Effectiveness of Mobile-assisted Language Learning in Developing Oral English in Higher Education: A Comparative Systematic Review

Mengfei Zhao[1,2], Nooreen Noordin[1], Norhakimah Khaiessa Binti Ahmad[1], Lingxin Liu[2]

[1] Department of Language and Humanities Education, Faculty of Educational Studies, Universiti Putra Malaysia, Serdang, Selangor, Malaysia

[2] School of Foreign Languages, Anhui University of Technology, Anhui, People's Republic of China.

Correspondence: Nooreen Noordin, Department of Language and Humanities Education, Faculty of Educational Studies, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia. Tel: +60136670573. E-mail: nooreen@upm.edu.my

Received: June 12, 2024 Accepted: August 6, 2024 Online Published: August 23, 2024

doi:10.5430/wjel.v15n1p56 URL: https://doi.org/10.5430/wjel.v15n1p56

Abstract

English is a globally prominent language, and oral English proficiency is both crucial and challenging. Mobile technology offers a promising avenue for language enhancement, but research on the role of Mobile-Assisted Language Learning (MALL) in English-speaking skills is relatively scarce. Literature reviews on this topic are even rarer, particularly those that provide comparative analyses between China and other nations. This study addresses this gap through a comparative systematic literature review of 30 relevant studies from 2019 to 2023. The findings reveal similarities between Chinese and global studies, with only slight differences in sample size and oral English proficiency assessment methods. The preferences for mixed research methods, tests, questionnaires, and interviews were found. Additionally, this review identifies limitations in previous research, including a lack of theoretical frameworks, limited large-scale studies, and a need for deeper exploration of mobile app utilization. This comparative analysis provides valuable insights that can guide future studies and foster a more comprehensive understanding of MALL's effectiveness in enhancing oral English proficiency, both in China and globally.

Keywords: Mobile-assisted language learning (MALL), oral English, comparative, systematic literature review

1. Introduction

1.1 Background

In the current era of globalization, the cultivation of oral English holds great importance for ESL and EFL learners, regardless of their geographical location or professional background, as it paves the way for their future career prospects and contributes to higher income and an enriched social life (Leong & Ahmadi, 2017; Rao, 2019; Rashid, Mohamed, Rahman, & Shamsuddin, 2017; Zhang, 2022). Consequently, one of the main objectives of language learning is to assist learners in achieving effective oral communication (Elaish, Hussein, & Hwang, 2022; Peng, Jager, & Lowie, 2021). Nevertheless, despite the paramount importance of spoken English, it is widely acknowledged as the most challenging skill compared to listening, reading, and writing. Unfortunately, the teaching methods typically used in this domain often yield unsatisfactory outcomes, as many students still find it challenging to speak fluently and effectively in English (Abugohar, Yunus, & Rashid, 2019; Ahn & Lee, 2016; Leong & Ahmadi, 2017; Rajendran & Yunus, 2021; Saidouni, 2019). Chinese EFL learners in higher education face the same problem due to their limited exposure to English, large class sizes, traditional classroom learning modes, scarce opportunities to use spoken English both inside and outside the classrooms, and students' unwillingness to practice oral English (Lazaraton, 2014; Li, Fan, & Wang, 2022; Rajendran & Yunus, 2021; Shi, Luo, & He, 2017; Wang, 2018; Zhou, 2021). Therefore, there is a pressing need for more innovative approaches to help students in universities and colleges improve their oral English.

With rapid advancement in mobile technology, a new language teaching and learning method has emerged called Mobile-assisted Language Learning (MALL), which refers to the ability to learn languages using mobile devices from anywhere, anytime, without being limited by time or location (Elaish et al., 2022; Sherine, Seshagiri, & Sastry, 2020; Traxler, 2016). Mobile technology, like smartphones, has had a profound impact on second language learning. Learners are able to access a multitude of mobile tools, language learning materials, activities, and communication opportunities across time and space due to the widespread availability and ubiquity of this technology (Kukulska-Hulme, Lee, & Norris, 2017; Reinders & Benson, 2017), enhancing interactive learning experiences, and ultimately improving learning efficiency (Chen, Chen, Jia, & An, 2020). Previous research has substantiated that MALL can enhance English proficiency across various aspects, encompassing vocabulary, pronunciation, reading, writing, listening, and speaking (Abugohar et al., 2019; Andujar, 2016; Atay & Gulseren, 2020; Auliya, 2021; Dewi, Ratminingsih, & Santosa, 2020; Guo & Wang, 2018; Keezhatta & Omar, 2019; Li & Gao, 2016; Wang, 2018; Wang & Han, 2021; Winet, 2016; Yassin & Abugohar, 2022). Besides, the utilization of mobile devices can alleviate learners' stress and lessen their burden (Shadiev, Liu, & Cheng, 2023), while also enhancing their motivation and enjoyment (Klimova et al., 2023) thanks to its unique features such as mobility and portability, ubiquity, individuality, flexibility, interactivity, seamless accessibility, spontaneity, and informality (Elaish et al., 2022; Khubyari & Narafshan, 2018; Kukulska-Hulme et al., 2017; Kukulska-Hulme & Shield,

2008; Luo & Shi, 2022; Palalas, 2011; Zaki & Yunus, 2015). Moreover, from the onset of 2020 through the post-pandemic era, the benefits of mobile learning have been significantly highlighted (Elaish et al., 2021).

1.2 Aims of the Current Study

The challenging state of oral English learning, coupled with the significant advancements in mobile technologies and the swift surge in MALL studies, highlights the need to evaluate the effects of MALL on the development of oral English skills (Chen et al., 2020). Earlier systematic reviews and meta-analyses have established that MALL has had positive influences on English language acquisition across various time frames, spanning from 1990 to 2022 (Chen, 2022; Chen et al., 2020; Elaish et al., 2022; Klimova et al., 2023; Li et al., 2022). Nonetheless, there has been a scarcity of reviews examining recent studies assessing the efficacy of MALL, specifically in enhancing English-speaking skills within ESL and EFL contexts (Klimova et al., 2023; Rajendran & Yunus, 2021). Additionally, there is a notable shortage of review studies that have delved into the current state of MALL and its research directions within specific contexts (Adams Becker, 2017; Elaish et al., 2022; Li et al., 2022; Zhou, 2021). Further constrained is the research that conducts a comparative analysis of MALL at a global level and within the specific context of China, with a particular emphasis on its impact on the improvement of oral English proficiency. Therefore, the purpose of this study is to conduct a comparative systematic literature review to bridge the aforementioned gap. This can be achieved by examining recent MALL studies conducted globally and in China, specifically focusing on oral English learning in higher education over the past five years, from 2019 to 2023. The objectives are to identify and compare 1) the current development of MALL in enhancing English-speaking skills among ESL and EFL learners and 2) potential near future trends in MALL studies within the field of oral English teaching and learning, both globally and within the context of Chinese EFL education. As the quantity of MALL studies concerning English-speaking skills is rather limited (Aliakbari & Mardani, 2022; Chen et al., 2020; Elaish et al., 2022), the present study employs a mixed-method systematic review approach to provide a comprehensive overview of this subject. A mixed-method systematic review employs the principles of mixed-methods research in the review process, which involves merging different types of research (qualitative and quantitative), all centered on the same topic, to produce comprehensive evidence that can inform decision-making (Pearson et al., 2015; Rajendran & Yunus, 2021).

1.3 Research Questions

Based on the research background and research objectives, three research questions are generated:

RQ1: In both global and China contexts, what are the methodological features of the selected MALL studies, including research designs, instruments, theoretical framework, and sample sizes?

RQ2: In both global and China contexts, what mobile devices and applications have the potential to enhance learners' oral English skills?

RQ3: In both global and China contexts, how are learners' oral English skills measured in the selected MALL studies?

2. Method

This review uses the Preferred Reporting Items for Systematic Reviews and Meta-Analyses 2020 (PRISMA 2020) to report target researched items. The PRISMA 2020 statement was developed with the goal of improving the transparent and comprehensive reporting of systematic reviews. It incorporates recent advancements in methodology and terminology for conducting systematic reviews and is applicable to mixed-methods systematic reviews (Page et al., 2021).

2.1 Databases and Search Strings

We selected 2019 as the starting point for two main reasons. Initially, since this study is not designed to give a historical review of MALL development, but rather to identify current findings and potential near-future trends, it is vital that the search be restricted to articles published in the previous five years. Second, studies specifically investigating the impact of MALL on speaking skills have been published since 2016 (Peng et al., 2021). As highlighted by Li et al. (2022), Hou and Aryadoust (2021), Rajendran and Yunus (2021), the year 2019 marked the peak in the number of MALL studies globally and in China. Therefore, this systematic literature review focuses on studies published from January 2019 to December 2023.

To identify appropriate articles, five reputable databases were utilized, including four English-language databases, Educational Resources Information Centre (ERIC), Web of Science (WoS), ProQuest, and Scopus, and one Chinese-language database, China National Knowledge Infrastructure (CNKI). To ensure inclusivity and unrestricted access to research, only open access articles were considered in this review. In addition, to ensure a high level of quality in the extracted articles, this literature review exclusively extracts articles from CSSCI (Chinese Social Sciences Citation Index) and CSSCIE (Chinese Social Sciences Citation Index Expanded) in CNKI.

Informed by the previous reviews of MALL (Chen et al., 2020; Li, 2023; Zhou, 2021), two sets of keywords were applied in the mentioned databases to retrieve the relevant literature accurately and quickly:

(1) Mobile-assisted language learning-related keywords, including mobile-assisted language learning OR MALL OR mobile learning OR m-learning OR mobile applications OR mobile apps OR portable devices OR handheld devices OR ubiquitous learning OR seamless learning OR mobile phone OR smart phone OR PDAs OR personal digital assistants OR tablets OR pad OR laptop; AND

(2) Oral English-learning-related keywords, including English-speaking OR speaking proficiency OR speaking performance OR oral English OR spoken English OR oral presentation OR speaking accuracy OR speaking complexity OR speaking fluency OR communicative competence OR English communication

The search strings were appropriately adjusted to comply with the word limit specifications of the five databases, with a primary focus on the keywords "mobile" and "speaking". When searching the phrases, quotation marks were employed. In CNKI, the Chinese translations of those key words were used to guarantee precision (Li et al., 2022).

2.2 Inclusion and Exclusion Criteria

To ensure the inclusion of the most relevant studies and the exclusion of irrelevant literature, explicit inclusion and exclusion criteria (detailed in Table 1) were formulated based on the research questions and adapted from prior studies by Chen et al. (2020), Li et al. (2022), and Zhou (2021).

Table 1. Inclusion and exclusion criteria

Criterion	Inclusion criterion	Exclusion criterion
Digital devices	Mobile phones, smartphones, iPad, tablets, and other handheld devices	Computers or other non-handheld devices
Field of study	MALL must be applied in higher education field	MALL is not applied in higher education field
Language skill	English-speaking skill	Not English-speaking skill (e.g., vocabulary, listening, reading, writing, translation, etc.)
Context of study	ESL/EFL learners	L1 English speakers
Year of publication	Published between 2019-2023	Not published between 2019-2023
Publication type	Peer-reviewed open access journal articles	Not peer-reviewed open access journal articles
Publication language	Articles written in English or Chinese	Articles not written in English or Chinese

The initial keyword search yielded a total of 1834 studies, comprising 1058 from ERIC, 212 from WoS, 451 from ProQuest, 19 from Scopus, and 94 from CNKI. Out of these identified studies, 15 duplicates were removed, resulting in 1819 studies for further screening. Subsequently, these articles were automatically filtered by applying specific criteria within the databases, such as selecting "higher education", "journal articles", and "open access". Consequently, 1299 studies were excluded, leaving 520 articles. The titles and abstracts of the 520 potentially relevant articles were manually screened based on the inclusion and exclusion criteria outlined in Table 1. As a result, 444 articles were excluded, and 76 articles remained for assessment through skimming, scanning, and reading the full texts as necessary to meet all inclusion and exclusion criteria. From these 76 studies, 37 were eliminated, leaving 39 studies eligible for systematic analysis. The researchers then carefully read these articles and excluded 9 of them for reasons such as not using mobile technologies, poor quality of academic writing, and being a literature review. The detailed search and selection processes are illustrated in Figure 1, a PRISMA flow diagram adapted from Page et al. (2021).

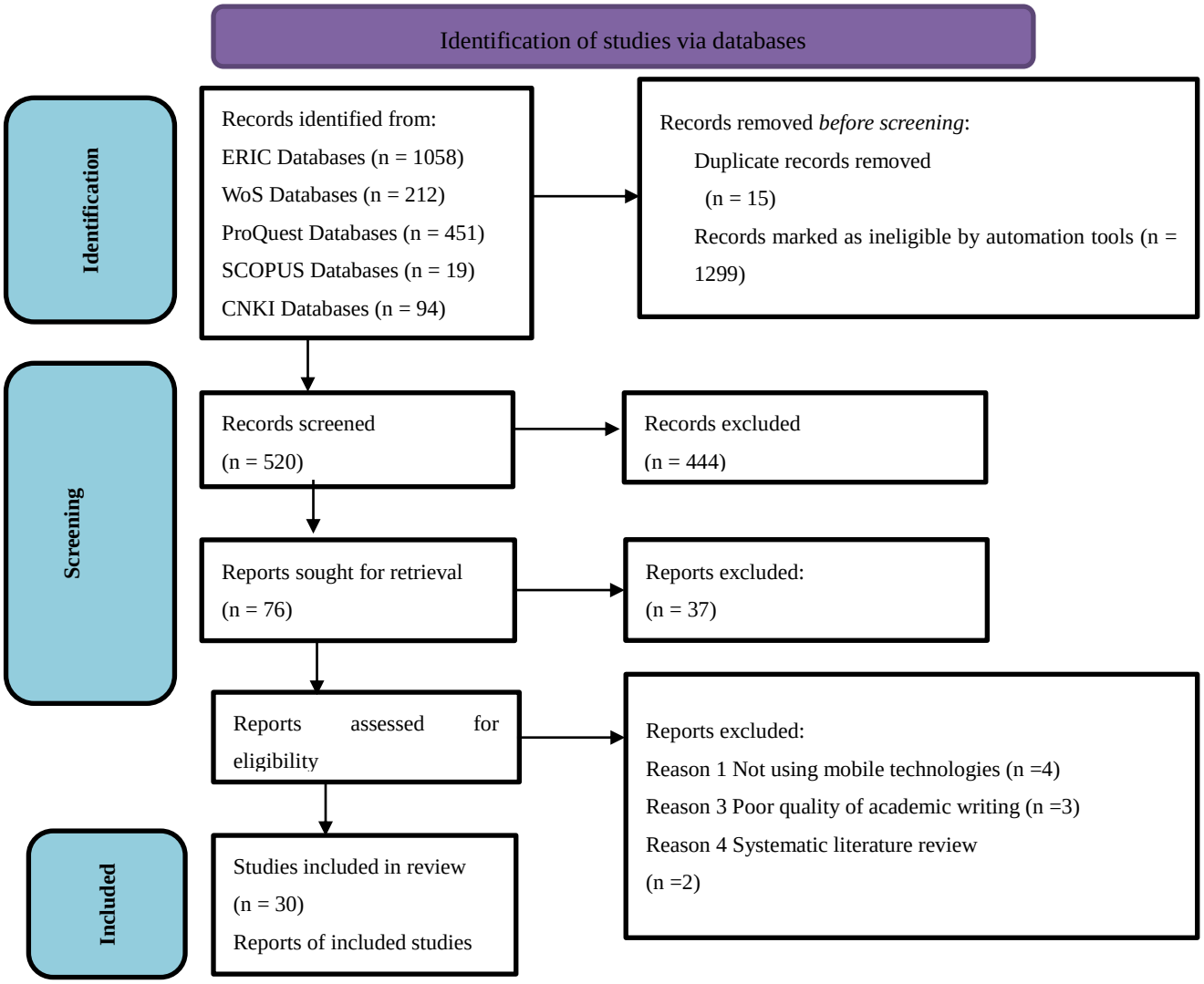

Figure 1. The literature search and selection process

2.3 Coding Scheme

For a comprehensive analysis of the 30 articles retrieved in this review and to address the research questions, we coded all 30 selected publications according to the primary categories outlined in Table 2. These categories encompass basic information about the articles, research design, instruments, theoretical framework, sample size, software types, and measurement (Chen et al., 2020; Elaish et al., 2022; Hwang & Fu, 2018; Li et al., 2022; Li, 2023; Luo, 2023).

Table 2. Information of the coding scheme

Coding	Operational definition	Reference
Basic information	Publication year, nationality of authors	Elaish et al. (2022)
Research design	Quantitative design Qualitative design Mixed methods design	Elaish et al. (2022)
Instruments	Pre- and post-tests Questionnaire, Interview, reflective journal, observation, assignment	Researcher-designed
Theoretical framework	With a theoretical framework Without a theoretical framework	Researcher-designed
Sample size	Small (<30) Medium (30~99) Large (>100)	Elaish et al. (2021)

Software types	General purposes: applications not specifically created for educational use, e.g. WhatsApp, WeChat. Educational purposes: applications specifically created for educational use, e.g. Liulishuo, Duolingo. Built-in functions: video shooting, picture taking Others	Chen et al. (2020)
Measurement	Standardized band scoring: e.g. IELTS, TOEFL; researcher-designed; CAF (complexity, accuracy, fluency)	Li (2023)

3. Findings and Discussions

A detailed discussion of the analysis is provided in this section to give a thorough understanding of the 30 reviewed studies related to the three research questions.

3.1 Basic Information

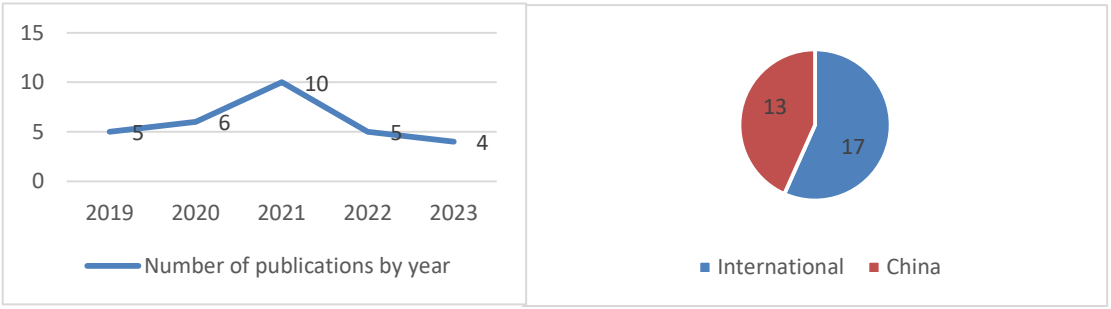

Figure 2. The numbers of publications from 2019 to 2023

As depicted in Figure 2, MALL studies addressing the field of English-speaking skills peaked in 2021 (n=10), while the rest of the years witnessed a consistent number of publications, ranging from 4 to 6. An upward trend has been observed from 2019 to 2021, followed by a subsequent decline since 2021. Taking nationality into consideration, it is noteworthy that China (n=13) takes up almost half of the total studies. This could be attributed to the rapid advancement of mobile technology in China over the past five years and the increasing concern among researchers regarding the issue of "dumb English" among Chinese EFL learners.

3.2 Findings to Research Question One

3.2.1 Research Design

In order to answer research question one, detailed information about research designs, instruments, theoretical framework, and sample sizes were collected and analyzed.

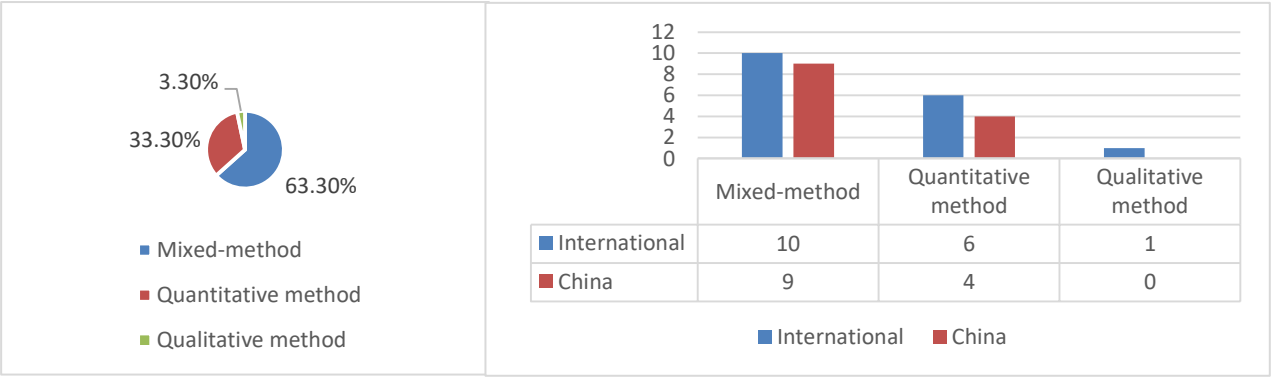

Figure 3. Research designs of MALL studies on English-speaking from 2019 to 2023

As demonstrated in Figure 3, researchers conducting MALL studies on English-speaking skills have predominantly favored the mixed-method research design over the past five years. Specifically, 19 studies, constituting 63.3% of the total 30 studies, employed a mixed-method approach. The second most prevalent research design was the quantitative method, with 10 articles, making up 33.3%. Only one article (Alsaffar, 2021) used the qualitative method, which involved a case study with five students and one teacher, constituting 3.3%. This inclination is evident not only internationally but also within China, where nine studies utilized the mixed-method approach and four studies adopted the quantitative method.

Although this finding contrasts slightly with the conclusions of Elaish et al. (2022) and Li et al. (2022), who asserted that quantitative research design was the most frequently employed method between 2007 and 2020 and 2015 and 2020, respectively, it is important to note that these two studies provided reviews of MALL studies covering all aspects of English learning, including vocabulary, listening, speaking,

reading, and writing. In contrast, like the current research, Rajendran and Yunus (2021), who conducted a systematic literature review on the use of MALL for enhancing speaking skills among ESL and EFL learners from 2016 to 2020, identified the same pattern: mixed-method is the most favored research design, followed by quantitative and then qualitative design.

What is more, out of the 19 mixed-method research and 10 quantitative research designs, six studies adopted action research (e.g. Dong, Yuan, & Xu, 2023), while 23 employed experimental research. Within the latter, there were two true experimental studies (Ataeifar, Sadighi, Bagheri, & Behjat, 2019; Rezaee, Alavi, & Razzaghifard, 2019), 20 quasi-experimental studies (e.g. Woldetsadik, Bachore, Woldeab, & Gezahegn, 2022), and one crossover comparative experimental design (Zeng, Wang, & Tan, 2020). Notably, among these 23 experimental studies, nine utilized only the experimental group without a control group, constituting 39.1%. Elaish et al. (2021) had a similar result, showcasing that 42.4% of 151 studies from 2010 to 2017 were one-group design. Thus, recent trends suggest that MALL studies focusing on oral English tended to prefer mixed research designs, and as for the collection of quantitative data, the quasi-experimental method was the most frequently used. However, there were still quite a number of studies using quasi-experiments without a control group, making the conclusions drawn from these studies potentially less persuasive compared to experimental studies with a control group (Elaish et al., 2021).

3.2.2 Instruments

Instruments utilized across the 30 reviewed articles include pre- and post-tests (n=25), questionnaires (n=21), interviews (n=15), reflective journals (n=7), assignments (n=3), and class observations (n=2). 83.3% of articles employed pre- and post-tests, making them the most commonly used research instrument in MALL studies within English-speaking area, reflecting a global trend among researchers who favor using tests conducted before and after interventions to gather quantitative data.

Among them, two (Ataeifar et al., 2019; Aliakbari & Mardani, 2022) opted for the Preliminary English Test (PET) provided by Cambridge English Language, asking students to complete an introduction, pictures discussion and a topic discussion. Interestingly, both of these studies were conducted in Iran.

13 studies employed researcher-made speaking tasks, among which four (Ahmed et al., 2022; Baek & Lee, 2021; Ma & Ouyang, 2021; Zeng et al., 2020) employed monologic topic speech. In Baek and Lee (2021), students were additionally required to answer questions from the researcher. Other pre- and post-tests instruments included picture description tasks (Rezaee et al, 2019; Wang & Han, 2021), topic-related communication with the researcher, student pair work involving role play (Chaya & Inpin, 2020), decision-making and problem-solving tasks (Chen & Chew, 2021), and question discussion (Cai & Zhang, 2023). In two studies (Durán-Bautista & Huertas-Malagón, 2021; Woldetsadik, Bachore, Woldeab, & Gezahegn, 2022), specific details about the tests were not provided, except that Durán-Bautista and Huertas-Malagón (2021) mentioned the use of the exam for the oral English course, while the other indicated an adaptation from "A Guide to Assess Speaking Performance: Speak Practice Test - General Directions". The study conducted by Mykytiuk, Lysytska, Melnikova, and Mykytiuk (2022) stands out due to its use of different types of tests before and after the intervention. For pre-test, an English language proficiency test was employed, while the post-test involved the use of monologic topic speech and group discussion. Notably, the researchers did not provide explicit reasons for the choice of different test types.

Eight articles (Albogami & Algethami, 2022; Dong, Yuan, & Xu, 2023; Sherine, Sastry, & Seshagiri, 2020; Sherine, Seshagiri, & Sastry, 2020; Wulandari, 2019; Xu, 2020; Yuan, 2019; Zhou, 2019) utilized either IELTS speaking tests or IELTS-like speaking tests, and one article (Huang, 2021) employed the TOEFL-iBT independent speaking test. Zou, Guan, Shao, and Chen (2023) directly used an online test from a website (https://www.speechace.com/speaking-test) to assess students' oral proficiency. It is noteworthy that in these ten articles, whether employing IELTS, TOEFL-iBT, or the online test website, all utilized monologues on given topics or in a given situation. Similarly, among the studies conducted in China, 11 used pre- and post-tests, among which, seven employed individual topic speech. Therefore, we can conclude that monologic topic speech was the most frequently used instrument for pre- and post-tests in MALL studies on English-speaking both in China and globally, from 2019 to 2023.

Questionnaires emerged as the second most preferred instrument. Specifically, 13 studies used questionnaires to collect quantitative data, constituting 61.9%. Six studies employed questionnaires for both quantitative and qualitative data, totaling 28.6%, and two studies used questionnaires for qualitative data collection, accounting for only 9.5%. The situation in China is similar, with six studies employing questionnaires for quantitative data and four studies using the method to obtain mixed data. Notably, no study in China utilized questionnaires exclusively for qualitative data collection. Students' perceptions of mobile technologies were investigated through these questionnaires, using 5-point Likert items and open-ended questions.

Interviews and reflective journals were employed to gather qualitative data about students' attitudes and views toward mobile learning and the use of mobile applications to improve their speaking skills. Interestingly, regardless of the mobile applications or mobile platforms used in these studies, results from the questionnaires, interviews and students' reflective journals showed that most students spoke highly about the effectiveness of mobile-assisted English-speaking learning, identifying that their English-speaking skills were improved (Albogami & Algethami, 2022; Ataeifar et al., 2019; Chaya & Inpin, 2020; Huang, 2021; Mykytiuk et al., 2022; Yuan, 2019; Zemlyanova, Muravyeva, Masterskikh, Shilova, & Shevtsova, 2021). Six studies, Sherine, Seshagiri, et al. (2020), Xu (2020), Alsaffar (2021), Durán-Bautista and Huertas-Malagón (2021), Albogami and Algethami (2022), and Zou et al. (2023), investigated subcategories of English-speaking skills, asking students to make self-assessment about whether oral English skills were improved after the intervention.

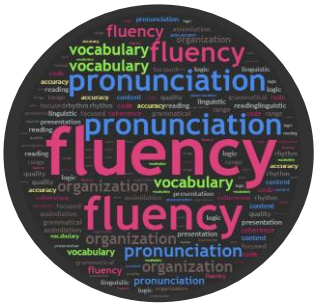

Figure 4. Word cloud from questionnaires, interviews, and reflective journals

Figure 4 shows that the most frequently mentioned sub-categories of English-speaking skills were fluency, pronunciation, and vocabulary. Only Sherine, Seshagiri, et al. (2020) and Zou et al. (2023) asked students to consider the accuracy of their oral English. Surprisingly, neither students nor researchers paid attention to the complexity of students' spoken language, although complexity, accuracy and fluency are the three main indicators to evaluate English learners' oral production. Other repeatedly emphasized aspects related to the effects of mobile application were increased confidence and opportunities, enhanced motivation, heightened interests, convenience, user-friendliness, and reduced anxiety.

In summary, over the past five years, both in China and other countries worldwide, the predominant research instruments in the investigation of MALL applications for English-speaking skills have been pre- and post-tests, followed by the questionnaires, interviews, and students' journals. This result differs slightly from the findings of Elaish et al. (2022), who stated that questionnaires, tests, interviews, and observation were the main instruments in mobile-assisted English learning from 2007 to 2020. However, Elaish et al. (2022) conducted their literature review across all aspects of English learning. In the current literature review, we also found a tendency among students, teachers, and researchers to perceive oral proficiency as a broad concept. The limited in-depth investigations into specific subskills of oral proficiency have primarily focused on pronunciation, fluency, and vocabulary, overlooking aspects such as accuracy and complexity. Therefore, future research should emphasize the importance of accuracy and complexity in oral English and raise awareness among students, teachers, and researchers about these critical components.

3.2.3 Theoretical Framework

Theoretical framework involves assembling a set of pertinent theories that are connected, either directly or indirectly, to a specific area of investigation in a coherent manner (Kumar, 2019). It demonstrates how the researcher interprets or clarifies the logical connections among the variables that hold importance for the issue being investigated (Sekaran, 2013).

Table 3. Theories used by MALL studies on English-speaking from 2019 to 2023

Theory	**Articles**
Vygotsky's Sociocultural Theory (SCT)	Ahmed et al. (2022); Chaya and Inpin (2020); Huang (2021); Rezaee et al. (2019); Wulandari (2019); Zeng et al. (2020)
Zone of Proximal Development (ZPD)	Rezaee et al. (2019); Woldetsadik et al. (2022); Wulandari (2019)
Connectivism	Mykytiuk et al. (2022); Yuan (2019)
Constructivism	Woldetsadik et al. (2022)
Krashen's comprehensible input	Chaya and Inpin (2020)
Learning-oriented assessment (LOA)	Wu and Miller (2020)
Dual Coding Theory, Cognitive Theory of Multimedia Learning, theories on Mental Imagery, Embodied Cognition	Moreno and Vermeulen (2021)
Theory of Transdisciplinary	Cai and Zhang (2023)
Grounded theory	Alsaffar (2021), Durán-Bautista and Huertas-Malagón (2021)

Note: Articles underlined in this table are from China.

As indicated in Table 3, out of the 30 reviewed articles, 14 (46.7%) explicitly referenced guiding theories, with five (35.7%) originating from China (highlighted in Table 3). Remarkably, this finding closely aligns with Chen and Jia (2020), which showed that only around 40% of the 98 MALL studies published in CSSCI from 2000 to 2019 clarified theoretical background. In contrast, Peng et al. (2021) reported a higher percentage of 59% for global MALL studies from 2008 to 2017 that clarified their theoretical background. This disparity suggests that MALL studies specifically related to oral English might lack sufficient theoretical guidance. Vygotsky's Sociocultural Theory (SCT) emerged as the most frequently cited theory, followed by the Zone of Proximal Development (ZPD) and Connectivism, which echoes the results reported by Chen and Jia (2020) and Peng et al. (2021). It is worth noting that although Zhou (2019) claimed to use the theories of cooperative learning, blended learning, self-directed learning, we considered these more as learning strategies or modes rather than learning theories. That is why we excluded this study from Table 3. Therefore, in recent MALL studies on oral English, a notable absence of robust theoretical frameworks persists not only in China but also globally. The lack of well-established frameworks may result in overlooking empirical evidence supporting the application of MALL (Peng et al., 2021).

3.2.4 Sample Size

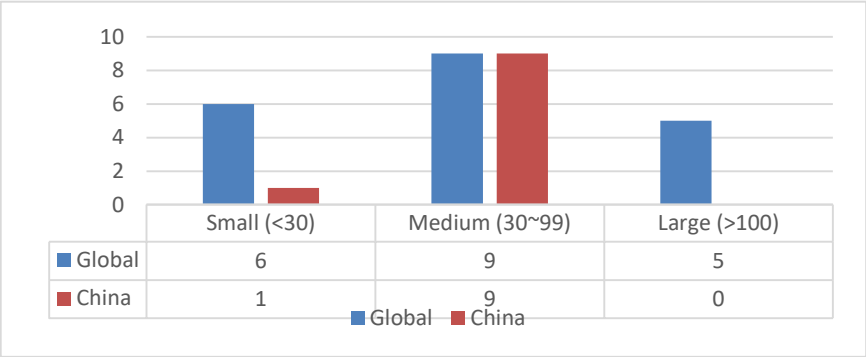

Figure 5. Sample size of MALL studies on English-speaking from 2019 to 2023

Figure 5 illustrates the distribution of sample sizes over the past five years. The majority of studies (60%) opted for medium-sized samples, while 23.3% utilized small samples, and only 16.7% employed large samples. Notably, studies conducted in China also preferred medium sample sizes. Only one study in China utilized a small sample size, and none surpassed 100 participants. This result may be due to the feature of quasi-experiments, where most researchers use intact classes as their participants. It is rare for an oral English class in Chinese higher education to have fewer than 30 students or to exceed 100 students. However, this outcome is different from Elaish et al. (2021), who stated that six out of 13 studies (46%) addressing speaking skills used 100 or more participants. Therefore, in the future, researchers, especially in China, should consider the use of large sample sizes when conducting MALL studies related to English-speaking domain.

3.3 Findings to Research Question Two

A mobile device, as described by Trifonova, Knapp, Ronchetti, and Gamper (2004), is compact, self-sufficient, and inconspicuous, making it suitable for constant use and applicable in educational contexts. Typically, mobile devices encompass a range of electronic gadgets, including mobile phones, PDAs, tablet PCs, laptops, etc. Through analyzing the 30 articles, we found that almost all studies utilized mobile phones or smartphones, establishing them as the most popular mobile devices. Only Zhou (2019) used both smartphones and laptops.

Social networking apps were the most frequently used mobile applications, with *WhatsApp* being the top choice among researchers, followed by *WeChat*, the Chinese counterpart with additional functions. The primary usage of these social networking apps in MALL studies centered around voice recording and feedback, communicative activities, delivering instructional materials, and question-and-answer interactions.

WhatsApp-related communicative activities encompassed information gap, decision-making, and opinion exchange (Rezaee et al., 2019); pronounce it, fill the gap, correct it, find the odd, discuss, interview, 30 seconds presentation, text me what I said, word clouds, grammar test (Sherine, Seshagiri, et al., 2020); and voice chat on a topic (Albogami & Algethami, 2022). Mykytiuk et al. (2022) provided details about *Facebook*-related activities, such as content-oriented input activities (e.g. infographic narrating activity), structured output activities (e.g. information gap), communicative output activities (e.g. discussion, digital story narrating), etc. However, very few studies provided insights into the communicative activities designed through *WeChat*, with Chen and Chew (2021) being an exception, as they incorporated decision-making and problem-solving tasks. Therefore, future Chinese researchers may consider designing more English communicative activities using *WeChat*.

Table 4. Mobile apps used by MALL studies on English-speaking from 2019 to 2023

	Category	**Mobile Apps**
General purposes	Social networking app	WhatsApp (7); WeChat (6); Facebook (2); Voice Thread (2); Kakaotalk (Korea); Twitter; Instagram; Vlook Xmind; Draw Lots Software; Tencent Docs
Educational purposes	English practice app	Keke English; Liulishuo (2); Fun Dubbing; Duolingo; English pronunciation; Yidian English; EAP
	Educational platform	MosoTeach (2); Moodle 3.0; blackboard; CongAcademy
	Feedback provider	PeerEval; TEAMMATES
Built-in functions	Smartphone/mobile phone built-in app	Voice recorder; Video recording and editing apps
Others	Researcher-developed app	VISP (VIdeos-for-SPeaking) (Spain)
	VR app	VirtualSpeech (USA)
	website	bbc, testmoz, youtube

Note: Apps underlined in this table are from China. Numbers in the brackets indicate the quantity of studies, while the absence of a number signifies that only one article utilized this application.

Upon examination of Table 4, an interesting phenomenon emerged: except for *English pronunciation* (Sherine, Sastry, et al., 2020),

Duolingo (Ahmed et al., 2022), and *Moodle 3.0* (Woldetsadik et al., 2022), English practice apps and educational platforms were mostly used in China. Notably, researchers mainly tasked students with listening or speaking through these apps, such as dictation, imitation, or shadowing (Wang & Han, 2021; Wu & Ekstam, 2021; Xu, 2020), and interactive communication activities were rare. Concerning English educational apps, Zou et al. (2023) can be seen as an exception because *Liulishuo*, *EAP Talk*, and *Yidian English* were implemented in both control and experimental groups, with the experimental group students using *WeChat* to conduct interactive activities, such as punching cards, uploading recordings, and giving comments. Thus, their findings should still be attributed to *WeChat* instead of those educational apps. Educational platforms, like social networking apps, were used to share learning materials, upload recordings, and give feedback.

Wu and Miller (2020) and Gokgoz-Kurt (2023) used specific feedback-providing apps, *PeerEval* and *TEAMMATES*, in their treatment. However, neither study recruited a control group nor used pre- and post-tests. Positive attitudes towards mobile-assisted peer feedback were generated only from questionnaires and a group interview, declaring the apps useful and convenient, and students considered the apps an opportunity for learning and self-improvement. As a consequence, the effectiveness of these two apps was less convincing.

The researcher-developed app, *VISP*, was used in Moreno and Vermeulen (2021), showcasing its utility both with and without teacher instruction. Whereas, the intervention was limited to a two-hour duration, involving 12 students in the experimental group and 16 in the control group. The notably short duration and small sample size diminish the overall persuasiveness of this study. The VR app, *VirtualSpeech*, was used in a case study (Alsaffar, 2021) in the US. Unlike many VR programs that depend on high-end personal computers, *VirtualSpeech* is unique in its ability to operate on mobile phones. This feature allows users to upload PowerPoint slides and practice their presentations within a virtual reality environment, complete with a simulated audience. Nonetheless, it is worth noting that this app is not available for free, making it a suitable option primarily for researchers or teachers with ample funding.

Last but not least, among the 30 studies, 16 (53.3%) utilized mobile interventions outside the classroom, nine (30%) in classroom, and only five (16.7%) in both contexts. As for studies conducted in China, seven implemented the treatment outside the classroom, four in class, and only one in both situations. Therefore, more studies may need to integrate mobile technology both in and outside the classroom.

In summary, social networking apps, English practice apps, and educational platforms all have the potential to enhance learners' oral English skills. Prior studies predominantly emphasized the mobility and portability, ubiquity, and informality of MALL, given that these apps were predominantly used outside the classroom without a predetermined time or place. However, the individuality and flexibility of mobile learning need to be further explored, as students have not had the opportunity to choose materials that interest them. The potential for interactivity has not been fully realized, as it was primarily reflected in giving feedback or voice chat. Furthermore, educational mobile apps have been employed merely as tools for "drill practice", where leaners imitate materials and engage in repetitive exercises, closely resembling traditional oral English practice. Consequently, there is a pressing need to move beyond this limited utilization and delve into a more comprehensive integration of the individualized, interactive, and flexible features of mobile learning to enhance students' oral English production.

3.4 Findings to Research Question Three

In this section, we explore how past studies assessed learners' oral English. As questionnaires and interviews mainly focused on gauging students' views on the treatment, here we specifically address the evaluation of students' oral English in pre- and post-tests.

For the evaluation of oral English performances in these tests, two main frameworks have been adopted. The first is the standardized grading mechanism where the overall score is divided into distinct levels or bands, known as "band scoring" or "level-based scoring". Among the 25 studies that implemented pre- and post-tests, 17 (68%) fell into this category. Firstly, the majority of studies adopted established scoring systems, while notable variations and innovative approaches were also evident. Cambridge English Language Assessment criteria were used in three studies, evaluating students across four aspects: grammar and vocabulary, discourse management, pronunciation, and interactive communication. Raters assigned scores using 5-point (ranging from 1 to 5) or 6-point (ranging from 0 to 5) bands. Moving on, five articles applied the IELTS scoring system (ranging from 1 to 9) to evaluate fluency and coherence, lexical resource, grammatical range and accuracy, and pronunciation. The TOEFL independent speaking scoring rubric was used in one study to measure four categories of learners' speaking performance: general description, delivery, language use and topic development (Huang, 2021). Baek and Lee (2021) employed a hybrid approach, combining IELTS descriptors with intelligibility and comprehensibility concepts on a 100-point scale. Nevertheless, the need for clarity on the integration of these scoring methods remains an area for improvement. Two studies (Ahmed et al., 2022; Chen & Chew, 2021) utilized the criteria of Hughes's speaking checklist to assess students' oral English performance from five dimensions: grammar, fluency, pronunciation, comprehension, and vocabulary, demonstrating a willingness to explore established frameworks from other reputable language proficiency tests.

Furthermore, the integration of technology, as seen in Zou et al.'s (2023) use of the SpeechAce Speaking test, highlights the evolving landscape of oral English assessments. Students' scores were generated automatically from the website based on pronunciation, fluency, vocabulary, and grammar. Researcher-developed assessing rubrics, adapted from previous studies, were also employed in four articles. Wulandari (2019) utilized a rating scale from 1 to 5 to assess pronunciation, fluency, vocabulary, syntax, and the use of the target language. Sherine et al. (2020) used a 40-point scale with level descriptors (e.g. A1, B2, C1). Zemlyanova et al. (2021) evaluated their students' oral English from fluency, content, pronunciation, grammar, and vocabulary, while Woldetsadik et al. (2022) looked into oral fluency, language control, content, and risk-taking (ability to be a creative user). These customized rubrics provide researchers with the flexibility to tailor assessments to specific learning objectives and institutional contexts. As a consequence, Figure 6, the word cloud of oral English assessment

criteria, showed that evaluators tend to grade students' speaking skills from pronunciation, vocabulary, grammar, and fluency.

Figure 6. Word cloud of oral English assessment criteria

The second assessment framework, known as the CAF method, involves an analysis of data to evaluate the complexity, accuracy, and fluency in order to determine the oral English proficiency of learners (Ellis, 2003; Ellis & Barkhuizen, 2005). Utilizing quantitative measures enables researchers to collect information on students' advancements, compare outcomes across different individuals, and monitor their growth over time. This facilitates a more precise evaluation of learners' development and the efficacy of instructional approaches employed (Housen & Kuiken, 2009). However, among the 25 articles, only 5 (20%) adopted this method. Amidst these, two articles solely focused on the accuracy of participants' spoken English. Rezaee et al. (2019) employed error-free clauses, while Ma and Ouyang (2021) used the total number of vocabulary errors as an inverse indicator of vocabulary accuracy. A more recent study, Cai and Zhang (2023) applied non-repeated words, t-unit count, and mean length of run after pruning.

Zeng et al. (2020) and Wang and Han (2021) examined the three dimensions of CAF through different calculation methods. Zeng et al. (2020) assessed sentence complexity, mean AS-unit length, lexical diversity (complexity), syntactic and pronunciation accuracy (accuracy), and syllables per minute and effective syllables per minute (fluency). In contrast, Wang and Han (2021) measured complexity with mean words per T-unit and lexical density, accuracy with repairs and errors per 100 words, and fluency with speech rate per minute and mean length of pauses. Results from the two studies were different: Zeng et al. (2020) found significant improvement in accuracy but not in complexity and fluency, while Wang and Han (2021) showed that complexity was significantly improved.

In summary, a large proportion of previous MALL studies measured learners' oral English using the band scoring method, with only a few applying the CAF framework. Moreover, the two studies that utilized the CAF framework generated different results. Therefore, there is a need to adopt the CAF framework more widely to assess students' oral English in future MALL studies.

4. Conclusion

This study conducted a systematic literature review to understand the status of MALL in enhancing English-speaking skills among higher education students in both Chinese and global contexts from 2019 to 2023. The analysis of 30 articles, selected from a total of 1834 retrieved from five reputable databases, revealed striking similarities in MALL studies between China and other countries, with subtle differences in sample size and the measurement of learners' oral English.

In both contexts, the favored research design for investigating MALL implementation in oral English was mixed-method research, emphasizing not only the actual improvement of participants' English-speaking skills but also their perspectives on MALL implementation. Quantitative research held the second position, while qualitative studies were comparatively limited. Many researchers leaned towards quasi-experimental methods for data collection, often without utilizing a control group. Primary instruments included pre- and post-tests, questionnaires, and interviews. Notably, learners often assessed their oral English proficiency in questionnaires and interviews based on fluency, pronunciation, and vocabulary, possibly influenced by the prevalent use of "band scoring" rubrics for evaluation. Chinese researchers exhibited a higher adoption rate of the CAF framework for oral English evaluation. However, inconsistent results indicate a need for further exploration and attention in future research on the application of CAF in mobile-assisted oral English learning.

Mobile phones or smartphones, social networking apps, English practice apps, and educational platforms were identified as having the potential to enhance learners' oral English skills. However, additional research is necessary to delve into the individuality, flexibility, and interactivity aspects of mobile learning in the English-speaking domain. Notably, the lack of a robust theoretical framework and limited sample sizes emerged as additional challenges in the realm of mobile-assisted oral English learning.

Recognizing MALL as a valuable tool in developing students' language proficiency, it is anticipated that future research will benefit from exploring and addressing the identified common features and challenges in MALL studies about oral English in both Chinese and global contexts. This literature review aims to inspire more researchers to delve into this field and contribute to its growth.

Acknowledgments

Not applicable

Authors' contributions

Mengfei Zhao was responsible for the conceptualization and writing, including the original draft, review, and editing. Prof. Nooreen Noordin supervised the methodology, formal analysis, and provided guidance in writing and editing. Dr. Norhakimah Khaiessa Binti

Ahmad contributed to editing the academic language. Lingxin Liu was responsible for data curation.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Competing interests

The authors have no competing interests to declare that are relevant to the content of this article.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Sciedu Press.

The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

Data sharing statement

No additional data are available.

References

Abugohar, M. A., Yunus, K., & Rashid, R. A. (2019). Smartphone Applications as a Teaching Technique for Enhancing Tertiary Learners' Speaking Skills: Perceptions and Practices. *International Journal of Emerging Technologies in Learning (iJET), 14*(09), 74-92. https://doi.org/10.3991/ijet.v14i09.10375

Adams Becker, S., Cummins, M., Davis, A., Freeman, A., Hall Giesinger, C., & Ananthanarayanan, V. . (2017). *NMC horizon report: 2017 higher education edition*. Retrieved from https://files.eric.ed.gov/fulltext/ED582134.pdf

Ahmed, A. A., Hassan, I., Pallathadka, H., Keezhatta, M. S., Haryadi, R. N., Al Mashhadani, Z. I., . . . Rohi, A. (2022). MALL and EFL Learners' Speaking: Impacts of Duolingo and WhatsApp Applications on Speaking Accuracy and Fluency. *Education Research International, 2022*, 1-10. https://doi.org/10.1155/2022/6716474

Ahn, T., & Lee, S. (2016). User experience of a mobile speaking application with automatic speech recognition for EFL learning. *British Journal of Educational Technology, 47*(4), 778-786. https://doi.org/10.1111/bjet.12354

Albogami, A., & Algethami, G. (2022). Exploring the Use of WhatsApp for Teaching Speaking to English Language Learners: A Case Study. *Arab World English Journal, 2*, 183-201. https://doi.org/10.24093/awej/covid2.12

Aliakbari, M., & Mardani, M. (2022). Mobile-Assisted Language Learning and Its Effects on Learners' Speaking Development. *Education Research International, 2022*, 1-14. https://doi.org/10.1155/2022/9043326

Alsaffar, M. J. (2021). Virtual Reality Software as Preparation Tools for Oral Presentations: Perceptions From the Classroom. *Theory and Practice in Language Studies, 11*(10), 1146-1160. https://doi.org/10.17507/tpls.1110.02

Andujar, A. (2016). Benefits of mobile instant messaging to develop ESL writing. *System, 62*, 63-76. https://doi.org/10.1016/j.system.2016.07.004

Ataeifar, F., Sadighi, F., Bagheri, M. S., & Behjat, F. (2019). Iranian female students' perceptions of the impact of mobile-assisted instruction on their english speaking skill. *Cogent Education, 6*(1), 1-19. https://doi.org/10.1080/2331186X.2019.1662594

Atay, E., & Gulseren, O. Z. (2020). The Efficiency of Mobile Assisted Language Learning (Mall) in Vocabulary Learning. In *Advances in Social Science Research*: St. Kliment Ohridski University Press.

Auliya, P. K. (2021). Mobile Assisted Language Learning: Platfoms To Support Students Teacher Improving Reading Skill. *Journal of English Teaching, Literature, and Applied Linguistics, 4*(1), 70-75. https://doi.org/10.30587/jetlal.v5i1.2527

Baek, J. S., & Lee, C. H. (2021). Effects of Mobile-Assisted Blended Learning on University Students' English Speaking Proficiency in

Korea. *Journal of Asia Tefl, 18*(4), 1266-1284. https://doi.org/10.18823/asiatefl.2021.18.4.12.1266

Cai, Y., & Zhang, L. J. (2023). Effects of mobile-supervised question-driven collaborative dialogues on EFL learners' communication strategy use and academic oral English performance. *Frontiers in Psychology, 14*, 1-18. https://doi.org/10.3389/fpsyg.2023.1142651

Chaya, P., & Inpin, B. (2020). Effects of Integrating Movie-Based Mobile Learning Instruction for Enhancing Thai University Students' Speaking Skills and Intercultural Communicative Competence. *English Language Teaching, 13*(7), 27-45. https://doi.org/10.5539/elt.v13n7p27

Chen, M. (2022). The Impact of Mobile Learning on the Effectiveness of English Teaching and Learning-A Meta-Analysis. *IEEE Access, 10*, 38324-38334. https://doi.org/10.1109/ACCESS.2022.3165017

Chen, Y., & Chew, S. Y. (2021). Speaking Performance and Anxiety Levels of Chinese EFL Learners in Face-to-Face and Synchronous Voice-based Chat. *Journal of Language and Education, 7*(3), 43-57. https://doi.org/10.17323/jle.2021.11878

Chen, Z., Chen, W., Jia, J., & An, H. (2020). The effects of using mobile devices on language learning: a meta-analysis. *Educational Technology Research and Development, 68*(4), 1769-1789. https://doi.org/10.1007/s11423-020-09801-5

Chen, Z., & Jia, J. (2020). Mobile-assisted Language Learning Research in China in the Past 20 years: Review and Prospect. *Foreign Language World, 1*, 88-95.

Dewi, P. A. K., Ratminingsih, N. M., & Santosa, M. H. (2020). Mobile-Assisted Task-Based Language Learning, Writing Competency, And Motivation. *JPI (Jurnal Pendidikan Indonesia), 9*(1), 119-130. https://doi.org/10.23887/jpi-undiksha.v9i1.23164

Dong, X., Yuan, Y., & Xu, Q. (2023). Action Research on Audiovisual-Based Speaking Continuation Task via Mobile-Assisted Language Learning. *Foreign Languages and Their Teaching, 1*, 84-95.

Durán-Bautista, D. C., & Huertas-Malagón, S. P. (2021). Mobile Phones-Assisted Practice and Note-Taking in Foreign Language Oral Production. *International Journal of Mobile and Blended Learning, 13*(2), 51-72. https://doi.org/10.4018/IJMBL.2021040104

Elaish, M. M., Hussein, M. H., & Hwang, G. J. (2022). Critical research trends of mobile technology-supported English language learning: A review of the top 100 highly cited articles. *Educ Inf Technol (Dordr), 28*(5), 4849-4874. https://doi.org/10.1007/s10639-022-11352-6

Elaish, M. M., Shuib, L., Hwang, G. J., Ghani, N. A., Yadegaridehkordi, E., & Zainuddin, S. Z. (2021). Mobile English language learning: a systematic review of group size, duration, and assessment methods. *Computer Assisted Language Learning, 36*(3), 430-456. https://doi.org/10.1080/09588221.2021.1931341

Ellis, R. (2003). *Task-based language learning and teaching*. Oxford: Oxford University Press.

Ellis, R., & Barkhuizen, G. (2005). *Analysing Learner Language*. Oxford: Oxford University.

Gokgoz-Kurt, B. (2023). Mobile-Assisted Peer Feedback for Oral Presentation Performance: L2 English Speakers' Perceptions and Practices. *TOJET: The Turkish Online Journal of Educational Technology, 22*(4), 140-152.

Guo, M., & Wang, M. (2018). Integrating WeChat-based Mobile-Assisted Language Learning into College English Teaching. *EAI Endorsed Transactions on e-Learning, 5*(17), 1-12. https://doi.org/10.4108/eai.25-9-2018.155646

Hou, Z., & Aryadoust, V. (2021). A review of the methodological quality of quantitative mobile-assisted language learning research. *System, 100*, 1-38. https://doi.org/10.1016/j.system.2021.102568

Housen, A., & Kuiken, F. (2009). Complexity, Accuracy, and Fluency in Second Language Acquisition. *Applied Linguistics, 30*(4), 461-473. https://doi.org/10.1093/applin/amp048

Huang, H. W. (2021). Effects of smartphone-based collaborative vlog projects on EFL learners' speaking performance and learning engagement. *Australasian Journal of Educational Technology, 37*(6), 18-40. https://doi.org/10.14742/ajet.6623

Hwang, G. J., & Fu, Q. K. (2018). Trends in the research design and application of mobile language learning: a review of 2007–2016 publications in selected SSCI journals. *Interactive Learning Environments, 27*(4), 567-581. https://doi.org/10.1080/10494820.2018.1486861

Keezhatta, M. S., & Omar, A. (2019). Enhancing Reading Skills for Saudi Secondary School Students through Mobile Assisted Language Learning (MALL): An Experimental Study. *International Journal of English Linguistics, 9*(1), 437-447. https://doi.org/10.5539/ijel.v9n1p437

Khubyari, L., & Narafshan, M. H. (2018). A Study on the Impact of Mall Mobile Assisted Language Learning on EFL Learners' Reading Comprehension. *International Journal of English Language Teaching, 6*, 34-44.

Klimova, B., Pikhart, M., Polakova, P., Cerna, M., Yayilgan, S. Y., & Shaikh, S. (2023). A Systematic Review on the Use of Emerging Technologies in Teaching English as an Applied Language at the University Level. *Systems, 11*(1), 1-15. https://doi.org/10.3390/systems11010042

Kukulska-Hulme, A., Lee, H., & Norris, L. (2017). Mobile learning revolution: Implications for language pedagogy. In C. A. Chapelle & S. Sauro (Eds.), *The Handbook of Technology and Second Language Teaching and Learning* (pp. 217-233). Oxford: Wiley & Sons.

https://doi.org/10.1002/9781118914069.ch15

Kukulska-Hulme, A., & Shield, L. (2008). An overview of mobile assisted language learning: From content delivery to supported collaboration and interaction. *ReCALL, 20*(3), 271-289. https://doi.org/10.1017/S0958344008000335

Kumar, R. (2019). *Research Methodology A Step-by-Step Guide for Beginners, 5th edition* (A. Owen Ed.). London: SAGE Publications Inc.

Lazaraton, A. (2014). Second language speaking. In D. B. M. S. E. M. Celce-Murica (Ed.), *Teaching English as a second or foreign language* (pp. 106-120). Boston, MA: National Geographic Learning.

Leong, L. M., & Ahmadi, S. M. (2017). An Analysis of Factors Influencing Learners' English Speaking Skill. *International Journal of Research in English Education, 2*(1), 34-41. https://doi.org/10.18869/acadpub.ijree.2.1.34

Li, F., Fan, S., & Wang, Y. (2022). Mobile-assisted language learning in Chinese higher education context: a systematic review from the perspective of the situated learning theory. *Education and Information Technologies, 27*(7), 9665-9688. https://doi.org/10.1007/s10639-022-11025-4

Li, R. (2023). Effects of Mobile-Assisted Language Learning on EFL Learners' Listening Skill Development. *Educational Technology & Society, 26*(2), 36-49.

Li, S., & Gao, Y. (2016). An Empirical Study of the effects of MALL on English Vocabulary Learning. *Foreign Language World 4*, 73-81.

Luo, Q., & Shi, M. (2022). Empirical Studies on Mobile-Assisted Language Learning in China: A Review of Selected Research. *Frontiers in Educational Research, 5*(13), 45-57. https://doi.org/10.25236/FER.2022.051309

Luo, Z. (2023). The Effectiveness of Gamified Tools for Foreign Language Learning (FLL): A Systematic Review. *Behav Sci (Basel), 13*(4). https://doi.org/10.3390/bs13040331

Ma, J., & Ouyang, H. (2021). An Empirical Study of WeChat-Assisted Oral English Vocabulary Accuracy Development. *Technology Enhanced Foreign Language Education, 2*, 37-44.

Moreno, A. I., & Vermeulen, A. (2021). A Comparative Analysis of a Mobile App to Practise Oral Skills: in Classroom or Self-directed Use? *Journal of Universal Computer Science, 27*(5), 472-484. https://doi.org/10.3897/jucs.67032

Mykytiuk, S., Lysytska, O., Melnikova, T., & Mykytiuk, S. (2022). Facebook as a Flexible Ubiquitous Learning Space for Developing Speaking Skills. *IAFOR Journal of Education: Language Learning in Education, 10*(1), 109-133. https://doi.org/10.22492/ije.10.1.06

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., . . . Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ, 372*, n71. https://doi.org/10.1136/bmj.n71

Palalas, A. (2011). Mobile-Assisted Language Learning: Designing for Your Students. In S. Thou ësny & L. Bradley (Eds.), *Second language teaching and learning with technology: views of emergent researchers* (pp. 71-94). Dublin: Research-publishing.net. https://doi.org/10.14705/rpnet.2011.000007

Pearson, A., White, H., Bath-Hextall, F., Salmond, S., Apostolo, J., & Kirkpatrick, P. (2015). A mixed-methods approach to systematic reviews. *Int J Evid Based Healthc, 13*(3), 121-131. https://doi.org/10.1097/XEB.0000000000000052

Peng, H., Jager, S., & Lowie, W. (2021). Narrative review and meta-analysis of MALL research on L2 skills. *ReCALL, 33*(3), 278-295. https://doi.org/10.1017/S0958344020000221

Rajendran, T., & Yunus, M. M. (2021). A Systematic Literature Review on the use of Mobile-assisted Language Learning (MALL) for Enhancing Speaking Skills among ESL and EFL Learners. *International Journal of Academic Research in Progressive Education and Development, 10*(1), 586-609. https://doi.org/10.6007/IJARPED/v10-i1/8939

Rao, P. S. (2019). The Role of English as a Global Language. *Research Journal of English, 4*, 65-79.

Rashid, R., Mohamed, S., Rahman, M., & Shamsuddin, S. (2017). Developing Speaking Skills Using Virtual Speaking Buddy. *International Journal of Emerging Technologies in Learning (iJET), 12*(05). https://doi.org/10.3991/ijet.v12i05.6955

Reinders, H., & Benson, P. (2017). Research agenda: Language learning beyond the classroom. *Language Teaching, 50*(4), 561-578. https://doi.org/10.1017/S0261444817000192

Rezaee, A. A., Alavi, S. M., & Razzaghifard, P. (2019). The impact of mobile-based dynamic assessment on improving EFL oral accuracy. *Education and Information Technologies, 24*(5), 3091-3105. https://doi.org/10.1007/s10639-019-09915-1

Saidouni, K. (2019). *The Effect of Mobile-Assisted Language Learning on Developing EFL Students' Speaking Skill: The Case of Second Year Students of English at Batna -2.* (Doctor). University of Mostafa Benboulaid Batna-2 –Algeria,

Sekaran, U., & Bougie, R. (2013). *Research Methods for Business: A Skill-Building Approach (6th ed.).* . New York: John Witey and Sons.

Shadiev, R., Liu, J., & Cheng, P. (2023). The Impact of Mobile-Assisted Social Language Learning Activities on Speaking Skills and Self-Efficacy Development. *IEEE Transactions on Learning Technologies, 16*(5), 664-679. https://doi.org/10.1109/TLT.2023.3243721

Sherine, A., Sastry, M. M., & Seshagiri, A. V. S. (2020). Improving second language speaking and pronunciation through smartphones. *International Journal of Interactive Mobile Technologies, 14*(11), 280-287. https://doi.org/10.3991/ijim.v14i11.13891

Sherine, A., Seshagiri, A. V. S., & Sastry, M. M. (2020). Impact of WhatsApp Interaction on Improving L2 Speaking Skills. *International Journal of Emerging Technologies in Learning (iJET), 15*(03), 250-259. https://doi.org/10.3991/ijet.v15i03.11534

Shi, Z., Luo, G., & He, L. (2017). Mobile-assisted Language Learning Using WeChat Instant Messaging. *International Journal of Emerging Technologies in Learning (iJET), 12*(02), 16-26. https://doi.org/10.3991/ijet.v12i02.6681

Traxler, J., & Kukulska-Hulme, A. (2016). Conclusion: Contextual challenges for the next generation. In J. Traxler, & Kukulska-Hulme, A. (Ed.), *Mobile learning: The next generation* (pp. 208-226). London: Routledge. https://doi.org/10.4324/9780203076095-13

Trifonova, A., Knapp, J., Ronchetti, M., & Gamper, J. (2004). Mobile ELDIT: Challenges in the Transition from an e-Learning to an m-Learning System. *Proceedings of ED-MEDIA*.

Wang, H. (2018). Needs analysis of academic spoken English for Chinese college students. *Journal of Xi ′ an International Studies University, 26*(1), 81-87.

Wang, Z., & Han, F. (2021). Developing English language learners' oral production with a digital game-based mobile application. *PLoS One, 16*(1), e0232671. https://doi.org/10.1371/journal.pone.0232671

Winet, D. (2016). Mobile Instant Messaging in the ESL Writing Class. *The Electronic Journal for English as a Second Langage, 20*, 1-6.

Woldetsadik, G. T., Bachore, M. M., Woldeab, T. A., & Gezahegn, T. H. (2022). Mobile-based aural oral skill lessons: The effects on EFL teacher trainees' oral performance. *Cogent Education, 9*(1), 1-34. https://doi.org/10.1080/2331186X.2022.2112943

Wu, H., & Ekstam, J. M. (2021). Beyond Parroting Using English Fun Dubbing to Improve English Oral Performance. *Chinese Journal ofApplied Linguistics, 44*(2), 203-218. https://doi.org/10.1515/CJAL-2021-0012

Wu, J. G., & Miller, L. (2020). Improving English Learners' Speaking through Mobile-assisted Peer Feedback. *RELC Journal, 51*(1), 168-178. https://doi.org/10.1177/0033688219895335

Wulandari, M. (2019). Improving EFL Learners' Speaking Proficiency Through Instagram Vlog. *LLT Journal: Journal on Language and Language Teaching, 22*(1), 111-125. https://doi.org/10.24071/llt.v22i1.1796

Xu, Q. (2020). Applying MALL to an EFL Listening and Speaking Course: An Action Research Approach. *Turkish Online Journal of Educational Technology, 19*(4), 24-34.

Yassin, B., & Abugohar, M. A. (2022). Gamified Mobile-Assisted Formative Assessment for Reviving Undergraduate Learners' Overall Language Proficiency: A Quasi-Experimental Study. *Teaching English with Technology, 22*(2), 69-89.

Yuan, L. (2019). Promoting EFL Communicative Competence through Connectivism Learning Models--When Flipped Classroom Meets WeChat. *Higher Education Exploration*, *5*, 26-31.

Zaki, A. A., & Yunus, M. M. (2015). Potential of Mobile Learning in Teaching of ESL Academic Writing. *English Language Teaching, 8*(6), 11-19. https://doi.org/10.5539/elt.v8n6p11

Zemlyanova, M., Muravyeva, N., Masterskikh, S., Shilova, L., & Shevtsova, A. (2021). Advancing English Language Learners' Speaking Skills Using VoiceThread in Mobile Learning for Russian Tertiary Context. *International Journal of Web-Based Learning and Teaching Technologies, 16*(6), 1-11. https://doi.org/10.4018/IJWLTT.286754

Zeng, G., Wang, Y., & Tan, X. (2020). Effects of Two Peer Feedback Modes on English Oral Performance in a Mobile Assisted Language Learning Environment. *Foreign Languages and Their Teaching*, *6*, 109-120.

Zhang, Y. (2022). On the Practical Path of High-quality Employment for Business English Majors in Higher Vocational Colleges. *Economic and Trade Talents, 322*, 163-165.

Zhou, Y. (2019). Design and Practice of the Blended Teaching Model for Oral Presentation in College English. *Modern Educational Technology, 29*(3), 85-91.

Zhou, Z. (2021). A Systematic Literature Review on the use of Mobile-assisted Language Learning (MALL) for Enhancing Speaking Skills in Chinese EFL context. *International Journal of Frontiers in Sociology, 3*(15), 12-24. https://doi.org/10.25236/IJFS.2021.031502

Zou, B., Guan, X., Shao, Y. H., & Chen, P. (2023). Supporting Speaking Practice by Social Network-Based Interaction in Artificial Intelligence (AI)-Assisted Language Learning. *Sustainability, 15*(4), 1-19. https://doi.org/10.3390/su15042872