you choose 'Other'.
( ) Calling
( ) Sending / Receiving SMS
( ) Sending / Receiving MMS
( ) Listening to music
( ) Watching videos
( ) Taking pictures
( ) Recording videos
( ) Playing games
( ) Instant Messaging (e.g. WhatsApp)
( ) Listening to podcasts
( ) Listening to music online
( ) Watching videos online
( ) Downloading documents, music or videos
( ) Uploading documents, music or videos
( ) Sending/Receiving E-mails
( ) Other:_____

8) Which of the following smartphone applications do you regularly use?
Please specify if you choose 'Other'.
( ) Facebook
( ) Twitter
( ) Google+
( ) YouTube
( ) Vine
( ) Instagram
( ) Hangouts
( ) WhatsApp
( ) TikTok
( ) Skype
( ) Viber
( ) Pushbullet
( ) E-mail applications (e.g., Outlook, G-Mail)
( ) None
( ) Other:_____

9) Have you ever used your smartphone to learn English?

( ) Yes
( ) No
If yes, please explain how you have used it for learning English.
You can write your experience(s) in Turkish

_____

_____
_____
_____
_____

10) Which of the following applications for learning English have you used?
Please specify if you choose 'Other'.
( ) British Council Audio&Video
( ) Johnny Grammar
( ) Big City
( ) My WordBook
( ) English Tutor
( ) Voxy
( ) Busuu
( ) Cambridge Advanced Learners' Dictionary
( ) Oxford Deluxe Dictionary and Thesaurus of English
( ) Conversation English
( ) None
( ) Other:_____

11) What language skills would you most like to improve via smartphones?
Choose the most important choices. Please specify if you choose 'Other'.
( ) Reading
( ) Writing
( ) Listening
( ) Speaking
( ) Vocabulary
( ) Grammar

( ) Any of the above
( ) None
( ) Other:_____

12) Would you like to participate in a project to use smartphones to support English language learning?

( ) Not now
( ) Probably not
( ) Maybe
( ) Quite likely
( ) Definitely

13) How many English exercise(s) would you like to do via your smartphones in a week?

( ) None
( ) 1
( ) 2
( ) 3
( ) 4
( ) 5

14) How much time would you like to spend on each exercise to learn English via smartphones?

( ) None
( ) 5-10 minutes
( ) 11-30 minutes
( ) 31-60 minutes
( ) 60+ minutes

15) Where do you think you are likely to do these exercises?

Please specify if you choose 'Other'.
( ) At home/dormitory
( ) At the university (e.g. break time)
( ) On public transport
( ) None
( ) Other:_____

APPENDIX 2

The Second Questionnaire

Smartphones and English Learning: Students' Tendencies and Perceptions

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Participant Information Sheet

You are being invited to participate in this research study. Before you decide to take part in this study, it is important to read the following information about it. Please read all details given below about the study carefully and decide whether you want to be involved in this study or not. Please do not hesitate to contact me if anything is unclear or/and you need to know more about the study. You can find my contact details at the end of the Participant Information Sheet.

Title of the Project

Improving Listening and Speaking Skills of Learners of English as a Foreign Language via Mobile Phones

Introduction

This research project is conducted to investigate how mobile phones can be used to improve students' foreign language skills. Listening and speaking skills will be focused on in this study.

Procedure

In this phase of the study, you will be asked to answer 25 questions in the following questionnaire and it will take about 20 minutes. With this questionnaire, it is aimed to determine potential participants' profiles for the further phases of the study, which will last about five months and contain language learning practices aiming to develop your listening and speaking skills in English. This phase of the study contains only the questionnaire attached to this information sheet. That is to say, by signing this consent form, you only accept to answer the questionnaire and you do not take any responsibility for the further phase of the study.

After you answer the questionnaire, you can volunteer to take part in the main study. The only thing you need to do is to contact with the researcher. You can send e-mails, talk to

him face to face or you can tell your intention to your teachers (*Please also see the related item in the questionnaire).

Risks

There is no risk to complete this questionnaire and to participate in the main study.

Confidentiality and Anonymity

All data obtained with this questionnaire will be confidential. They will be kept in a secure location to which only the researcher will have access.

In the questionnaire, you will be asked to write your names on it because it can be needed for the further phases of the study. Your answers to the questionnaire will be seen and analysed only by the researcher and they will not be shared with any other person or institution. In all publishing, conference presentations or seminars related to this study, your ID will be anonymous.

Participation

Participation is voluntary in this study. It is up to you whether to take part in this study or not. It is your right to withdraw your answers from the questionnaire within one week after submitted. Once you withdraw your answers from the study, the questionnaire you answer will be destroyed.

Questions about the Research Project

If you have any questions about the project, you may contact Yasin Goktas by sending e-mail to the following addresses:

Consent Form

Project Title

Improving Listening and Speaking Skills of Learners of English as a Foreign Language via Mobile Phones

Project Summary

The main purpose of the project is to investigate how recent mobile phone technologies can be used to improve Turkish university students' language skills (listening and speaking in this project). The project focuses on making use of distinctive features of mobile phones such as being time-saving, ubiquitous and highly portable to enable students, who may have different learning styles, to be more autonomous and it aims to provide students with supportive, constructive, collaborative, interactive, creative and flexible language learning practices improving speaking and listening skills of students by adapting some common mobile phone applications to foreign language education.

By signing below, you agree that you have read and understood the Participant Information Sheet, all your questions about the study have been answered satisfactorily and you take part in this phase of the study voluntarily.

_____

Date

Participant's Name   Name of person obtaining
                                                                              consent

Participant's Signature   Signature of person obtaining
                                                                              consent

Part I

This part contains some demographic and general information to have more idea about potential participants.

1) Your Full Name

_____

2) Gender

( ) Male

( ) Female

3) Your age

( ) 17-19

( ) 20-22

( ) 23-25

( ) 26+

4) What OS (operating system) do you use on your smartphone?

( ) Android

( ) iOS

( ) Windows Mobile

 ( ) Other: _____

( ) I do not know

( ) I do not have a smartphone

5) What size data plan do you use?

( ) I do not have a data plan

( ) 512 Mb

( ) 1 Gb

( ) 2 Gb

( ) 4 Gb

( ) Unlimited

( ) I do not know its limit

( ) Other: _____

6) Are you satisfied with your mobile internet speed and cell coverage?

( ) Very dissatisfied   ( ) Dissatisfied   ( ) Neutral   ( ) Satisfied   ( ) Very Satisfied

7) Do you have Wi-Fi at home or dormitory?

( ) Yes
( ) No

Note: If you do not have a smartphone, you can skip Part 2.

Part 2

This part includes 8 items aiming to have a better understanding of how students tend to employ their smartphones.

8) I find it easy to use my smartphone.

( ) Never   ( ) Rarely   ( ) Sometimes ( ) Often   ( ) Always

9) I understand the meanings of the visuals (emoticons, pictures, etc.) on my smartphone.

( ) Never   ( ) Rarely   ( ) Sometimes ( ) Often   ( ) Always

10) I use visuals (emoticons, pictures etc.) while using my smartphone.

( ) Never   ( ) Rarely   ( ) Sometimes ( ) Often   ( ) Always

11) I can easily find things (information, pictures, videos etc.) I need to go online by using my smartphone.

( ) Never   ( ) Rarely   ( ) Sometimes ( ) Often   ( ) Always

12) I mind choosing trusted online sources while using my smartphone.

( ) Never   ( ) Rarely   ( ) Sometimes ( ) Often   ( ) Always

13) I use my smartphone to share things (information, pictures, videos etc.) with my friends.

( ) Never   ( ) Rarely   ( ) Sometimes ( ) Often   ( ) Always

14) I modify pictures or videos on my smartphone.

( ) Never   ( ) Rarely   ( ) Sometimes ( ) Often   ( ) Always

15) I share things (information, pictures you modify etc) with people I do not know on digital platforms (wikis, social networks, microblogs etc.) by using my smartphone.

( ) Never   ( ) Rarely   ( ) Sometimes ( ) Often   ( ) Always

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Part 3

This part aims to find out the opinions of students about the use of smartphones in learning English.

Please answer the following questions in view of the fact that it is planned to adapt some common smartphone applications such as WhatsApp, Facebook, Vine and so on to help Turkish students learn English in this project. You can find more information about the project in Appendix.

16) Smartphones can be used to improve my English skills.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Reading	( )	( )	( )	( )	( )
Writing	( )	( )	( )	( )	( )
Listening	( )	( )	( )	( )	( )
Speaking	( )	( )	( )	( )	( )
Vocabulary	( )	( )	( )	( )	( )
Grammar	( )	( )	( )	( )	( )
Pronunciation	( )	( )	( )	( )	( )

17) The features of smartphones are <u>not</u> compatible with learning English.

( ) Strongly disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly agree

18) Smartphones can be a time-saver in learning English.

( ) Strongly disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly agree

19) It can be fun to use smartphones in learning English.

( ) Strongly disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly agree

20) Smartphones can encourage me to use innovative ways to learn English.

( ) Strongly disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly agree

21) Using smartphones can be time-consuming in learning English.

( ) Strongly disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly agree

22) Smartphones are fun to use but not in learning English.

( ) Strongly Disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly Agree

23) Smartphones enable me to study English interactively with my peers.

( ) Strongly disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly agree

24) Smartphones can provide me with self-learning opportunities.
( ) Strongly disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly agree

25) Using smartphones has no significant advantages to learn English.

( ) Strongly disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly agree

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*I would like to join this project about using smartphones to support English learning.

( ) Yes, (your e-mail:_____)

( ) Maybe, I need to think on it

( ) No

( ) I need more information about the project

If you tick the last choice, please read the Appendix carefully.

Thank you for taking the questionnaire! Your response is very important!

<u>Your Comments on the Questionnaire and the Project:</u>

_____

_____

_____

_____

_____

_____

Appendix

In this project, you will be asked to:

- take an IELTS exam (only listening and speaking sections) in the first week of the project. This exam will be applied after your routine class by the researcher. At the end of the project (at the end of April), you will take the same exam to check how much you will have improved your listening and speaking skills.
- Complete some "tasks" which will be given by the researcher via your smartphones. These tasks will include some listening and speaking practices. The number of tasks will be 2 in a week. These tasks will be different for every week and each will take about 10-15 minutes. They will require you to work individually or collaboratively.
- Do routine listening and speaking practices through a smartphone application. This application will be purchased for you by the researcher after the trial period (after two weeks). You will NOT pay anything.
- Participate in group meetings. These meetings will be held monthly. In these meetings, your development will be tracked, and we will share our opinions about anything to improve your speaking and listening skills via your smartphones.
- Keep in touch with other participants and the researcher.
- Keep a diary about your development and the project so that you will be able to review your own development. These diaries will be collected by the researcher at the end of the project.

      *More details about the project will be discussed after you decide to join the project. All processes can change after group meetings, according to your feedback and the observation of the researcher. Also, as mentioned above, there is a trial period. That is, you can give up participating in the project in two weeks. After two weeks, you will be responsible for the project till the end of it.

      Thank you for your time,

      Best wishes,

      Yasin Goktas

APPENDIX 3
The Full List of Tasks

The Name of the Task	What to Do	What Mobile Literacy	Which Group
Killer Question	Ask a 'killer question' which are hard to answer or make your friends think on it deeply	Information	3&4 students
Introduce a Country or a Place	Introduce your country/hometown/a place to your friends	Multimedia Information	3&4 students
Introduce Yourself	Introduce yourself to your friends	Participatory	Common
Who am I?	Introduce a famous person	Multimedia Information	3&4 students
Describe a Charity	Introduce a charity organization to your friends	Information	3&4 students
You are the Examiner!	Prepare possible exam questions on listening tracks you are given Ask and answer one another's questions in your groups	Participatory	3&4 students
I wonder...	Ask something you really wonder to your group mates	Information	3&4 students
Picture Quote	Create a picture quote and discuss the quotation with your friends in the group	Multimedia Information Participatory Reproduction	3&4 students
Make a Commercial	Shoot an advertisement together	Multimedia Participatory Reproduction	3&4 students
Movie Comprehension	Watch the suggested movie and discuss the given questions with your group mates	Multimedia Participatory	3&4 students
Random Story	Make up a story by using 8 random words you are given with no preparation and share it with your friends	Reproduction	3&4 students
My Global Role Model Award Goes to...	Choose a famous person who you admire and introduce him/her to your group mates and discuss your role models	Multimedia Information	3&4 students
The Bucket List	Inspired from the movie, "The Bucket List", create your own bucket list and share it with your group	Multimedia Participatory Reproduction	3&4 students
For and Against	Discuss the given topic by introducing your point of view with your group mates	Participatory	3&4 students
Aunt/Uncle Agony	Give some advice about the problems of your friends and discuss the advice together	Participatory	3&4 students
Story Telling	Create a video/slideshow in which you talk about a topic you choose at least for three minutes and share it on Smartans' YouTube page	Multimedia Information Participatory Reproduction	3&4 students and YouTube

APPENDIX 4

The Interview in the middle of the Project

INTERVIEW QUESTIONS

1. Please share your thoughts about *SpeakingPal*.

2. How many *SpeakingPal* lessons should be done in a week?

3. How much time do you spend for SpeakingPal lessons? How much time should be spent?

4. What do you think about the tasks?

5. How many tasks should be done in a week?

6. How much time do you spend for a task approximately? How much time should be spent?

7. What task(s) have you enjoyed most/least?

8. Do you prefer to do the tasks on your own or with your friends? Why?

9. When do you prefer to do your tasks? Why?

10. Where do you prefer to do your tasks? Why?

11. Have you ever experienced any difficulties while doing a task? If yes, what are they?

12. Some tasks are not done by all students. What can be the reason(s) for that?

13. What kind of tasks would you like to do?

14. What do you expect from the project from now on?

15. Is there anything you want to change in the project? If yes, what are they?

16. How do you evaluate the project overall?

17. Is there anything else you would like to say about the project?

APPENDIX 5

The Final Questionnaire

Your Full Name:

This questionnaire consists of 3 parts, all of which aim to understand your thoughts and feelings about the project in a different way. In part 1 and part 2, the beginning of every item is given at the very beginning of each section and all items are multiple-choice. In part 3 – 'Written Interview', there are open-ended questions which you can freely answer; there is no word or page limitation.

Please complete the following questions to reflect your opinions about the project as accurately as possible. Your answers will be kept strictly confidential.

Part 1

Throughout the project, ...

1. It has been easy to use my smartphone to do the tasks.

( ) Strongly disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly agree

2. It has been easy to understand the meanings of the visuals used in the project. (emoticons, pictures etc.).

( ) Strongly disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly agree

3. It has been enjoyable to use visuals in the project.

( ) Strongly disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly agree

4. I have improved my online searching skills.

( ) Strongly disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly agree

5. It has been enjoyable to share things (information, voice records, pictures etc.) with my friends.

( ) Strongly disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly agree

6. It has been easy to modify or create things on my smartphone.

( ) Strongly disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly agree

7. I have enjoyed sharing things with people I do not know.

( ) I have never shared things with people I do not know. If you shared:

( ) Strongly disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly agree

Part 2

As a result of this project, I think that...

1. I have improved my speaking skills.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Fluency and Coherence	( )	( )	( )	( )	( )
Grammatical range and accuracy	( )	( )	( )	( )	( )
Pronunciation	( )	( )	( )	( )	( )

2. I have improved my listening skills in English.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Listening for general information	( )	( )	( )	( )	( )
Listening for specific information	( )	( )	( )	( )	( )
Predicting what the speaker will say	( )	( )	( )	( )	( )
Inferring what the speaker says	( )	( )	( )	( )	( )
Critical listening (To evaluate what the speaker says and to form opinion about it)	( )	( )	( )	( )	( )

3. Smartphones are time-saving in learning English.

( ) Strongly disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly agree

4. Smartphones are fun to use in learning English.

( ) Strongly disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly agree

5. I have become a more creative English learner.

( ) Strongly disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly agree

6. Smartphones enable me to study English collaboratively with my peers.

( ) Strongly disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly agree

7. I have become a more autonomous learner.

( ) Strongly disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly agree

8. I feel more confident in using English.

( ) Strongly disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly agree

9. My awareness of learning English has developed.

( ) Strongly disagree   ( ) Disagree   ( ) Neutral   ( ) Agree   ( ) Strongly agree

Part 3 – Written Interview

1. Do you think you can use your smartphone more effectively in learning English after the project? If yes, how?

2. How do you assess SpeakingPal?

-To what extent did it help you improve your listening and speaking skills?

- What did you like about it?

- What would you change?

3. How do you assess the tasks?

- To what extent did it help you improve your listening and speaking skills?

- What did you like about them?

- What would you change?

- Were some tasks better than others? Which and why?

4. What were the motivational/demotivational things in the project?

5. If any, what were the challenges you experienced during the project?

6. What were the positive and negative sides of the project? Please explain in detail.

7. Would you join the project if you had the chance again? Why/Why not?

8. Free write! – Please write anything you would like about the project.

The Criteria for the Students' Voice Recordings

Fluency					
	15 Dec – 26 Jan	**27 Jan – 1 Mar**	**1 Mar – 9 Apr**	**9 Apr – 15 May**	**Total**
Repetitions					
Self-corrections (G-L-P)					
Pauses (2 secs)					
Speed of talking (Sps)					

Grammar					
	15 Dec – 26 Jan	**27 Jan – 1 Mar**	**1 Mar – 9 Apr**	**9 Apr – 15 May**	**Total**
Simple Sentences/All sentence					
Compound sentences/All sentences					
Complex sentences/All sentences					
Compound-Complex Sentence/All sentences					
Range&Level					
Uncorrected grammar mistakes					

Vocabulary					
	15 Dec – 26 Jan	**27 Jan – 1 Mar**	**1 Mar – 9 Apr**	**9 Apr – 15 May**	**Total**
Range (TTR)					
Wrong or missing word					

Pronunciation					
	15 Dec – 26 Jan	**27 Jan – 1 Mar**	**1 Mar – 9 Apr**	**9 Apr – 15 May**	**Total**
Mispronounced sounds (NMS)					

Mispronounced problematic sounds (NMPS)(Theta, Eth and Velar Nasal N)					
NMPS / NMS					

Conversational Skills					
	15 Dec – 26 Jan	27 Jan – 1 Mar	1 Mar – 9 Apr	9 Apr – 15 May	Total
References to earlier turns					
Topic initiations					
Digressions					

The Criteria for the Tests

Fluency	IELTS 1			IELTS 2		
Repetitions						
Self-corrections (G-L-P)						
Pauses (2 secs)						
Speed of talking (Sps)						

Grammar	IELTS 1				IELTS 2			
Simple Sentences/All sentence								
Compound sentences/All sentences								
Complex sentences/All sentences								
Compound-Complex Sentences/All sentences								
Range&Level								
Uncorrected grammar mistakes								

Vocabulary	IELTS 1	IELTS 2
Range (TTR)		
Wrong or missing word		

Pronunciation	IELTS 1	IELTS 2
Total Number of problematic sounds (NPS)		
The number of mispronounced problematic sounds (NMPS)(Theta, Eth and Velar Nasal N)		