

## Integrating Mobile Assisted Language Learning in English Listening: A Synthetic Review

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### ABSTRACT

Mobile-assisted language learning (MALL) has proven effective in many aspects. It is necessary to review the effects of MALL on English listening among learners who take English as a Foreign Language (EFL). Based on journal articles indexed by Scopus and Web of Science from 2018 to 2022, using the keywords search of MALL and English listening, nine articles were selected via further screening. A synthetic literature review was conducted. It has been revealed that the applications under experiment in the last five years have generally been either self-developed or web-based. The research designs employed by researchers are either quantitative or mixed. Most importantly, the review shows that mobile-assisted language learning positively enhances English listening skills in differentiating tones and accents, segmenting words in natural speeches, expanding vocabulary, and improving pronunciation and spoken language. It also contributes to self-directed or independent learning, increases motivation, and cultivates learning habits. As for EFL lower achievers, it is reported that recording assignments and dictation exercises greatly help. On top of it, this review also synthesizes the theories and suggestions to promote MALL in English listening teaching and learning practices.

**Keywords:** *English listening, mobile-assisted language learning, synthetic review.*

### 1. INTRODUCTION

Mobile and information technology have changed the way we communicate. In this digital age, the continuous revolution of information and technology is unprecedentedly transforming our education as well (Burbules et al., 2020; Criollo-C. et al., 2021; Granić & Marangunić, 2019; Ratheeswari, 2018). The sudden outbreak of COVID-19

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accelerated the use of information technology in education for emergency purposes (Kaqinari et al., 2021). Nowadays, mobile learning assisted by mobile technology enables learners to access information without constraints of time and place, altering how teachers instruct and how students learn (J. X. Gao, 2016). It is believed that this type of learning under the circumstances of widespread intelligent terminals is different from previous computer-assisted language learning because of its mobility and portability (Kukulska-Hulme & Shield, 2008).

Mobile learning is considered a better way of language acquisition (Miangah & Nezarat, 2012). Formal or informal learning outside classroom settings can promote conventional learning via mobile-assisted language learning (MALL) (Azli et al., 2018). Teachers can send language learning materials remotely online, and students can learn them simultaneously or at some other time at their convenience. Young language learners, especially, now prefer to have their self-paced language learning with the aid of an Internet environment and mobile applications (apps) that provide various types of texts and authentic language materials (Arvanitis, 2019). Many students use different types of mobile apps for English dictionaries to facilitate their language-learning process (Qiao, 2021).

However, studies also show concerns about the unfavorable states of students' MALL experiences. For example, the researcher shows that students may lack clear plans while using MALL for English learning (Xie & Li, 2021); they may also lack time investment and persistence in using it (Liu et al., 2021); some English learning apps lack the sense of authority since they are developed without the censorship of official institutions (Wang & Luo, 2019).

There are undeniable advantages and disadvantages to applying for MALL. After all, technology is not a panacea for all of the problems in mobile-assisted language teaching and learning (Hu & Hsu, 2021). Therefore, experiments are necessary to improve the positive effects and reduce the negative influential factors. In addition, more attention should be given to effect research, especially empirical research based on experimental design and first-hand data collection (Zhang, 2021). In these experiments, creating instructional designs is significant, especially about what can be done in the formal learning environment and what can be done in informal learning beyond the classroom, while also searching for a way to combine class and extracurricular (Kukulska-Hulme, 2009). For this purpose, this article aims to synthesize mainly the effects of integrating MALL into English listening in the past five years.

## **2. LITERATURE REVIEW**

### **2.1 Mobile-Assisted Language Learning**

Mobile-assisted language learning is a sub-division of mobile learning (Viberg et al., 2020). It is called language learning using mobile technology (Wu, 2018). It is considered an approach to language learning supported and enhanced by handheld mobile tools (Hassan & Islam, 2020).

According to Klopfer et al. (2002), MALL has unique features for mobile devices. Firstly, it has the characteristics of portability, as also emphasized by Kukulska-Hulme and Shield (2008), which allows users to carry mobile devices around. Secondly, it boosts social interaction and communication among users, enabling learners to exchange ideas

online. Thirdly, it is susceptible to context because it can provide real-time data about learners' location, environment, and time. Fourthly, it has the characteristic of connectivity since the devices can be connected to a shared network. Fifthly, it has the trait of individuality, which makes personalized learning possible since different activities can be tailored to learners' individual and specific needs. These unique features of MALL are very popular among language learners. MALL has become a new trend in the past one or two decades (Sen, 2021). For instance, students prefer to use an online dictionary in their reading activity because of its efficiency and flexibility (Waloyo et al., 2021). Such applications are greatly favored by EFL college students (Liu et al., 2021).

MALL applications and activities help improve EFL learners' linguistic proficiency. According to Kusmaryani et al. (2019), smartphone features, such as dictionaries, videos, audio, and other applications, can provide a contextual learning environment that facilitates learners' speech comprehension, oral fluency, pronunciation, vocabulary, grammar accuracy, and accent. Dousti et al. (2021) investigated the effect of WebQuest-based training on students' academic writing skills. They discovered a significant improvement in EFL learners' overall writing performances and a small effect size in the control group in the organization, focus, elaboration, and vocabulary sub-skills. However, the conventions sub-skills showed no significant improvements. Le (2021) integrated the applications of Kahoot, Wordwall, Google Form, and Padlet into integrated skills teaching and showed that combined usage of the four applications was conducive to students' active learning, self-study, and students' attention span. The study survey also showed that EFL learners in Vietnam preferred Google Forms and Kahoot. In addition, various mobile applications make MALL available with authentic language materials that could improve English-speaking performances (Chen & Hwang, 2020).

## **2.2 English Listening**

As an essential linguistic skill, listening is an act of recognizing and processing spoken sounds (Nunan, 2023). It is a significant and easily neglected communication skill (Renandya & Hu, 2018). For EFL learners, English listening can be very challenging because they must process both content information and linguistic knowledge and understand, analyze, remember, and even translate sometimes (H. S. Kim, 2013). The difficulty level can be raised when there are two or more simultaneous talkers, which increases the cognitive load of listeners (Fumero et al., 2022). Emerick (2019) highlighted the importance of authenticity and held that listening items should be contextualized and interest-arousing for EFL learners. As technology has been extensively applied in education, researchers (H. S. Kim, 2013; Liu et al., 2021) also suggested that mobile applications could be an effective tool for students to be exposed to authentic and meaningful listening materials to become proficient listeners. Chang et al. (2018) studied the differences in English listening comprehension, cognitive load, and learning behavior between outdoor MALL and indoor computer-assisted language learning (CALL), showing that the former even outperformed the latter because students in outdoor MALL environment brought about better English listening comprehension; they had lower cognitive load and their self-reported learning interests and interactions were enhanced compared with those who had indoor CALL.

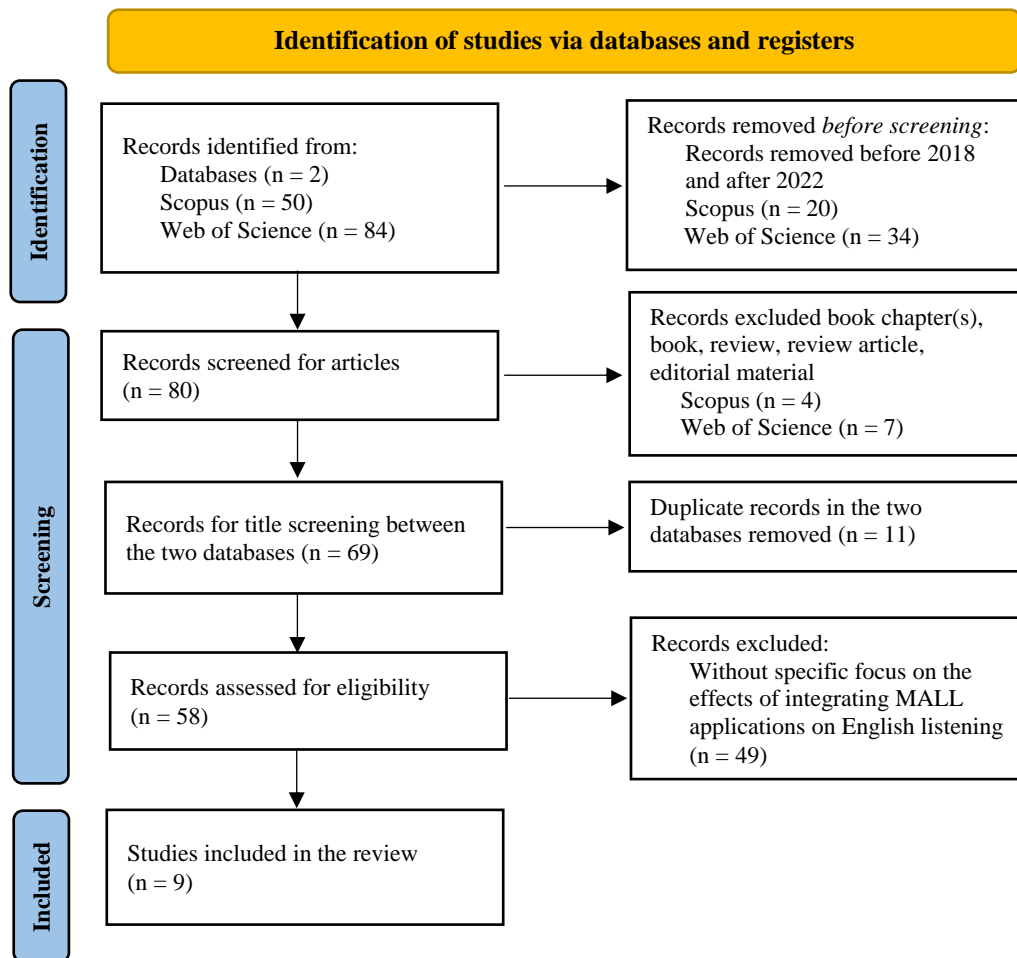
Hasan and Islam (2020) studied the effects of MALL in teaching and learning listening skills among university students. They revealed that MALL was significantly effective and put forward strategies for teachers to use MALL best to enhance English

listening skills. Alzieni (2020) conducted a test to verify the effectiveness of MALL-based listening learning at Dubai Men's College and found there was a significant difference in the post-tests among the experimental group, and the game-like setting of MALL encouraged students' informal learning and meantime increased their learning motivation and engagement. Y. J. Kim (2018) focused on English listening performance and anxiety among Korean college students, showing that MALL effectively improved their scores. Besides, the study also indicated that students in the experimental group displayed decreased anxiety. Therefore, it is necessary to summarize the experiments on the possible effects of integrating MALL in English listening in different contexts in recent years to use the applications in MALL teaching and learning design and activities better and give insights into future MALL research. To achieve these goals, the following research questions are formulated:

- RQ1. What applications are experimented with?
- RQ2. What are the effects of MALL in the experiments?
- RQ3. Which research methods are adopted to test the effects?
- RQ4. What theories are adopted in the experiments?
- RQ5. What are the suggestions for integrating MALL in the experiments?

### **3. RESEARCH METHODS**

Meta-synthesis combines reviewing and synthesizing qualitative factors to generate new understandings (Walsh & Downe, 2005). This synthetic research includes essential research syntheses of current studies' findings, methodology options, and suggestions. The review used a search, appraisal, synthesis, and analysis framework (Grant & Booth, 2009). The data gathering involved screening for journal articles based on keyword searches with inclusion and exclusion criteria. A Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) was used to minimize bias (Liberati et al., 2009). The flow diagram was generated using PRISMA 2020 for new systematic reviews, including searches of databases and registers.



**Figure 1.** Flow chart for item selection according to the PRISMA model.

The data was searched and obtained from Scopus and Web of Science. The two keywords are MALL and English listening. Other criteria for inclusion and exclusion are the date range between 2018 and 2022, including journal articles and conference papers, while excluding the other types, such as review papers or articles, chapters of books, and research articles published in languages other than English. This enabled researchers to focus on the findings of experimental studies concerning using MALL in English listening alone. The primary method for further analysis is narrative synthesis, which involves summarising and elucidating the findings of many studies using words and text (Popay et al., 2006).

#### 4. RESULTS AND DISCUSSION

By searching the two databases, Scopus and Web of Science, nine articles were selected based on the inclusion and exclusion criteria mentioned in the research methodology. There are three articles that Scopus and Web of Science can index. There is only one article selected in 2018, three articles in 2019, no related articles in 2020, the

year declared to be the outbreak of COVID-19 by the World Health Organization, three articles in 2021, and two articles in 2022.

#### 4.1 Results

The articles selected for analysis are listed according to the year of publication in the following table.

**Table 1.** Selected articles for synthetic review.

<i>Author(s)</i>	<i>Year</i>	<i>Title</i>	<i>Journal</i>	<i>Source</i>
Çakmak, F., & Erçetin, G.	2018	Effects of gloss type on text recall and incidental vocabulary learning in mobile-assisted L2 listening	<i>ReCALL</i> , 30(1), 24–47. <a href="https://doi.org/10.1017/S0958344017000155">https://doi.org/10.1017/S0958344017000155</a>	Web of Science
Rashtchi, M., & Mazraehno, M. R.	2019	Exploring Iranian EFL Learners' Listening Skills via TED Talks: Does Medium Make a Difference?	<i>Journal of Language and Education</i> , 5(4), 81–97. <a href="https://doi.org/10.17323/JLE.2019.9691">https://doi.org/10.17323/JLE.2019.9691</a>	Scopus & Web of Science
Andujar, A., & Hussein, S. A.	2019	Mobile-mediated communication and students' listening skills: A case study	<i>International Journal of Mobile Learning and Organisation</i> , 13(3), 309–332. <a href="https://doi.org/10.1504/IJML.2019.100432">https://doi.org/10.1504/IJML.2019.100432</a>	Scopus
Hwang, G.-J., Hsu, T.-C., & Hsieh, Y.-H.	2019	Impacts of Different Smartphone Caption/Subtitle Mechanisms on English Listening Performance and Perceptions of Students with Different Learning Styles	<i>International Journal of Human-Computer Interaction</i> , 35(4–5), 333–344. <a href="https://doi.org/10.1080/10447318.2018.1543091">https://doi.org/10.1080/10447318.2018.1543091</a>	Scopus & Web of Science
Hu, W.-C., & Hsu, S.-T.	2021	Beyond technocentrism: Improving Lower-Achiever's English Listening Performance by Using Mobile-Assisted Language Learning on University of Technology students	<i>ICICM</i> 2021. 98–102. <a href="https://doi.org/10.1145/3484399.3484413">https://doi.org/10.1145/3484399.3484413</a>	Scopus
Mallampalli, M. S., Anumula, V. S. S., & Akkara, S.	2021	Enhancing Second Language Listening Skills Through Smartphones: A Case Study	<i>1192 AISC</i> , 347–356. <a href="https://doi.org/10.1007/978-3-030-49932-7_34">https://doi.org/10.1007/978-3-030-49932-7_34</a>	Scopus
Read, T., Kukulska-Hulme, A., & Barcena, E.	2021	Supporting listening comprehension by social network-based interaction in mobile assisted language learning	<i>Porta Linguarum</i> , 2021(35), 295–309. <a href="https://doi.org/10.30827/portal.in.v0i35.15341">https://doi.org/10.30827/portal.in.v0i35.15341</a>	Scopus & Web of Science
Jia, C., & Hew, K. F. T.	2022	Supporting lower-level processes in EFL listening: the effect on learners' listening proficiency of a dictation program supported by a mobile instant messaging app	<i>Computer Assisted Language Learning</i> , 35(1–2), 141–168. <a href="https://doi.org/10.1080/09588221.2019.1671462">https://doi.org/10.1080/09588221.2019.1671462</a>	Web of Science
Mulyadi, D., Aimah, S., Arifani, Y., & Singh, C. K. S.	2022	Boosting EFL Learners' Listening Comprehension through a Developed Mobile Learning Application: Effectiveness and Practicality	<i>Applied Research on English Language</i> , 11(3), 37–56. <a href="https://doi.org/10.22108/ARE.2022.130726.1785">https://doi.org/10.22108/ARE.2022.130726.1785</a>	Scopus

## **4.2 Discussion**

### **RQ1. What applications are experimented with?**

By synthesizing the experiments in these nine articles, it is found that there are mainly two types of MALL. The first type is using developed mobile applications or interfaces. For example, Çakmak and Erçetin (2018) used a mobile-assisted listening application developed and optimized for Samsung Galaxy Mini devices. Read et al. (2021) studied an Audio News Trainer application created to help students with their English listening comprehension strategies. Mulyadi et al. (2022) investigated a mobile learning application developed by EFL teachers for listening instruction using practical software, Smart Application Creator 3.0. Hwang et al. (2019) tested three mobile-assisted language learning interfaces using three types of captions: partial English captions, full English captions, partial English captions, and Chinese translations. The second type of MALL experiment uses mobile phones to get access to web-based applications or interfaces. For example, TED talks (Rashtchi & Mazraehno, 2019), YouTube videos and TED talks (Mallampalli et al., 2021), mobile instant messaging of WhatsApp (Andujar & Hussein, 2019), WeChat (Jia & Hew, 2022), or Voicetube, Quizizz, Padlet, and Mentimeter (Hu & Hsu, 2021).

This result is in line with the findings of J. X. Gao (2016). According to J. X. Gao (2016), depending on the technology carrier, the application of mobile devices, MALL, can be divided into two types: standalone applications and web-based applications. The former is installed in the mobile device or the device itself and does not require constant network access to function, while the latter needs to always be online to obtain learning resources. However, nowadays, the majority of studies concentrate on web-based applications. Or the combination of the two types (Y. Gao, 2021). For example, the Audio New Trainer application under the study of Read et al. (2021) has two versions: the Facebook-enabled and the non-Facebook-enabled versions. The application, tested by Çakmak and Erçetin (2018), was connected to a web service with PHP language, MySQL database, and JSON data interchange standard and downloaded the experiment materials so each usage of the participants could be sent to the web service and recorded in the database. The web control panel also allowed the researchers to start and terminate the experiment and download the fundamental data about the participants.

In fact, no matter which type of MALL, either self-developed or integrated with existing applications or interfaces, the study of MALL strives to obtain specific teaching and learning effects, aiming to improve EFL students' English listening skills by taking advantage of the unique features of mobile learning.

### **RQ2. What are the effects of MALL in the experiments?**

Using MALL in English listening can have various positive effects. All of the experiments using the above applications or interfaces have proved their effects in improving students' English listening proficiency to various degrees. The impacts go beyond the linguistic aspect, as shown below.

MALL is proven to be both effective and practical. Mulyadi et al. (2022) studied a teacher-developed mobile-assisted language learning application and found that it effectively improved students' listening comprehension with significant statistical differences. Participants also perceived it practical since MALL could improve their listening comprehension practices, satisfy their learning objectives, and provide easily accessible and flexible listening materials. Meanwhile, it also allowed students to gain a

wide range of valuable resources, participate in activities, and communicate with classmates and lecturers. As the articles suggested, MALL has comparatively more flexible advantages over computer-assisted language learning (Çakmak & Erçetin, 2018; Mallampalli et al., 2021).

MALL can improve students' English listening by using voice-based chat conversations. Andujar and Hussein (2019) showed that mobile instant messaging via WhatsApp could help students get used to different accents and tones and improve their listening comprehension. On top of that, students could also benefit in terms of vocabulary, pronunciation, and speaking. The conversations and discussions also enabled the students to be prepared and thus reduced the anxiety of communication in real life. Besides, the effects of MALL can also be enhanced with glosses during English listening practice. Çakmak and Erçetin (2018) found that multimedia glosses were conducive to vocabulary recognition and production, whether with textual gloss, pictorial gloss, or textual-plus-pictorial types of gloss in mobile-assisted English listening comprehension.

By combining web-based applications, MALL can help lower achievers improve their English listening skills. Hu and Hsu (2021) showed that lower-achieving college EFL students could benefit better via MALL instruction on listening. They used the applications of Voicetube for recording and self-evaluation, Quizizz, Padlet, and Mentimeter for mobile-assisted activities, peer assessment, and teacher instruction. Their study showed that recording assignments were an effective means to practice listening skills because it allowed the low achievers to conduct their study at their own pace, and it was adequate for listening achievement, especially when combined with peer feedback and self-evaluation. Jia and Hew (2022) also showed that the mobile instant messaging app WeChat could support lower-level EFL learners in improving their listening proficiency via a dictation program. Students reported vocabulary expansion, word recognition, and segmental ability of naturally connected speech, increased confidence, and more excellent initiative and time investment after class in English listening.

MALL can facilitate self-directed learning or independent learning via mobile devices. Compared with laptop-assisted listening with TED talks and listening practice with the aid of DVDs and CDs of the textbook during class hours, mobile-assisted language learning outside the classroom could boost students' listening skills with ubiquitous learning without the constraint of time, place and frequency. Students could be cognitively prepared to learn when ready (Rashtchi & Mazraehno, 2019). In addition, MALL, which allowed the students to get automatic corrective feedback, enabled them to conduct their listening study independently (Mulyadi et al., 2022).

MALL can also increase motivation and cultivate learning habits. By testing the effect of a self-developed application with a standalone program with links to Facebook for the students to summarize, share, and discuss. Read et al. (2021) found that students with access to the social network Facebook showed more increased motivation and good learning habits. Mallampalli et al. (2021) also found that students with devices brought by themselves positively affected listening comprehension. MALL allowed students to use their devices to suit their purposes. They could save the videos for extracurricular learning beyond the classroom. They were more motivated by watching videos than the students who used desktop computers in the language lab. Hwang et al. (2019) studied three smartphone caption mechanisms on English listening performance: cognitive load, learning motivation, learning anxiety, and different learning styles. They showed that the group with full English captions had higher learning motivation. The cognitive load of active-style students was lower than that of the reflective-style students, and they had



higher learning enjoyment. There was no significant difference between the learning anxiety within different learning styles in the three groups. Jia and Hew (2022) also showed that students were more motivated in a group study.

**RQ3. Which research methods are adopted to test the effects?**

All of the studies in the selected articles are experimental studies with interventions. The research design is either quantitative or mixed methods with both quantitative and qualitative studies. There is no pure qualitative research design among the articles. The following table lists the research methods, instruments, and participants.

**Table 2.** Research methods, instruments, and participants.

<i>Articles</i>	<i>Methods</i>	<i>Instruments</i>	<i>Participants</i>
Effects of gloss type on text recall and incidental vocabulary learning in mobile-assisted L2 listening	Experiment	Immediate free recall task and unannounced vocabulary tests after listening.	88 participants with a low level of proficiency in English, in Turkey
Exploring Iranian EFL Learners' Listening Skills via TED Talks: Does Medium Make a Difference?	Quasi-experiment	Preliminary English Test: proficiency test of listening, reading and writing; A series of comprehension questions; A 68-item listening posttest.	60 intermediate level male learners aged between 18 and 20 in three intact classes from a language institute in Tehran in Iran
Mobile-mediated communication and students' listening skills: A case study	A mixed method research design	Pre- and post multi-level test; Pre-survey; Post-survey included close and open-ended questions.	61 students that enrolled in an Administration and Business Management course
Impacts of Different Smartphone Caption/Subtitle Mechanisms on English Listening Performance and Perceptions of Students with Different Learning Styles	Quantitative method	Pre-questionnaires: learning motivation, learning anxiety, and learning styles; Post-questionnaires: learning motivation, learning anxiety, and cognitive load.	119 11th-grade students (three classes) in a senior high school
Beyond technocentrism: Improving Lower-Achiever's English Listening Performance by Using Mobile-Assisted Language Learning on University of Technology students	Quantitative method	Pre-test and post-test.	Randomly assigned to three groups (two treatment groups and one control group) in one academic year
Enhancing Second Language Listening Skills Through Smartphones: A Case Study	A quasi experimental study; quantitative and qualitative methods	Pre-test and post-test with IELTS for students; Questionnaire for teachers; Interview: Perceptions of stakeholders.	119 undergraduate students in India; 36 teachers; 15 administrators; 28 parents
Supporting listening comprehension by social network-based interaction in mobile assisted language learning	Experiment: quantitative and qualitative	Questionnaires: Pre-questionnaire, post questionnaire on students' opinions, habits and behaviors;	90 students

		Semi-structured data using API Graph Explorer (comments, likes, etc.).	
Boosting EFL Learners' Listening Comprehension through a Developed Mobile Learning Application: Effectiveness and Practicality	Quasi experiment	Pre-test and post-test on listening comprehension using Longman TOEFL Preparation 2004; Questionnaire: perceptions of practicality.	86 undergraduate students on tests; 184 students for questionnaire of perceptions
Supporting lower-level processes in EFL listening: the effect on learners' listening proficiency of a dictation program supported by a mobile instant messaging app	Quantitative and qualitative	Listening pre-test and post-test using CET-4; Open-question survey on students' experience and perceptions of the WeChat dictation program.	70 university students

Among the quantitative studies, the most commonly used instruments are tests, questionnaires, or both simultaneously. For example, Çakmak and Erçetin (2018) adopted immediate free recall tasks and unannounced vocabulary tests after listening. Hu and Hsu (2021) employed pre-tests and post-tests alone. Rashtchi and Mazraehno (2019) used a Preliminary English Test proficiency test (PET) of listening, reading, and writing to get a fuller picture of students' pre-test English proficiency, a series of comprehension questions in multiple-choice format related to the TED talk videos, and a 68-item listening posttest. While Hwang et al. (2019) relied mainly on pre-questionnaires for students' learning motivation, learning anxiety, and learning styles and post-questionnaires for students' learning motivation, learning anxiety, and cognitive load. However, Mulyadi et al. (2022) combined the tests and questionnaires. They conducted pre-tests and post-tests on listening comprehension using Longman TOEFL Preparation 2004, combined with a questionnaire to investigate the perceptions of the practicality of using a self-developed application.

As for the studies using mixed methods, there are mainly two types of instruments employed in the quantitative strand: pre and post-tests and questionnaires. In the qualitative strand, researchers mainly resorted to open-ended surveys, interviews, or semi-structured data of students. For example, Andujar and Hussein (2019) adopted pre and post-multi-level tests, pre-survey based on the modified version of Dugas's (2005) Technology Adopter Category Index, and post-survey included close and open-ended questions. Jia and Hew (2022) conducted the listening pre-test and post-test using CET-4 and an open-question survey on students' experience and perceptions of the WeChat dictation program. Mallampalli et al. (2021) used pre-test and post-test with IELTS for students, a questionnaire for teachers concerning the issues and challenges, and interviews for the stakeholders' perceptions like students, teachers, administrators, and parents. However, Read et al. (2021) employed pre- and post-questionnaires on students' opinions, habits, and behaviors in the quantitative strand and semi-structured data using API Graph Explorer to investigate students' comments, likes, etc.

The critical fact is that the number of participants in these experiments is no more than two hundred. The most significant number goes to the study of Mulyadi et al. (2022), when the questionnaire was distributed to 184 students. That is probably because all of the experiments have to exercise interventions, which have to limit the participants to a reachable population.

**RQ4. What theories are adopted in the experiments?**

Related theories or past studies are significant parts of an article that provide theoretical and research background for the current studies. The following table shows the theories and past studies mentioned in the literature review of the selected articles.

**Table 3.** Theories and past studies mentioned in the literature review.

<i>Author(s)</i>	<i>Articles</i>	<i>Theories/ Previous studies</i>
Çakmak, F., & Erçetin, G.	Effects of gloss type on text recall and incidental vocabulary learning in mobile-assisted L2 listening	Research on L2 vocabulary learning and listening in mobile learning environments; effects of multimedia glosses on L2 listening and incidental vocabulary learning through listening
Rashtchi, M., & Mazraehno, M. R.	Exploring Iranian EFL Learners’ Listening Skills via TED Talks: Does Medium Make a Difference?	Listening process; authenticity; TED talks; mobile technology
Andujar, A., & Hussein, S. A.	Mobile-mediated communication and students’ listening skills: A case study	Mobile assisted language learning; mobile instant messaging
Hwang, G.-J., Hsu, T.-C., & Hsieh, Y.-H.	Impacts of Different Smartphone Caption/Subtitle Mechanisms on English Listening Performance and Perceptions of Students with Different Learning Styles	Computer assisted English learning; Cognitive Theory of Multimedia Learning, Cognitive Load Theory, and the Active/Reflective Learning Styles
Hu, W.-C., & Hsu, S.-T.	Beyond technocentrism: Improving Lower-Achiever’s English Listening Performance by Using Mobile-Assisted Language Learning on University of Technology students	Self-regulated learning (SRL); lower achievers’ characteristics; technology students’ learning challenges; controversial MALL
Mallampalli, M. S., Anumula, V. S. S., & Akkara, S.	Enhancing Second Language Listening Skills Through Smartphones: A Case Study	MALL for enhancing English listening skills
Read, T., Kukulska-Hulme, A., & Barcena, E.	Supporting listening comprehension by social network-based interaction in mobile assisted language learning	The development of listening comprehension; MALL and podcasting for the development of listening comprehension; social networking in language learning
Mulyadi, D., Aimah, S., Arifani, Y., & Singh, C. K. S.	Boosting EFL Learners’ Listening Comprehension through a Developed Mobile Learning Application: Effectiveness and Practicality	MALL; Mobile Language Applications; Mobile learning applications in listening instruction
Jia, C., & Hew, K. F. T.	Supporting lower-level processes in EFL listening: the effect on learners’ listening proficiency of a dictation program supported by a mobile instant messaging app	Theoretical framework for listening comprehension; Importance of lower-level processes in EFL listening; dictation; previous studies of language learning using social network sites or mobile instant messaging; Integrating MIM into dictation

All of the articles introduced past studies related to this topic, among which only three mentioned the theories employed. For example, Hwang et al. (2019) introduced the Cognitive Theory of Multimedia Learning, Cognitive Load Theory, and Active/Reflective Learning Styles. Hu and Hsu (2021) mentioned the theoretical

approach of self-regulatory learning. Jia and Hew (2022) mentioned Vandergrift's top-down and bottom-up processing (2004) and the three-stage model of lower- and higher-level listening processes.

**RQ5. What are the suggestions for integrating MALL in the experiments?**

As for teachers and educators, it is suggested that they should catch up with the latest technological advancements in language learning by integrating educational tools into their curriculum to increase and expand the opportunities for exercises and build learning beyond the classroom in the authentic environment via using MALL applications while taking account of students' perceptions of the value and usefulness of the application (Andujar & Hussein, 2019). Mallampalli et al. (2021) suggested that how students use their smartphones outside the classroom for English listening should be studied in the future.

As for the mobile-assisted language teaching and learning process, some researchers hold that the integration of technology cannot blur the role of the teacher in the classroom since it plays a supplementary role in the learning process (Rashtchi & Mazraehno, 2019). Some other researchers also seem conscious about employing technology even though the experiment has increased students' English proficiency scores. Hu and Hsu (2021) emphasized that despite the significant time and effort teachers invest in preparing and implementing curriculum design and experimental instruction, these activities may not develop self-regulated learning habits beyond the duration of the experiment. Furthermore, it is essential to note that technology integration and the use of mobile devices are not guaranteed to lead to higher English achievement. Thus, students have to match their English goals with learning style preferences and establish a long-term learning habit for more significant achievements and language teachers should focus on genuinely effective pedagogies in applying MALL instead of pursuing fancy applications or digital tools.

After all, even though all of the experiments have obtained the expected increase in English listening comprehension among EFL students, some limitations have been pointed out. For example, mobile phones are comparatively compact, so they may have reduced screen size and low screen resolution, impacting images-or-text-based mobile learning and assessment (Çakmak & Erçetin, 2018). There were a few participants who reported the disruptions of messages from social media interrupting deep learning and unsteady data connection unfavorable for watching streaming videos; teachers also found that it was hard to monitor students' learning, even though sharing listening materials could be facilitated by WhatsApp immediately (Mallampalli et al., 2021). Such worries of the teachers are not at all groundless. The reason is revealed coincidentally in another article. It has been found that a high percentage of students spend more than two hours a day using mobile applications to chat (Andujar & Hussein, 2019). Jia and Hew (2022) listed five significant types of drawbacks. First, the most common disadvantage reported by students was inadequate or ineffective teacher supervision. Second, the problem mentioned by participants was audio dictation material. Students reflected that the learning materials were too long and demanding. They would lose patience and confidence very soon. Third, the learning materials were monotonous and confined to one source. Fourth, the interaction was not enough. Students would be more engaged if senior students or teachers were more active. Fifth, there was a lack of explanation about word segmentation and recognition. Students expected the teacher to explain phonetic features, such as elision.

Therefore, as for integrating MALL applications into teaching and learning practices, it is suggested that there is great significance to preparing content and interactive language tasks that can boost students' engagement in learning activities when designing and using self-developed MALL applications (Mulyadi et al., 2022). As for web-based application-facilitated language learning, the task design also has a prominent impact (Andujar & Hussein, 2019). Some researchers suggest that the role of learning styles needs to be explored further in designing caption interfaces for mobile applications (Hwang et al., 2019). Some other mediating factors, like individual differences, learner preferences, strategy use, etc., should also be incorporated into the research in the future (Çakmak & Erçetin, 2018). Qualitative research examining learners' cognitive processes could provide valuable insights (Rashtchi & Mazraehno, 2019).

## **5. CONCLUSION AND SUGGESTION**

MALL has become a new trend, along with mobile and information technology. Various applications are either being used or developed. Based on the previous discussions, it can be synthesized that there are mainly these two types of applications. Besides, quantitative or mixed methods are the most commonly used methodologies in MALL studies. Most studies concentrate more on past studies and theories related to the current research focus. More importantly, there are various effects of MALL on more than improving English listening despite its limitations. It can improve students' linguistic competence by differentiating tones and accents, segmenting speech words, improving pronunciation and spoken ability, and leading to vocabulary expansion. MALL can also help low achievers cultivate self-directed learning or independent learning. It has been shown that recording assignments and dictation programs are really helpful for low achievers. It can increase motivation and change EFL students' learning habits. Voice-based conversations or glosses can enhance the effects of MALL.

In addition, as suggested, teachers, educators, and researchers need to explore MALL and integrate it into English teaching and learning practices. In the meantime, the role of teachers is also prominent in this process, since the limitations repeatedly revealed that guidance and explanations were greatly needed. Above all, even though MALL has a significant impact on different aspects, either linguistically or psychologically, we still need to keep in mind that technology is not a panacea. Still, a better way of integrating design is expected to facilitate MALL teaching and learning activities to meet the personalized needs of EFL learners in this digital age.

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