

The Effects of Mobile Learning on Listening Comprehension Skills and Attitudes of Omani EFL Adult Learners

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Abstract. This study aimed to explore the effect of using mobile learning on improving adult learners' listening skills in Oman, to investigate their attitudes, and to explore the factors that stand as barriers to its implementation. The study is quasi-experimental consisted of two groups, an experimental group (n=15) and a control group (n=16) from a foundation program at a military educational institute. The research data included the results of two sets of listening tests and learners' responses on an attitude questionnaire. The students in the experimental group outperformed their counterparts in the control group as a result of the mobile learning strategy. There was a statically significant improvement in the experimental group students' listening ability. Also, the participants had positive attitudes towards using mobile learning in improving their listening comprehension skills. The participants found that mobile learning enhanced their motivation, increased their exposure, expanded their vocabulary repertoire, and provided easy access to "anytime" and "everywhere" learning. However, they emphasized some challenges that were related to mobile software design, screen sizes of mobile phones, network connections, and the appropriateness of the listening content. Based on the findings, the study suggested some educational implications and recommendations.

Keywords: Mobile learning; listening comprehension skill; attitudes; language exposure; autonomous

1. Introduction

Mobile devices are the next generation of learning as they are extending into all areas of human life (Kim, 2013). Mobile learning is providing us with

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opportunities to change the existing learning methods and strategies and gives a more flexible approach to manage learning experiences on the move (Kukulska-Hulme & Traxler, 2005). Mobile learning technologies “help produce learning that is personally customized, socially constructed, and which extends beyond the classroom” (Holden & Sykes, 2011, p. 4). Several empirical studies assert that mobile-learning is a useful and instructive tool for language learning, and it can encourage students to be more autonomous and independent in their learning process (Chen, 2016; Liu & He, 2015). Chen (2016) emphasized that “Mobile learning apps provide multiple channels and modalities for adult learners to practice language skills” (2016, p. 40).

Regarding language learning, researches in the literature have shown that listening comprehension is crucial for second language acquisition (Feyten, 1991; Richards, 2005). Listening ability is an essential factor that contributes significantly to the second language learning process. Richards (2005) stated that “The development of good listening skills is seen not only as something valuable for its own sake but as something that supports the growth of other aspects of language use, such as speaking and reading” (p. 85). However, many language learners and teachers consider listening as the most difficult skill to be taught (Aryana & Apsari, 2018).

In Oman, several studies assessed the students' listening comprehension skills. They found out that Omani students have difficulty in listening comprehension due to incompetent treatment of listening comprehension and insufficient exposure to listening outside the classroom (Al-Busaidi, 1997). Also, the listening materials and conventional teaching methods are of poor quality (Al-Belushi, 1999). Moreover, learners are unable to follow listening materials in a stressful environment because of the cognitively demanding listening activities (Al-Issa, 2005). Likewise, Al-Handhali (2009) claimed that content issues, lack of exposure, lack of encouragement, and teachers' methodological decisions in classrooms all contributed to listening comprehension difficulties. Therefore, the problem of this current study lies in the weak performance of many Omani students' in listening comprehension and their insufficiency of exposure to the English language outside classrooms.

Therefore, listening skills must be investigated further in Oman. New approaches in teaching are needed to be adopted, and modern technologies are required to be exploited and utilized. Al-Harrasi (2014) recommended that a less-stressful environment is necessary for the classroom, and learners need more interactive listening activities. Al-Belushi (1999) also recommended utilizing the latest technologies that are made available for language learning. He urged teachers to encourage students' autonomy and independence in their learning process and to give opportunities for individual students to listen to what interests them and to listen in their own time and place. Thus, a shift towards integrating educational technologies is required to give learners some opportunities to practise listening comprehension skills outside the classroom independently. Therefore, to improve the learners' listening skills, it is recommended to increase time exposure to the language by providing different listening materials for students to listen to in their

free time outside the classroom. Also, it's essential to utilize advanced technologies, online listening materials and to provide less stressful learning environments (Al-Belushi, 1999; Al-Busaidi, 1997; Al-Handhali, 2009; Al-Issa, 2005).

Concerning utilizing advanced technologies, several studies have reported the potential use of mobile-based technology in enhancing language learning and accordingly have required EFL teachers to use mobile learning to perform language learning activities (Al Aamri, 2011; Al Yafei & Osman, 2016; Beatty, 2010; Chen, 2016; Kim, 2013). Crompton and Burke (2018) urged higher education teachers to use mobile technologies to increase learning opportunities outside classrooms. Mobile devices can allow language learners to access different learning materials everywhere, flexibly, and at any time (Kim, 2013; Read & Kukulska-Hulme, 2015). Also, they help to overcome many problems such as anxiety of language learning, inadequate language practices, and deficiency of language exposure (Rahimi & Soleymani, 2015). Furthermore, students can develop self-regulation and self-assessment through mobile devices (Gangaiamaran & Pasupathi, 2017; Liu & He, 2015; Zheng & Chen, 2018). Besides, some mobile learning applications can provide opportunities for immediate feedback and language analysis (Chen, Hsu & Doong, 2016). Mobile learning can establish an educational electronic learning platform that offers motivating educational experiences for instructors and students. It can also enhance the learners' self-regulated learning experiences and increase language exposure outside the classroom.

Therefore, the importance of promoting listening comprehension skills and the great opportunities that mobile-learning can positively offer has led to the need to investigate this issue further in Oman. The primary purpose of this study, thus, is to explore the impact of mobile-learning on improving listening comprehension skills and explore the pedagogical attitudes of students towards the integration of the mobile-learning in their classroom activities. The study addresses the following research questions:

1. Are there any statistically significant differences in listening performance between students who learn listening skills through mobile devices and students who conventionally learn listening skills?
2. What are the students' attitudes towards using mobile devices in improving their listening comprehension skills?
3. What challenges do students face in using mobile devices?

2. Literature Review

The growing popularity of the term mobile learning among language learners and the vitality of listening skill in language acquisition bring with them a shift in focus that may impact the teaching and learning process. This dramatic shift towards using m-learning in teaching English language listening skills can provide access to listening materials from everywhere and at anytime. The literature review provides a theoretical background of English listening comprehension skills and information background about mobile learning and its impacts on EFL contexts.

2.1 Listening Comprehension Skill in L2 Learning

Listening comprehension skill plays an active part in L2 learning (Brown, 2001; Feyten, 1991; Richards, 2005; Vandergrift & Goh, 2012). Listening is an essential skill in a way that exists in most of the activities we do throughout our lives (Al-Belushi, 1999). A person cannot communicate or interact with others unless s/he understands the spoken language (Rivers, 1966). Therefore, the rationale behind teaching listening skills is to prepare English language learners for understanding the actual speech in real-life communication contexts and for facilitating second language acquisition. Besides, listening ability contributes significantly to the predictability of foreign language acquisition process (Feyten, 1991) and creates a channel by which the learner gains access to a great deal of comprehensible input in the target language (Krashen, 2013; Rost, 2007). Furthermore, the development of listening comprehension plays a significant role in developing other language skills (Dunkel, 1986), expands the learners' vocabulary repertoire and grammar knowledge (Rost, 1994), and improves learners' pronunciation of the target language (Harmer, 2007). Listening plays an active part in the language learning process, and language learners cannot maintain acquisition until a certain amount of the listening input in the target language is intelligible.

2.1.1 Learners' Problems in Listening Comprehension

Although listening plays a significant and constructive role in language learning, language learners confront several difficulties and problems when practising listening comprehension skills. Kim (2013) stressed that many English learners find listening skill a challenging skill as it demands a complex process of interpreting information from sound, especially when there are no visual aids. Also, students need to comprehend and process both content knowledge (data) and linguistic knowledge (language) simultaneously while they are doing the listening. According to Namaziandost, Ahmadi and Keshmirshakan (2019), limitations on learner's listening ability are due to the listener's limited vocabulary, length of the discourse, inability to understand the speaker's accent, and the speaker's speech rate. In his article, Goh (2000) notified that students tend to forget what they hear quickly, are unable to recognize the meanings of words, and tend to face difficulty to comprehend the intended purpose of the message even though they had understood the literal meaning of the words. Thus, learners' problems in listening comprehension are due to personal cognitive differences, individual emotional statuses such as learners' anxiety, and the context of the spoken language (Vandergrift & Goh, 2012).

2.1.2 Contemporary Trends in Teaching Listening Comprehension

The difficulties that EFL learners face when listening to the target language and the value of mastering listening skills for language acquisition emphasize the importance of seeking new strategies and techniques to facilitate listening comprehension skills. Teachers should help students improve their listening comprehension proficiency by reducing students' concern about listening and providing a less worrying classroom environment (Al-Handhali, 2009). Also, students should be encouraged to promote self-regulated learning to seek listening opportunities outside the classroom (Gangaiamaran & Pasupathi, 2017; Yabukoshi, 2018; Vandergrift & Goh, 2012). Moreover, there has been an

increasing call on employing more authentic materials in the learning process (Vandergrift, 2007), and on providing more extensive listening exposure to the target language outside the classroom (Lee & Cha, 2017).

Based on the above discussion, integration of mobile learning can enable students to reduce their anxiety, increase their language exposure, enhance independent learning, and develop some learning strategies so that learners are motivated to seek more opportunities outside the classroom (Al Aamri, 2011; Al Yafei & Osman, 2016; Chen, 2016; Kim, 2013; Kukulska-Hulme & Traxler, 2005; Liu & He, 2015; Rahimi & Soleymani, 2015). Vandergrift (2007) emphasized that “Broader access to these new technologies will likely shift the focus from the classroom to independent learning” (p. 206). Mobile devices can be utilized outside the classroom to enhance the learning process and create a more self-regulated learning environment (Zheng & Chen, 2018). Besides, mobile-based learning can be a convenient tool in providing immediate feedback and assessment for students so that they track their self-improvement in the language (Chen, Hsu & Doong, 2016). Therefore, this study intends to examine the effect of using mobile devices in improving listening comprehension skills.

To sum up, the previous studies in the literature show that listening comprehension is a complex process which requires much listening exposure and extensive practice outside the classroom. Therefore, teachers need to inspire learners to become independent, to look for listening opportunities outside the classroom through using English language media, to establish goals and means of self-evaluation, and to keep a record of their performance. The use of mobile learning can facilitate a shift from teacher-led education to student-led one, so that students can listen to the language anytime and anywhere and be more self-independent.

2.2 Mobile Learning (M-Learning)

Many scholars and practitioners have described mobile learning in different forms (Grant, 2019). Brown (2005) defined M-learning as being a subset of E-learning that is explicitly a form of web-based delivery of content and learning management; moreover, it features with mobility, flexibility, and convenience when compared to online learning. However, Peters (2007) went further in defining m-Learning as being a model of flexible learning that is ‘just in time, just enough and just for me’. Other scholars described mobile learning as a sort of portable education that uses portable devices to access learning and knowledge on the move without the time and location constraints (Kukulska-Hulme & Pettit, 2009; Traxler, 2009). El-Hussein and Cronje (2010) attempted to provide a comprehensive definition of mobile learning that is “any type of learning that takes place in learning environments and spaces that take account of the mobility of technology, mobility of learners, and mobility of learning” (p. 20).

2.2.1 Significance of Mobile Technology in EFL Context

M-learning recognizes learners’ diversity and individual differences to determine the way of learning (Traxler, 2009). It has the potentials to provide authentic listening materials such as songs and news in English for language learners

(Elfiona, Embryany & Pamela, 2019). Authentic materials can help the language learners see how the language is related to the real world (Brown, 2001), enhances their active involvement in the learning process (Hapsari & Ratri, 2014), and fosters their self-confidence (Unver, 2017). Furthermore, mobile technology can contextualize the learning activities, and it can combine between formal and informal learning opportunities (Pulla, 2020). Thus, learning won't only be limited to the classroom setting but also will be extended to learning in real-life communities.

Moreover, mobile technology gives students the flexibility and motivation to learn at their own pace at a convenient time. It promotes autonomy and makes the learning process more independent (Al-Hunaiyyan, Alhajri & Al-Sharhan, 2018; Beatty, 2010; Kim, 2013; Read & Kukulska-Hulme, 2015; Traxler, 2009). It also involves learners in determining their objectives, developing more useful learning strategies, and determining the method and timing that they decide on (Raya & Fernández, 2002). Besides, it can provide a variety of English expressions and vocabulary (Kim, 2013). Hence, mobile learning can fit different learning styles, directs learners to control their education, contextualize the learning experiences, and frees learners from the formality of conventional education.

2.2.2 Challenges

Although mobile learning has proved to have significant merits in the learning process, it cannot stand without some drawbacks. Rogers and Price (2009) mentioned that overloaded information, distractions by mobile devices, and difficulty in designing appropriate learning experiences that encourages collaboration and interaction between learners are the three main challenges that may occur when employing mobile technologies. Therefore, language teachers must create mobile learning experiences which are not too bewildering or overly complicated and make sure that learners are not working in isolation from their counterparts. Likewise, Zhang (2019) found that a lack of internet access, a lack of continuity of mobile data transfer, weak cellular signals in some areas can hinder a real continuous learning experience on mobile devices. Likewise, Alrefaai (2019) found that EFL learners face various challenges when they use mobile devices such as technical problems, small screen sizes, distractions, the accuracy of the information, health problems, and getting bored. In Oman, there is a shortage of technological aids or a failure of some teachers to utilize them due to their lack of knowledge or training on how to use educational technology (Al-Issa & Al-Bulushi, 2012; Al-Musawi, 2007; Al-Senaidi, Lin & Poirot, 2009).

2.3 Emerging Mobile Technologies in the Omani context

Several studies in Oman examined the teachers' and students' attitudes towards mobile-based learning. Al-Emran and Shaalan (2017) revealed that M-learning could be adopted by all academics regardless of their age and qualifications. However, instructors' attitudes towards mobile technology are determined by their beliefs about the effectiveness of mobile technology in education. The more positive perception they have towards mobile technology, the more optimistic they are towards the utilization of M-Learning. Likewise, Al Aamri (2011) found that students like to use mobile devices while teachers do not want them to do so.

Teachers think that mobile devices could be a big distraction for both teachers and students. Therefore, the researcher recommended fostering the use of mobile technology in education and emphasizing the merits of mobile phone in the classroom. In this respect, Al Yafei and Osman (2016) noted that m-learning could be an effective medium for self-learning as it promotes autonomy and increases learners' motivation which helps in solving many motivational barriers that might occur under fixed and even monotonous educational routines. Both learners and language educators hold positive attitudes towards integrating mobile technologies in the Omani context. However, there should be more studies investigating the merits of mobile devices in the classroom to gain confidence in using it.

In summation, the existing body of research shows that the use of mobile learning in language learning, especially in listening comprehension, is an essential contributor to second language learning. It increases the level of self-awareness and ability of learners and decreases the level of anxiety. Moreover, the literature provides conclusive empirical studies supporting the idea of using mobile learning that helps language learners undertake the listening activities in a scaffolded way and offers possibilities for interaction and collaboration. Thus, as the assertion that M-learning can enhance listening comprehension skills for L2 learners is assumed and demonstrated empirically, supporting the use of M-learning as a means for increasing listening ability can encourage the appearance of this research in the future. Their unique features like portability, individuality, and connectivity make mobile based-instruction an integrative, an interactive, and innovative experience. The primary of the present study, therefore, is to investigate the effects of M-learning on the development of L2 learners' listening ability.

3. Methods

This section discusses the research methodology and the procedures of designing and applying the research instruments including the statistical analysis that were adopted in analyzing and interpreting the results of the instruments, including a description of the participants, the research design, data collection, and data analysis.

3.1 Participants

The participants of the study were from the foundation program at a Military Educational Institute (MEI), Oman. They were about 48 students enrolled in level one. Two intact classes comprised the sample of the study, one as a control group (n =16 students) and the other one as an experimental group (n=15 students). All participants were full-time students registered for a 14-week course. They ranged in age from 20 to 23. All participants had a similar educational background and the same learning environment. The comprehension listening pre-test was administered to both groups before the intervention to determine the equivalency of the two groups in the English listening comprehension skill. The researcher conducted an independent-samples t-test to compare the mean scores between the two groups. Table 1 presents the means and standard deviations of the students' scores on the listening pre-test before receiving the intervention.

Table 1. Independent Samples T-test Results for Pre-test before the intervention

Groups	<i>n</i>	Mean*	SD	df	t-value	<i>p</i> -value
Control group	16	16.19	4.215	29	-0.845	0.405
Experimental group	15	17.47	4.207			

*Total score=25

The results showed that there was no significant difference in mean pre-test scores between the control group (M = 16.19, SD = 4.215) and experimental group (M = 17.47, SD = 4.207) before the intervention, ($t(29) = -0.845, p > .05$). The *p*-value is 0.405 ($p > .05$), which advocates that there is no significant difference between the two groups. These results indicate that the level of listening ability of the two groups was equivalent at the start of the intervention.

3.2 Research Design

This study is a quasi-experimental research design in which the researcher used a pre-test and a post-test to determine the effect of mobile learning on students' listening comprehension skills. The research followed this sort of design as there is no control of the random assignments of the subjects to the treatment group. Fraenkel, Wallen and Hyun (2011) affirmed that a quasi-experimental design is an experimental design in which the researcher cannot assign individual participants to groups randomly. Based on this, the researcher selected the experimental group and control group without randomization. The control group students received the English listening materials lessons following a conventional way of teaching. In contrast, the students in the experimental group worked with the same listening materials through mobile devices using the mobile application (Google Classroom). After the experiment, the researcher compared the performance of both groups to gauge the effect of the mobile-based learning treatment on the experimental group.

3.3 Research Instruments

To gather data, the researcher has administered a comprehension listening test and an attitude questionnaire. A brief explanation of each comes below.

3.3.1 Listening Comprehension Test

The comprehension listening test was developed based on the objectives of the English language program course and aims to gauge the effectiveness of using mobile-based learning materials on the learners' level of listening proficiency. The test was administered twice: as a pre-test before the intervention to determine the equivalence of the participants. Also, it was used as a post-test for both groups at the end of the treatment to measure the effect of using mobile learning on students' listening ability.

A panel of the Head of English section, four EFL teachers who were teaching in the foundation program, three evaluation experts from the Exam Cell in the institute, and an external examiner specialist validated the content of the test.

There was an agreement among the panel about the suitability, clarity, and relevancy of the test scoring.

The listening test was pilot-tested by the Exam Cell on a group of 73 level-one students to establish its reliability. According to the results, the Cronbach alpha showed that the listening test reached the right level of internal consistency at about 0.87. Therefore, the researcher is confident that this test was reliable for data collection.

3.3.2 The Questionnaire

The questionnaire survey was developed to assess the learners' attitudes towards using mobile learning for improving their listening skills. The researcher designed the questionnaire based on the relevant literature and previous studies (Al Aamri, 2011; Al-Hunaiyyan et al., 2018; Al Yafei & Osman, 2016; Kim, 2013). The questionnaire consisted of two main sections. In the first section, there were 20 statements scored on a five-point Likert scale (1= strongly disagree; 2= disagree; 3= neutral; 4= agree; and 5= strongly agree). In this section, the participants indicate the level of their agreement and disagreement with the statements regarding their attitudes towards using mobile devices in improving their English listening skills. There are four main dimensions in this section: perceived usefulness, motivation, self-management of learning, and intention to use.

In section two of the questionnaire, there were open-ended questions, including what the participants liked most about using mobile devices in learning English listening skills, the difficulties they faced, and other suggestions to improve the implementation of m-learning. Appendix 1 shows the sections of the questionnaire.

The initial version of the questionnaire was reviewed and checked by twelve experts in the ELT and instructional technology field. The jury assessed the validity of the survey in terms of its relevance, clarity, and suitability. Based on their recommendations, the researcher made some modifications and changes accordingly.

The questionnaire later was pilot-tested on a sample of 30 students to check its reliability. Reliability analysis was calculated using Cronbach reliability coefficient; the coefficient was ($\alpha = 0.893$) to the statements of the questionnaire. Thus, an alpha of 0.893 is an appropriate reliability coefficient as the statements of the survey reached the right level of internal consistency.

3.4 Description of the Materials

The study used the materials of the course textbook. The listening materials in the handbook are adapted from authentic sources to stimulate the learners' interests and engage them in classroom discussions. A wide variety of recording contents – including lectures, radio interviews, news reports, and informal conversations – are utilized to provide opportunities for extensive and intensive listening practices. The audio files are on a CD ROM that comes with the textbook.

Regarding the mobile-based listening materials, the researcher converted the original content of the course textbook into an electronic version. They emphasized the same course objectives and followed the same sequence of the teaching lessons. The mobile-based materials were assessed and validated by the course coordinator and the course teachers. They checked the validity of the materials in terms of its relevancy, clarity, functionality, and presentation in the mobile App.

3.5 Procedures and Implementation

This study aimed to investigate the students' academic achievement in listening skills and their attitudes towards using m-learning. Therefore, the researcher divided participants of the research into two groups, a control group (used the conventional method) and an experimental group (followed mobile-based learning). The researcher firstly administered the listening pre-test for both groups, which showed that there were no significant differences between the two groups before the experiment.

The researcher conducted a tutorial for the experimental group to explain the plan of the study and to practise on how to use the mobile application (Google Classroom). Also, the researcher explained the instruments to the participants, and consent forms were signed, too. The students in both groups were exposed to the same listening materials, exercises and assignments for eight weeks. The control group followed the usual teaching method of a paper and pencil, while the experimental groups used the Google Classroom App.

In the last phase of the study, the post-test was administered to both groups to determine the impact of the listening-oriented mobile learning materials on students' listening comprehension ability. Then, the students in the experimental group completed the attitude questionnaire and reflected on the use of mobile learning strategy.

3.6 Data Analysis

The researcher used the SPSS program (version 25) to analyze the listening comprehension test scores and questionnaire data. Descriptive statistics, including means and standard deviations, were computed for both instruments. An independent sample t-test was conducted before and after the intervention to compare the scores of both groups. The researcher also carried out a paired sample t-test to see if the students in the experimental group made significant improvements in listening proficiency after using the mobile App. Finally, to investigate the students' attitudes towards the mobile learning strategy in learning English listening and the difficulties that they encountered, the participants' responses to the questionnaire were tabulated and interpreted.

4. Results

The study was based on a quasi-experimental design in which two groups are involved with one group receiving the treatment. The results obtained from the research instruments were analyzed and presented. Tables were used to present and describe the data, and analysis and interpretations were followed.

4.1 The Effect of M-learning on Listening Comprehension Skill

To answer the first research question, the researcher administered a post-listening test to both groups and used an independent sample t-test to compare the scores of both groups. Table 2 presents the results of independent samples t-test of the post-test after the intervention by groups.

Table 2. Results of Independent Samples T-test for Post-test after the intervention

Groups	<i>n</i>	Mean*	SD	t-value	df	p-value
Control group	16	17.13	3.74	-2.57	29	0.016
Experimental group	15	20.20	2.83			

*Total score= 25

The results show a clear significant difference between the mean score of the experimental group (M=20.20) and the control group (M=17.13). It resulted in a statistically significant difference between the groups ($t = -2.093$, $p < 0.05$) and in favour of the experimental group. Thus, using m-learning was more effective than the conventional method in improving the learners' comprehension listening skill. The eta squared ($\eta^2 = 0.19$) indicated a large effect size according to the guidelines proposed by Cohen (1988) for interpreting this value: 0.01=small effect, 0.06=moderate effect, and 0.14=large effect. In other words, 19% of the variations in the post-test scores were explained by mobile-based learning practices, which means that mobile learning treatment was effective.

To further investigate the impact of m-learning on the experimental group, the researcher also used a paired sample t-test. Table 3 summarizes the results of the paired samples t-test in both tests for the experimental group.

Table 3. Results of paired Samples T-test

Groups	<i>n</i>	Test	Mean*	SD	t-value	Df	p-value
Experimental group	15	Pre-	17.47	4.21	-3.54	14	0.003
	15	Post-	20.20	2.83			

*Total score=25

As shown in Table 3, the test results of the experimental group revealed a significant improvement in the post-test (M=20.20, SD=2.83) over the pre-test (M=17.47, SD=4.21). The results demonstrated that the mean scores were higher for post-test after the intervention at a significant level ($t(14) = -3.54$, $p < 0.05$). The results of the eta squared ($\eta^2 = 0.47$) also indicated a large effect size, according to Cohen's (1988) three levels for interpreting this value. In other words, 47% of the variations in the post-test scores were explained by mobile-based learning practices, which also means that mobile learning treatment positively affected the learners' listening ability.

4.2. The Attitude of the Participants

The data of the questionnaire were analyzed and addressed in four dimensions to answer the second research question. The dimensions are as follows: perceived

usefulness, motivation, self-management of learning, and intention to use. The respondents have shown different estimates of the statements of the questionnaire. Table 4 presents the overall mean of the survey.

Table 4. The Dimensions of the Questionnaire

Dimension	Mean	SD
1. Dimension of Perceived Usefulness	4.32	0.42
2. Dimension of Motivation	4.15	0.37
3. Dimension of Self-Management of Learning	4.05	0.42
4. Dimension of Intention to Use	4.15	0.35
Overall Mean / Std. Deviation	4.17	0.39

As shown in Table 4, the participants generally tended to have a positive attitude towards using mobile learning for teaching English listening skills ($M = 4.17$, $SD = 0.39$). Thus, the results showed that the majority of participants had positive attitudes towards emerging mobile learning in the learning process as a useful tool for improving listening comprehension skills.

Each dimension of the questionnaire is further analyzed. Table 5 shows the students perceptions of the usefulness of mobile learning.

Table 5. The dimension of Perceived Usefulness

Statement	Mean	SD
1. Mobile learning provided more extensive listening practice.	4.33	0.62
2. Listening practice through the mobile device improved my listening ability.	4.47	0.52
4. I listen to audio materials using my mobile device more than once.	4.00	0.93
12. Listening practice through mobile devices helped me learn a variety of English vocabulary.	4.47	0.74
Overall Mean / Std. Deviation	4.32	0.42

The results showed that the students generally had a positive perception of the usefulness of using mobile learning in learning the listening skill ($M=4.32$). The participants in the experimental group think that mobile learning was useful in improving their listening ability as mobile devices have successfully increased their exposure to the target language and have expanded their vocabulary repertoire.

Table 6 shows the students' responses to the statements that tackled the motivation dimension towards mobile learning.

Table 6. Dimension of Motivation

Statement	Mean	SD
5. Using mobile devices motivated me to practise the listening skill.	4.27	0.59
6. The mobile device reduced my anxiety in learning listening skill.	3.87	0.99
7. I enjoyed the exercises through my mobile device than the traditional way.	4.20	0.78
17. I prefer mobile phone exercises to paper-based listening exercises.	4.13	0.74
18. I am satisfied with using the mobile device for practising listening skills.	4.27	0.59
19. Mobile devices encourage self-studying outside classroom.	4.13	0.64
Overall Mean / Std. Deviation	4.15	0.37

Overall, the results indicated that the students believed that mobile devices motivated them to practise listening exercises better than the conventional method of paper-based tasks (M=4.15). The participants in the experimental group think that mobile learning has the potentials to encourage them to practise listening skills outside the classroom.

Table 7 shows the students' attitudes on mobile learning effectiveness towards providing a flexible delivery of learning and directing the learners towards a more independent self-management of learning.

Table 7. The dimension of Self-Management of Learning

Statement	Mean	SD
3. Mobile devices helped me to practise listening anytime and anywhere.	4.47	0.92
8. Mobile devices provided immediate feedback while listening.	4.13	0.74
9. Mobile devices assisted me in selecting listening tasks outside the classroom.	3.87	0.64
10. Mobile devices helped me manage my listening activities outside the classroom.	3.80	0.78
11. Mobile devices helped me evaluate my listening skills outside the classroom.	4.20	0.56
13. I believe I can improve my listening skills alone through mobile devices without the teacher's help.	3.80	1.01
Overall Mean / Std. Deviation	4.05	0.42

Generally, the students believed that mobile devices provide learning dispositional characteristics like anytime and anywhere sort of learning, provision of quick feedback and independency of teachers (M=4.05). Consequently, learners can develop a more independent and self-directed style of learning. Therefore, mobile learning has the predisposition to provide a self-management style of learning.

However, the success towards shifting to a more self-management of learning depends on the learners' willingness and intention to seek their self-directed style of learning outside the classroom. Therefore, examining the fourth dimension of the plan to continue using mobile learning is crucial. Table 8 presents the students' intention to continue using mobile learning to practise language learning further.

Table 8: The dimension of Intention to Use

Statement	Mean	SD
14. I would like to practise other English skills using mobile devices.	4.20	0.78
15. I encourage others to use mobile devices for English language learning.	4.60	0.63
16. I would like to listen to authentic materials through my mobile device.	3.87	0.74
20. I'll continue using mobile learning for learning English after the course.	3.93	0.96
Overall Mean / Std. Deviation	4.15	0.35

The results emphasized that the students had the willingness to engage with the language learning process through mobile learning (M=4.15). The highest score was on statement 15 (I encourage others to use mobile devices for English language learning, M=4.60) followed by statement 14 (I would like to practice other English skills using mobile devices, M= 4.20).

4.3 The Challenges of using Mobile Devices

The researcher used a thematic analysis of the open-ended questions following coding methods to answer the third research question. There were four main themes emerged from the analysis of the data using the coding method. These themes are attributed to the following issues: mobile software-related issues, mobile features-related issues, technical issues, and listening to content-related problems.

Some students complained about some issues related to the features of mobile software (Google Classroom). The design of mobile software did not allow the learners to play the recordings and view the questions on the same page on their mobile phones. Participant #3 said, "it was difficult to listen to the audio materials and answer the questions at the same time". Due to this issue, the participants tend to forget what they heard quickly and faced difficulty to grasp the intended meaning of the recordings. Participant #11 added, "When listening to the audio materials, it was not possible to look at the question page at the same time, so we had to close the listening page and open the questions page. For this, we often forgot things or we were unable to answer directly".

Other students complained about some mobile features-related issues. Most of the complains related to the screen sizes of mobile phones. The participants said that the screen sizes of mobile phones were small, which made it difficult for them to read and answer the questions. Participants #6 wrote, "The words were tiny and unclear due to the small screen of the phone". Also, due to the small sizes, some students faced difficulty in typing the answer on the screen. Participant #10

added, "The screen size of the phone was small, and therefore, there was difficulty in reading some questions and answering them; the phone does not help much in writing".

Students also commented on technical issues and mentioned things including a wireless network service and lack of internet access. Some students had some difficulties accessing the Internet using the wireless network due to the lack of internet coverage. Participant #7 wrote, "Internet in the college was slow. Opening the audio file took a lot of time". Alternatively, they had sometimes to use their internet subscriptions to download the listening materials, which was inconvenient for them.

Some students also mentioned some listening content-related issues like the audio files were not very clear, and the speakers were very fast, which made it difficult to understand the audio files. Participant #9 mentioned, "Sometimes the speaker was not clear in pronouncing some words, and some recordings were high-speed".

Summing up, the findings of the study showed that there was a statistically significant difference ($p < 0.05$) between the post-test mean scores of the experimental group and the control group. Moreover, mobile learning is a novel educational strategy that can bring effectiveness, incentives, and motivation to the learning process; however, its implementation has some limitations and challenges on software design, screen sizes of mobile phones, and networks connectivity.

5. Discussion

The first research question asked, "Are there any statistically significant differences in listening performance between students who learn listening skills through mobile devices and students who conventionally learn listening skills?" The findings to this question revealed that mobile-learning had a statistically significant effect on the students' listening comprehension skills. The learners in the experimental group significantly outperformed the learners in the control group in the post-listening test even though the two groups were equivalent in the pre-listening test before the experiment. The findings of the study indicate the usefulness of using mobile devices in enhancing English language listening learning which lends support to several previous studies (Al Yafei & Osman, 2016; Chen, 2016; Chen, Hsu & Doong, 2016; Lie & He, 2014; Rahimi & Soleymani, 2015; Read & Kukulska-Hulme, 2015). They all provided support to the effectiveness of mobile devices in enhancing the language teaching and learning process.

The improvement of the experimental group students in listening comprehension skills might have been due to the potentials that mobile learning has provided. The researcher noticed that the students in the experimental group were highly interested in exploring learning the target language listening skills through their mobile devices. The students translated their high degree of motivation towards mobile learning into a higher level of engagement, exposure, and inclination to explore more listening materials through their mobile devices. Read and

Kukulka-Hulme (2015) claimed that using a mobile app to motivate students' practice on listening comprehension promotes intrinsic motivation for prolonged exposure to the target language. Mobile learning has succeeded in creating a relaxing learning atmosphere as learners could self-regulate their learning process. The students in the experimental group were able to learn listening skills anywhere and at any time rather than restricting themselves to a fixed place or a limited time, as the case with the control group.

In contrast, the learners in the control group appear to have been less motivated and less exposed to the target language outside the classroom, judging from their failure to meet deadlines in submitting most of their homework. It seems that the self-directing and portable attribute of the mobile learning strategy might demonstrate to be an essential motivational factor in increasing exposure and in enhancing autonomous learning over the non-portable conventional method. Hence, sustaining motivation is required for language learners to keep on listening to a considerable amount of listening materials and getting constant exposure to the target language outside the classroom in a self-regulation manner so that they gain significant improvements in their listening comprehension skills.

The second research question asked, "What are the students' attitudes towards using mobile devices in improving listening comprehension skills?" The findings to this question suggested that the learners were influenced by the experiment and showed a significant positive attitude towards mobile-based learning. They believed that mobile learning was influential in improving their listening skills and they frequently mentioned anytime and anywhere learning, extensive practice, provision of a variety of vocabulary, motivation, and autonomy as the most favourable characteristics of mobile learning.

Therefore, the findings of the study were in agreement with the results of most of the previous studies as more exposure to the target language is provided outside the classroom (Kim, 2013; Read & Kukulka-Hulme, 2015). Also, mobile learning can reduce a lot of anxiety (Rahimi & Soleymani, 2015), enhance more self-regulated learning (Gangaiamaran & Pasupathi, 2017; Liu & He, 2015; Zheng and Chen, 2018; Yabukoshi, 2018). All of these studies claim that the use of mobile learning technology makes the learning process enjoyable, valuable, and portable.

Furthermore, the findings of the present study demonstrated that mobile learning is a critical motivator in increasing the learners' incentive to further practise listening activities outside the classroom, which are also supported by previous studies (Al Yafei & Osman, 2016; Read & Kukulka-Hulme, 2015). Maria (2015) explained that the use of technology could motivate young learners during their EFL classes by creating a positive learning atmosphere as well as it can stimulate teachers to be innovative and creative in their materials design and teaching methods. The stimulating activities and the motivating use of mobile learning enable students to practise the target language and become active explorers of the English language; at the same time, they simultaneously improve their fluency and proficiency level. This present study revealed that learners' motivation could be enhanced considerably through the use of mobile learning technology when

compared to the paper-based conventional teaching method. Substantially, the ingenious features of mobile learning, including availability, adaptability, individuality can generate multiple learning functions for our everyday life and can increase learners' motivation. The uses of mobile technologies have shifted language learning from conventional-teaching methods focused on rote learning to a more constructive, interactive, innovative, and portable learning experience.

Another appealing attribute of mobile technology is the ability to enhance autonomous and self-regulated learning. Thus, the findings of this study are consistent with the results of (Al-Yafei, 2016; Chen, Hsu & Doong, 2016; Lie & He, 2014; Zheng & Chen, 2018; Vandergrift & Goh, 2012). These studies demonstrated that mobile learning could motivate learners to self-direct their learning process outside the classroom and can maximize the exposure to the target language. Beatty (2010) emphasized that the predisposition of autonomy and self-regulation enable learners to be independent of teachers and can manage and control their self-learning, which engages learners in developing metacognitive strategies for listening comprehension skills. Maintaining a high degree of motivation stimulates continuity of self-learning process. As a result, learners improve optimization of language exposure and increase regulation of language learning so that language listeners can achieve comprehension.

The third research question asked, "What challenges do students face in using mobile devices?" The results of the study suggested that the majority of the learners reported challenges that are related to limitations of the mobile software design, screen sizes of mobile phones, networks connection, and the appropriateness of the listening content. A review of literature on this regard revealed that the main challenges of mobile learning are lack of network connectivity and ownership (Zhang, 2019). Also, there are problems related to difficulty in designing appropriate learning experiences, overloaded information, and distractions by mobile devices (Rogers & Price, 2009). Al-Hunaiyyan et al. (2018) also found that institutional challenges, design challenges, technical challenges, evaluation challenges, and cultural and social challenges could hinder utilizing mobile learning effectively. Likewise, Sophonhiranrak and Sakonnak (2017) mentioned some of the flaws of mobile learning including the insufficient size of mobile screens, network connections, learners' knowledge and perceptions towards m-learning, the appropriateness of the content provided, and the mobile applications used. In this respect, it seems that literature corresponded with the findings of this study as the challenges of mobile software design, mobile screen sizes, technology infrastructure, and appropriateness of the content are the main emerged themes when it comes to the real implementation of mobile learning.

The design of mobile software is related to the features of mobile applications such as its functionality and ability to meet some specific requirements like flexibility and usability (Ismail, 2016). The failure of a mobile app to meet the needs of learners in mobile learning might contribute to some usability issues, and accordingly hinders any advantages of the mobile learning strategy. Hence, for learners to see the potentials of M-learning, it is vital to design and develop mobile software that considers some desirable features such as convenience, usability,

reliability, performance and functionality. In this study, the participants complained about the difficulty to navigate between the audio files page and the questions page. In designing mobile applications, navigation is an important design element that stands as a success factor for a mobile app because it enables users to locate efficiently the information they need and to quickly get access to any learning content (Garofalakis et al., 2007). Therefore, in the instance of mobile learning, there is a need for mobile software that meets learners' needs (Klimova, 2019), and gives special attention to functionality, usability, operability, and attractiveness issues. Future researchers should ideally investigate the expected quality characteristics of mobile software.

About mobile devices, the issue of mobile screen sizes can limit the sufficient display of the images and information on mobile phones. Besides, when the screen sizes are insufficiently small, they make typing on mobile phones very inconvenient. Therefore, the content of information must be displayed sufficiently on the mobile screen. Alhajri (2016) mentioned that "the organization of elements and media on the mobile screen will undoubtedly influence the ease and quality of learning, and has an important impact on learners' cognitive load" (p. 2). Thus, the sufficient display of information on the screen and a user's interaction with the learning content determines the success of mobile learning.

Besides, technology infrastructure such as connectivity and being able to get connected to networks is very critical in mobile learning so that real-time and ubiquitous learning is possible. Mobile learning is impossible without internet access. The availability of technology and broadband infrastructure is essential if teachers and students are to make full use of what mobile learning can offer. Motiwalla (2007) mentioned that the promise of mobile devices in instant access to knowledge anytime and anywhere has enormous benefits to learners, but will be restricted until wireless data access becomes more efficient and widely available. Hence, the availability of broadband and internet access for mobile learning is an indispensable necessity.

Regarding the content challenge, some students complained that some audio files were fast and incomprehensible. A similar problem was reported by Al-Busaidi (1997) when indicated that speed delivery of the listening materials was one of the major causes of listening difficulties for the Omani EFL students. Brown (2001) also referred to this problem as a rate of delivery which is a factor that might block the process of comprehending a spoken message. Therefore, designers of mobile-based materials must consider the appropriateness of learning content so that the benefit of mobile learning is attained. The listening materials must be understandable, meaningful and purposeful to the target group of learners. For the mobile learning method to arouse the learners' desires to continue learning and to improve their listening ability, the listening materials should address the learners' needs and be delivered in a non-distractive manner.

6. Conclusion

The current study emphasized the effectiveness of contextualizing m-learning practices on improving listening skills and revealed the merits of the integration of mobile phones in English language classes. Mobile learning can motivate language learners to be self-regulated so that more practices of the language and exposure take place. Also, the findings of the study showed that EFL learners have a positive attitude towards the use of mobile phones in language learning. However, the participants in the study stressed some challenges that were related to mobile software design, screen sizes of mobile phones, network connections, and the listening content. The proper development of the mobile learning strategy requires pedagogically adjusted curriculum and approaches to fit the new features of the learning-based mobile resources, and properly trained and motivated teachers and learners.

7. The study limitations

The sample is limited to male students who were enrolled in English language program courses in a military training institute in the academic year 2019-2020. Also, the study is only tackling English listening comprehension skills; therefore, the results of this study will not be applied to any other content area, but rather confined to listening comprehension achievement. Besides, it was difficult for the researcher to control the listening exposure of the control group outside the classroom and limit that exposure to the normal listening classroom only as they might use other mobile listening-oriented apps to improve their listening comprehension ability.

8. Recommendations

The findings of this study imply the need for more exposure and practices in the target language. Teachers should emphasize on extensive listening and encourage students to listen for pleasure through adopting mobile technologies outside the classroom. Furthermore, utilizing any mobile-based strategy in ELT curriculum should be in line with a sufficient training of teachers on the method, design of resources, and policies of evaluation, too. Therefore, the study recommended more professional development training courses for all EFL teachers in the Omani context aiming at familiarizing language teachers with mobile learning applications. The study also suggested more investigations on the EFL teachers' perceptions towards using mobile learning in their classroom activities in Omani schools.

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Appendix 1

Students' Attitudes towards Using Mobile devices in learning English Listening Skills

First: In the following list, please indicate the level of your agreement and disagreement with the statements regarding your attitudes towards using mobile devices in English language learning.

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Mobile learning provided more extensive listening practice.					
2. Listening practice through the mobile device improved my listening ability.					
3. Mobile devices helped me to practise listening anytime and anywhere.					
4. I listen to audio materials using my mobile device more than once.					
5. Using mobile devices motivated me to practise the listening skill.					
6. The mobile device reduced my anxiety in learning listening skill.					
7. I enjoyed the exercises through my mobile device than the traditional way.					
8. Mobile devices provided immediate feedback while listening.					
9. Mobile devices assisted me in selecting listening tasks outside the classroom.					
10. Mobile devices helped me manage my listening activities outside the classroom.					
11. Mobile devices helped me evaluate my listening skills outside the classroom.					

12. Listening practice through mobile devices helped me learn a variety of English vocabulary.					
13. I believe I can improve my listening skills alone through mobile devices without the teacher's help.					
14. I would like to practise other English skills using mobile devices.					
15. I encourage others to use mobile devices for English language learning.					
16. I would like to listen to authentic materials through my mobile device.					
17. I prefer mobile phone exercises to paper-based listening exercises.					
18. I am satisfied with using the mobile device for practising listening skills.					

Second: Open Questions:

Please read and answer the following questions:

1. What did you like most about using mobile devices in learning English listening skills?

.....

2. What difficulties did you face when using mobile devices for learning English Listening skills?

.....

3. What do you suggest to improve the use of mobile learning in teaching English listening skills?

.....

4. Do you have further comments you would like to add?

.....

>>>Thank you<<<