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by Pbi Unimus

Submission date: 14-Feb-2022 09:06AM (UTC-0500)

Submission ID: 1624036899

File name: Revised_Article_Final_14_February_2022.docx (78.6K)

Word count: 5669

Character count: 34847

Boosting EFL Learners' Listening Comprehension through a Developed Mobile Learning Application: Effectiveness and Practicality

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Abstract: Mobile-Assisted Language Learning (MALL) is prevalent in English instruction to enhance students' learning interest and motivation. However, its effectiveness and practicality have rarely been well confirmed. This study intended to investigate the effectiveness and practicality of utilizing a developed Mobile Learning Application (MLA) in listening instruction. A quasi-experimental design was applied in the present study with a test and a questionnaire as research instruments. The pre-test and post-test were administered to examine the effects of administering MLA on 86 undergraduate students' listening comprehension, and the questionnaire was employed to investigate 184 students' perceptions of the practicality of MLA in mastering listening comprehension as data triangulation. Descriptive and inferential statistics were utilized to analyze the collected data. The results showed that a teacher-developed MLA is feasible for effective learning media to enhance students' listening comprehension with the significant difference between pre-test and post-test scores. Moreover, it also accentuated that students' perception obtained a positive perception of the practicality of a developed MLA in mastering their listening comprehension. This finding encourages EFL teachers to use a mobile learning application in listening instruction to promote students' independence in mastering listening skills.

Keywords: Mobile Assisted Language Learning, Mobile Learning Application, EFL, Listening Instruction

Introduction

Listening skill plays a fundamental role in language acquisition (Vandergrift & Baker, 2015). This skill considerably contributes to mastering English as a Foreign language for communicative purposes. By increasing listening skills, English language learners will have a

better ability in English communication because listening skills help students recognize several aspects of speaking skills such as multifarious accents, intonations, and pronunciations of different languages users (Andujar & Hussein, 2019). However, EFL students receive minimal listening exposure in learning English because daily communication in an EFL context is conducted in a language other than English. As a result, they have experienced difficulties mastering listening skills. When students practiced listening skills, for example, they faced unfamiliar word sounds, little use of listening strategies, and a dearth of vocabulary (Mulyadi, 2018).

EFL listening skill needs more attention in language instructions to familiarize students with listening exposure to support more fluent communication. However, most English language teachers still consider this listening skill a passive activity that does not receive listening pedagogical instruction in the classroom instead of listening testing (Emerick, 2019). Furthermore, Indonesian EFL students, in particular, frequently postpone learning English for communication due to a variety of problems, including a lack of available learning resources at the local level and a lack of daily opportunities to practice listening (Mulyadi et al., 2017). As a result, teachers frequently struggle to locate materials that correspond to their student's level of English competence.

Regarding the problems, improving listening skills in learning English requires learning media that are familiar to students. The prevalent learning media the students are familiar with is mobile learning media. The practicality of mobile learning medium features and functions facilitates language learners to quickly access learning resources and activities. Mobile learning media such as smartphones are considered more accessible and practical either inside or outside the classroom than computer-based learning media since most students have had smartphones (Mutiarasari & Kristina, 2020). Learning English using cellphones or mobile devices allows students to be more involved in the learning process and more quickly access learning resources (Wan Azli et al., 2018). The practicality of features and functions of mobile devices facilitates language learners to more promptly access learning resources and activities in listening mastery (Salih, 2019).

Mobile learning media can be utilized as student-centered language learning (Cahyana et al., 2018). Besides, a mobile application as a mobile learning medium is regarded as an innovative and compelling learning medium without institutional and technical assistance (Burstson, 2017). It is a practical learning medium either inside or outside the classroom (Hsu, 2013). Moreover, considering the aforementioned merits of mobile language learning, the language pedagogical practices integrating mobile devices can potentially relate to students' real lives and their language learning needs (Kukulkska-Hulme et al., 2015).

The previous study found that EFL teachers have experienced difficulties in providing appropriate mobile learning media for pupils to utilize in and out of the classroom (Mulyadi et al., 2020; Elfiona et al., 2019). Especially in listening instruction, previous research reported that mobile applications applied in EFL classrooms were existing learning media from online sources, such as SMS via mobile phone (Elfiona et al., 2019), unspecific mobile devices (Salih, 2019), mobile social media (Xu, 2020), WhatsApp (Andujar & Hussein, 2019). However, inconsiderable research focused on mobile learning media that EFL Educators developed to suit their students' characteristics and learning needs. While assisting students in using mobile learning media, EFL teachers must consider aspects of language learning content relevant to their student's learning needs and characteristics (Churchill et al., 2016). To wit, in teaching EFL listening classes, mobile learning media with appropriate language tasks play a pivotal role in encouraging students' learning engagement (Andujar & Hussein, 2019) and suit their learning needs (Pérez-Paredes et al., 2018).

To this end, the study focused on investigating a developed mobile learning application (MLA) that we developed in listening instruction. This mobile learning application was developed by EFL teachers using practical software, i.e., Smart Application Creator 3.0 (SAC), which uses an intuitive User Interface, interactivity, and design (Suryaningtyas et al., 2019). This software's applications are compatible with Android. This application was installed on an android phone in the form of Application Package Files (APK). In addition, the learners can install applications on their mobile devices with a memory capacity of 35 megabytes or less.

This mobile learning app was validated by two experts, including content and media experts. A content expert evaluated learning materials, while an expert in media validated the appearance and usability of mobile learning media. Expert media validation results show that the media's graphic feasibility was categorized as excellent. Language feasibility is good. Meanwhile, the material expert asserted the content eligibility aspects of developed media and the quality of exercises were included in a good category. Moreover, these validation results improved the feasibility level of a developed MLA in creating effective learning media in listening instruction.

This developed MLA was designed with more interactive language materials that can be learned offline. Furthermore, language learning tasks and exercises related to listening comprehension needed internet connection so the EFL teachers could assess students' learning progress. This application has also been granted by the Ministry of Human Rights of Indonesia with Intellectual Property Rights No. 000200981.

In particular, the present study aimed to investigate the effectiveness and practicality of a developed MLA in listening instruction. To achieve the research goal, the following twofold research questions were formulated:

1. Does students' listening proficiency taught with a developed MLA differ from students' listening proficiency without a developed MLA?
2. How do EFL learners perceive the use of a developed MLA in mastering listening comprehension concerning its practicality?

Literature review

Mobile-Assisted Language Learning (MALL)

The use of mobile technology for teaching and learning has received much attention in recent years. As a result, mobile learning has grown in popularity as a method of language acquisition. This mobile learning has been accentuated in Mobile-Assisted Language Learning (MALL), which refers to the utilization of mobile devices in EFL or ESL instruction. One of MALL characteristics is that language learning can be carried out more dynamically because students and teachers can interact more quickly and flexibly both inside and outside the classroom (Kukulka-Hulme et al., 2015). Besides, mobile devices provide various features and diverse applications that underpin language learners to enhance their language skills (Nariyati et al., 2020).

There are many benefits of using MALL for EFL students and teachers. They are easily accessible learning materials, increase student motivation and interest in learning, are easy to carry and use, provide more opportunities for students to get more practice, and support quick feedback or reinforcement (Elfiona et al., 2019, Octavia et al., 2019; Kim, 2017). This MALL allows language learners to have speedy access to the learning contents and activities spontaneously, informally, and individually. It enables students to have high learning motivation and their learning involvement (Xu, 2020) because they can have well-timed feedback and conduct self-evaluation (Kukulka-hulme & Viberg, 2018). Furthermore,

previous research found that Indonesian EFL learners' low level of mobile learning literacy was deemed challenging for teachers and education authorities to successfully incorporate MALL in the learning process (Mutiarasari & Kristina, 2020). Even so, all participants agreed that MALL is a potential tool for constructivism in EFL learning (Hsu, 2013).

Mobile Language applications

The concept of mobile-assisted language learning (MALL) is in great demand in learning English using mobile devices that provide portable and easily accessible learning materials and activities for students (Kim, 2017). Mobile devices offer compelling and student-centered alternatives to EFL learning using a wide variety of applications. Diverse applications can be utilized in mastering English language in order to enhance vocabulary, master reading and listening comprehension, and assist with translation, spelling, and grammar revision (Alvarenga et al., 2020; Ameri, 2020; Persson & Nouri, 2018; Tappoon, 2020). Many of these applications can be downloaded and used cheaply and even free. Language teachers can take advantage of the app to facilitate faster, more dynamic, and engaging student learning. This mobile learning application can also enhance students' learning motivation and engagement because of its audio-visual integration (Khatib & Vaezi, 2017). Moreover, mobile technology integrated with language learning enables learners to personalize their learning process due to their own learning preferences, needs, and abilities (Sun & Yang, 2015).

Mobile learning Applications in Listening Instruction

The use of mobile technology to teach listening skills can help teachers be more creative in their design of teaching materials and media, increase student mobility and accessibility, and provide a great platform to provide learning materials anytime and anywhere (Elfiona et al., 2019). According to a previous experimental study, 60 second-year students at Al Iraq University improved their listening comprehension after receiving instruction via mobile learning media (Salih, 2019). In addition, a mobile learning application with voice-based chat conversation assisted 61 EFL students of an Administration and Business Management department have gained listening comprehension improvement because they could adapt to different accents and tones (Andujar & Hussein, 2019). However, we found some limitations in the aforesaid previous research. Less interaction and collaboration were observed throughout the teaching process, as well as only half of the students took part in the task-based speaking exercises. Thus, a developed mobile learning application that facilitate EFL learners to have particular application to meet the learning students' learning needs and characteristics was observed in the present study.

Method

A quantitative method was applied in the present study with two instruments, i.e., test and questionnaire. The test was 50 multiple choice questions adapted from the post-listening test of Longman TOEFL Preparation 2004. This test was employed because it has been a standard test that has been widely used recently for measuring EFL learners' listening ability after receiving MALL (Al Qasim & Al Fadda, 2013; Kim, 2017). This test comprised thirty questions of short dialogues, eight questions of long conversations, and twelve questions of long talks.

Before and after listening instructions, this test was administered to disclose mobile learning media's effectiveness on students' listening comprehension. To investigate this effectiveness, 86 sophomore EFL undergraduate student teachers, of which 30 males and 56 females age ranged from 18 years to 21 years, participated in this study. These participants

came from the English education study program at five Universities in Indonesia. They were divided into an experimental class with 45 students and a control class with 41. The experimental class received 12 meetings of EFL listening instruction with a mobile learning application integrated into the University Learning Management System. Meanwhile, the control one received 12 meetings of EFL listening instruction only via University Learning Management System without a mobile learning application.

Moreover, a questionnaire adapted from the preexisting studies (Klimova & Polakova, 2020); (Wan, Azli et al. 2018); (Mutiarasari and Kristina 2020) was employed as data triangulation to investigate students' perceptions of mobile learning media practicality in listening comprehension after utilizing a developed MLA. Two experts validated this questionnaire to ascertain the proper linguistic and content aspects of the questionnaire items. Subsequently, fifteen third-year EFL student teachers tried the questionnaire draft to measure its statistical validity and reliability. The statistical validity results of Pearson Correlations show 16 questionnaire items out of 20 were smaller than 0.05 level of significance, i.e., 16 valid items in the form of a Likert scale with five choices ranging from *strongly agree* to *strongly disagree* were administered in the present study. Meanwhile, the questionnaire reliability was assessed with internal consistency method. The result of Cronbach's alphas of questionnaire scale was 0.78 in which the questionnaire reliability was categorized as good level (Robert F, 2012) with a high internal consistency (Ho, 2014).

The questionnaire respondents were 184 undergraduate students of English departments from five universities (University A with 45 respondents, University B with 32, University C with 40, University D with 35, and University E with 32) in Central Java and East Java. Those students experienced utilizing A developed MLA that their lecturers voluntarily applied to their listening instructions. The questionnaire was distributed to all participants via email and WhatsApp, with a two-week completion deadline.

A developed MLA (*open the link*) in this study was built and designed to teach listening skills to students enrolled in an undergraduate study program in English education. This application's content is divided into six sections: listening to monologues, listening to dialogue, listening to long conversations, listening to storyboards, listening to video interviews, and listening to interviews.

The data that have been obtained are analysed using Descriptive statistics and inferential statistics through SPSS 21. The test results were analysed using paired and independent-sample t-tests to determine students' listening scores between experimental and control groups. Moreover, the data from the questionnaire were analysed using descriptive statistics to enumerate the percentage of EFL student teachers' preferences (strongly disagree to strongly agree) in responding to the questionnaire. Subsequently, the accumulation of "agree" and "strongly agree" preferences was presented and considered students' agreement using a mobile learning application.

Results and Discussion

The effectiveness of a developed MLA in EFL listening instruction

The effectiveness of MLA in EFL listening instruction was obtained based on a comparison of EFL students' TOEFL listening scores between experimental class and control class. The normality test was conducted before conducting inferential statistics with a Pair sample t-test and independent t-test. The significance values of pre-test scores for experiment and control classes were 0.200 and 0.127, respectively, according to these test results based on Kolmogorov-Smirnova. Additionally, the significant values for post-test scores were 0.088 for the experimental class and 0.190 for the control class. The scores, as mentioned earlier, of

significant values, were greater than a significant value (0.05), which implied that the data was a normal distribution. Thus, it could be continued to the subsequent statistical analyses of parametric tests.

After performing the normality test, the participants' pre-test scores were used to determine homogeneity of variance. Based on the results of Levene's Test for Variance Equality, the homogeneity test yielded a significant value was greater than 0.05 (0.167 > 0.05). As a result, the listening abilities of participants in both the experimental and control classes were comparable and suited for receiving the treatment.

Furthermore, an independent sample t-test of listening scores between the experimental and control groups was administered to determine the significant value. As shown in Table 1, the mean scores for both groups were slightly different. The results yielded that there is no significant difference with p-value = .743 (see Table 2) which is bigger than the standard error (p > 0.05). Therefore, it can be deduced that students' listening comprehension for both groups was homogenous before receiving EFL listening instruction treatment.

Table 1. Paired samples statistics of both pre-tests and post-tests of students' listening comprehension

	Sample	Mean	n	SD	Sig. 2-tailed
Experimental Class	Listening Pre-test	70.9600	45	12.75565	.000
	Listening Post-test	78.0000	45	9.41630	
Control Class	Listening Pre-test	69.7917	41	12.00717	.083
	Listening Post-test	71.6667	41	10.31110	

To compare the enhancement of students' listening comprehension, their mean, standard deviation (SD), and Paired Sample Test (Sig. 2-tailed) of their listening scores between experimental and control classes before the experiment and the end of the experiment were calculated and analysed. As shown in Table 1, the improvement from pre-test and post-test mean scores in the experimental class was 7.04 points with a significant difference (p < 0.05). However, students in the control class experienced a slight improvement with 1.875 points. Furthermore, a pair sample test result shows no significant p-value (0.083). This result corroborates the previous study that English learners perceived that mobile-assisted language learning enables them to enhance their English language learning process (Wan Azli et al., 2018). One possible explanation for this beneficial effect is that learning English through mobile learning media can facilitate subconscious language acquisition in comparison to learning English through a computer, which typically results in a conscious learning process (Jarvis & Achilleos, 2013).

An independent sample t-test was employed to analyze the post-test scores of listening comprehensions to ascertain the difference between the experiment and control classes. The result shows that the experimental class outperformed the control class with a statistically significant difference with p = 0.029, as shown in Table 2. The benefits of utilizing mobile learning media in EFL instruction were to enhance the students' listening comprehension. This result was supported by a study that the pedagogical implications of MALL are that teachers should find ways to incorporate it both inside and outside of their FL listening Instruction in the classroom. To enhance the usefulness of MALL, teachers' control may be required to a certain amount, as previously stated.

Table 2. Independent sample T-Test results for the experiment and control class in the listening test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	That's it, that's	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Pre-test	Equal variances assumed	.232	.632	.330	47	.743	1.168	3.542	-5.958	8.294
	Equal variances not assumed			.330	46.98	.743	1.168	3.538	-5.949	8.285
Post-test	Equal variances assumed	.141	.709	2.25	47	.029	6.333	2.82	.662	12.004
	Equal variances not assumed			2.24	46.20	.030	6.333	2.824	.649	12.018

The result is in accordance with the previous research that EFL students in Egypt experienced better mean scores of EFL listening comprehension after receiving mobile-assisted language learning intervention (Helwa, 2017). This finding appears to be the subsequent significant finding in the study that was in line with the previous research, i.e., the mobile application helps students prepare for final achievement tests with corrective feedback as they get a learning process that can be accessed from anywhere and anytime (Klimova & Polakova, 2020). Moreover, an action study is commensurate with this study that the mobile language learning application significantly influenced Chinese EFL learners' English listening proficiency but not for their speaking after receiving the treatment in the second cycle (Xu, 2020).

The positive effects of MLA are dealt with the integration of mobile devices in language learning with three types of mobility. They are mobility devices that facilitate students to use their mobile devices in the classroom, device mobility that refers to active participation in learning, and mobility of learning experiences that refer to diverse information in real-world contexts where students can experience a variety of authentic materials (Godwin-Jones, 2016). In short, a variety of authentic language materials and practical learning media should be considered critical factors in implementing technology in listening instruction (Mulyadi et al., 2021).

EFL learners' perception of the use of MLA in mastering listening comprehension

Table 3 elucidates students' perceptions of using MLA in mastering listening comprehension from the questionnaire. Students responded to the questionnaire of their experiences with this application without realizing that the teachers were the ones who created it themselves. The findings of this questionnaire will be deduced the practicality of utilizing MLA in listening instruction.

Table 3. *Students' perceptions of utilizing MLA in mastering Listening Comprehension*

No	Statement	Totally Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Totally Disagree (%)
1	Interacting with a mobile learning app helped me have more listening comprehension practice.	24	64	12	0	0
2	Learning objectives of the listening course can be met by utilizing a mobile learning app.	16	68	16	0	0
3	The materials of the listening course using a mobile learning app become accessible and flexible.	12	68	20	0	0
4	A mobile learning app is practical to master English listening comprehension independently.	12	64	20	4	0
5	I appreciated the automatic corrective feedback of the app of mobile learning app.	20	56	24	0	0
6	I enjoyed using a mobile learning app to practice English listening skills.	28	44	28	0	0
7	Utilizing a mobile learning app fostered me to perform better from previous listening exercises.	16	56	28	0	0
8	Utilizing a mobile learning app encourages me to control my task effectively.	12	60	24	4	0
9	I want this app to be implemented in future courses.	20	52	28	0	0
10	Using a mobile learning app makes me motivated to master a listening skill in English.	16	56	28	0	0
11	A mobile learning app enables me to spend my time studying English more efficiently.	20	44	36	0	0
12	A mobile learning app helped me prepare for the final test of the listening course.	16	48	32	4	0
13	Using a mobile learning app to practice listening comprehension makes me fun and less stressed.	16	40	36	4	4
14	I feel more engaged in listening class through a mobile learning app.	4	48	44	0	4

15	I have become confident in mastering English through a mobile learning app.	8	44	40	8	0
16	A mobile learning app enables me to accomplish listening tasks more quickly.	8	44	48	0	0

The majority of EFL students represented by 88%, 84%, and 80% respectively perceived that utilizing MLA helped them have more listening comprehension practices (88%), achieve learning objectives of the listening course (84%), and have accessible and flexible listening materials (80%). Integrating MLA in language classrooms allows learners to access various valuable materials, try multiple activities in mastering English, and interact with friends and lecturers using English (Wan Azli et al., 2018). Mutiarasari & Kristina (2020) support this finding that thirty Indonesian students perceived MLA as a portable, familiar, and accessible learning medium in mastering English skills. Thus, A developed MLA which provides enjoyment and interest for students is required to spend a considerable amount of time completing language learning tasks.

Table 3 also demonstrates that the same percentage (72%) of students perceived that a developed MLA is practical to master English listening comprehension independently with the automatic corrective feedback of the app of MLA. MLA in ESL instruction can help teachers encourage students to understand English language materials and practice their English more independently and intuitively (Wan Azli et al., 2018). Moreover, mobile application utilization has become popular in mastering foreign language mastery (Hsu, 2013) and improving students' self-disciplined and regulated learning (Hao et al., 2019). Furthermore, this mobile application is one of the technological advances that can enable students to have autonomous learning activities and access learning materials easily and quickly (Safara et al., 2019).

It is interesting to note that the percentage remains the same. 72% of students responded that they enjoyed using MLA to perform better from previous listening exercises, monitor the tasks effectively, and make them motivated in mastering listening skills. Furthermore, they would be expected to implement MLA for the future listening course. It demonstrates that the Mobile learning app was utilized positively in mastering listening comprehension. Thus, integrating a mobile application in EFL learning can empower learners to have better learning attention with attractive learning materials and activities (Wan Azli et al., 2018). This evidence shows that mobile language learning applications are required as technological education tools utilized in contemporary language learning contexts.

Unfortunately, the students' learning engagement, confidence, and ability to accomplish listening tasks more quickly were perceived by low percentages with the same rates, i.e., 52%. In the same vein, Lawrence's (2015) study revealed that only a half of Korean university respondents positively perceived mobile language learning applications. This case's possible reason is a lack of internal motivation that causes many undergraduate English students to have no interest in language learning. In line with the theory of learning motivation, the previous study purported that internal motivation is more important to learning sustainability in mastering language than external motivation like the use of mobile learning technology (Lawrence, 2015). Additionally, some non-learning activities such as sending messages and playing games frequently occur when students use mobile learning technology, which can disrupt the learning process (Burston, 2017). Therefore, EFL teachers need to prepare the contents and interactive language tasks in an attempt to improve their learners' motivations in English classroom activities. It is corroborated with suggestions of the previous research indicating that 70 English education students are strongly urged to continue improving their knowledge and skills in operating technology. Their ability to design instructional media

utilizing mobile technology has become essential since they will be the future teachers in the fast-growing digital era (Ameri, 2020).

Conclusion

The current study demonstrates the efficacy of EFL listening comprehension through a self-developed mobile learning application. The experimental group outperformed the control group by a statistically significant difference. The advantages of incorporating mobile learning media into EFL instruction included improving students' listening comprehension. The benefits of a self-developed MLA are discussed concerning the integration of mobile devices into language learning and their ability to connect students to access learning sources for listening comprehension materials.

According to EFL learners' perceptions of the utility of MLA in mastering listening comprehension, MLA enabled them to improve their listening comprehension practices, meet the learning objectives of the listening course, and have easily accessible and flexible listening materials. Furthermore, incorporating MLA into language classrooms allows students to gain access to a wide range of valuable resources, participate in a variety of English-related activities, and communicate in English with classmates and lecturers. Thus, it can independently master English listening comprehension through the app's automatic corrective feedback. Therefore, the mobile language learning application developed by EFL teachers is required as a technological education tool in contemporary language learning contexts. To wit, preparing content and interactive language tasks of MLA are needed to be taken into account to boost students' involvement in English listening activities and confidence in completing listening tasks.

This finding offers EFL teachers concerning MALL to integrate a mobile learning application that can facilitate listening learning with interactive learning media and motivate students to be more independent. However, the present study's potential limitation is its small sample size, so the findings may not be generalizable to EFL learning contexts in general. Thus, it is worthwhile to investigate the implementation of a developed MLA in a large research sample.

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