

# Handbook of Research on Determining the Reliability of Online Assessment and Distance Learning

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## Chapter 8

# The Effectiveness of Mobile-Assisted Language Learning (MALL): A Review of the Extant Literature

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### **ABSTRACT**

*This chapter examines the effectiveness of mobile-assisted language learning (MALL) through investigating the evidence from the extant literature. MALL is widely used by teachers and institutions to support different models of language teaching such as content and language integrated learning (CLIL) and English as a medium instruction (EMI). In particular, the chapter focuses on the determinants of MALL through reviewing a number of studies which show that the evidence points to a complex relationship rather than a unidimensional one in terms of MALL's place in language learning and its effectiveness in reality. The study once more emphasises the complex nature of language learning and cautions about the promise and risks of adoption of MALL.*

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## ***The Effectiveness of Mobile-Assisted Language Learning (MALL)***

### **INTRODUCTION**

There has been a sea change in mode of teaching and learning during the Covid-19 pandemic, which rendered the use of mobile technologies a must for most institutions. Often caught unprepared, educational establishments had to assess fast the use of alternative modes or mobile assisted learning in the field of education, language learning has also had its share of shock waves making mobile learning the only viable and safe learning environment. In this context of health crises, it has become of utmost importance to assess the effectiveness of alternative methods of mobile learning options. Mobile assisted language learning (MALL) is a self-paced learning supported and/or facilitated by any kinds of mobile device (i.e. mobile phones, tablets, or pads) that can be used while language learning and teaching (Hoi, 2020; Ezra & Cohen, 2018; Shi, Luo & He, 2017; Sun et al., 2017).

MALL is extensively used to increase the effectiveness of different language teaching methods i.e. English as a Medium Instruction (EMI) and Content and Language Integrated Learning (CLIL) which combine content and linguistic skills in parallel (Aguilar & Muñoz, 2014; Yang, 2015). The applications of MALL are particularly found appropriate for CLIL method since MALL can create a learning environment where L2 (second language) as the vehicular language can be practiced anytime and anywhere. Yet, this chapter does not only focus on the impact of MALL applications on CLIL. The main reason of this is that researchers in the field have a common belief that the effects of technology are more or less the same for different language teaching models (Loewen et al., 2019; Kukulska-Hulme & Traxler, 2013). Busy life courses that leave people with less time to spend in language classrooms and social aspects of language learning (i.e. social environments shaping individuals' knowledge) have led to a noticeable shift towards a more mobile technology-based language education (Cerezo, Calderón & Vicente, 2019; Kukulska-Hulme, Lee & Norris, 2017; Reinders & Benson, 2017).

In line, advances in mobile technology enabled educators to implement several technology-oriented language teaching models to improve learning performance of students (García Botero, Questier & Zhu, 2019; Zou, Li & Li, 2018; Burston, 2015; Song & Fox, 2008). Besides, learners could experience their personal studying atmosphere as well as obtaining freedom to access learning materials through the use of various functions of mobile devices (Zou et al., 2018; Wu, 2016). Parry (2011) claims that “the future students will inherit is one that will be mediated and stitched together by the mobile web” (p. 16). Similarly, Zou et al. (2018) who term the current society as the “mobile society”, state that “mobile learning is one of the significant tools by which learners can learn English without the restriction of time and place” (p. 694). Indeed, the mobile learner society argument of Zou et al. (2018) is supported by the estimates which show that the number of new mobile subscribers would reach 5.9 billion by 2025 (Kaliisa, Palmer & Miller, 2019). Needless to say that this trend will increase the integration of mobile technologies into language teaching evermore.

There are innovative features of mobile technologies and diverse mobile applications that aim to enhance different skills of learners. These applications can either be the specialised ones that were developed for the specific requirements of language learners (i.e. Babbel, Duolingo, Rosetta Stone), or the more generic type of current social media applications (i.e. Facebook, Kahoot, Twitter, WhatsApp, WeChat) that can be used in combination with other conventional language learning and teaching methods.

Against the widespread implementation of MALL in language classes, numerous studies (i.e. Loewen et al., 2019; Moghari & Marandi, 2017; Burston, 2015; Chinnery, 2006) which have investigated the effectiveness and success of MALL for English language learning and teaching yielded inconclusive results. The emergence of these mixed findings shows that the benefits and effectiveness of MALL need



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further exploration. Therefore, based on the extant MALL literature, the empirical efforts into better understanding of MALL implementation and the factors influencing MALL effectiveness are reviewed in this study. It is believed that this review which consists several MALL-related empirical studies, may help us to understand to what extent, in what ways and how MALL can contribute L2 English learning and teaching.

## **BACKGROUND**

Mobile assisted language learning is defined as “the use of smart phones and other mobile technologies in language learning, especially in situations where portability and situated learning offer specific advantages” (Kukulka-Hulme, 2013, p. 3701). Coupled with technological developments, teaching English language by MALL applications became a popular method in many countries.

Research examined the effects of incorporating mobile technology elements into English as a Foreign Language (EFL) programmes and found that the materials produced or delivered by mobile technology helped students learn vocabulary (Cakmak & Ercetin, 2018; Solak & Cakir, 2015; Nakata, 2011; Stockwell, 2010), grammar (Moghari & Marandi, 2017) and spelling (Fouz-González, 2017; Shih, Lee, & Cheng, 2015), promoted positive changes in their attitudes toward extensive reading (Lin, 2014; Chang & Hsu, 2011), improved confidence in their learning skills (Xu & Peng, 2017; Kim et al., 2013; Demouy & Kukulka-Hulme, 2010), and enhanced autonomous learning (Chen & Wang, 2016; Reinders & White, 2016). MALL-related applications were used in different national educational settings such as Turkey (Loewen et al., 2019; Basoglu & Akdemir, 2010), Iran (Baleghizadeh & Oladrostam, 2010), Malaysia (Gabarre & Gabarre, 2010), Morocco (Morchid, 2019), Saudi Arabia (Al-Jarf, 2012), China (Wu, 2018), Taiwan (Lin & Yu, 2012), Russia (Titova & Danilina, 2018) and Vietnam (Hoi, 2020). The study by Wu (2018) that was conducted in a Chinese tertiary EFL setting found that task-oriented MALL-based practices resulted in complex and meaningful discussions among learners.

However, the systematic review by Klimova (2018) found that although “the use of mobile phones and/or smartphones and their apps generate positive effects on learning English as a foreign language, especially in the development of learners’ vocabulary and their increased motivation to study” (p. 1091), it also offers several limitations such as a lack of pedagogical justifications, high costs of devices and a lack of human contact. In a more recent study, Kacetl and Klimova (2019) mention several pitfalls of MALL such as “students’ potential lack of attention caused by mobile phone multi-tasking, the lack of apps suitable for English for Specific Purposes (ESP) and at various levels of proficiency” (p. 2).

Some theorists (i.e. Hoi, 2020; Morchid, 2019; Hsu, 2013) claim that the success of MALL is subject to a number of psychological factors such as learners’ perceptions, attitudes and intentions toward MALL, in addition to the technological factors. Therefore, comprehensive models like the Unified Theory of Acceptance and Use of Technology (UTAUT) which integrates the social, psychological and technological aspects of mobile learning and teaching into one framework are used (Kukulka-Hulme et al., 2017; Venkatesh et al., 2003). These models represent the complicated relationship between the implementation of MALL and learning effectiveness once more. Undoubtedly, this complex relationship in which many determinants play different roles, makes more difficult for researchers to assess the effectiveness of MALL. Thus, in this review study, the effectiveness and learning outcomes of MALL implementation projects are evaluated.

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### **MAIN FOCUS OF THE CHAPTER**

#### **A Review of Empirical MALL Studies**

This chapter intends to explore empirical, peer-reviewed MALL studies from 2010 to May 2020 that report on using mobile applications in L2 classes and to determine whether MALL is beneficial and effective on language learning and teaching. The chapter only aims to provide sufficient insights about the impact of MALL on language learning without implying the superiority of one study and/or one journal over another in the field.

#### **Methods**

The studies for this review were selected based on a search in ERIC and SCOPUS databases which included most of the studies in the field of MALL. The search period covered the studies that were published between January 2010 and May 2020. The reason behind the choice of this period was that a number of comprehensive systematic review studies (i.e. Burston, 2015; Kukulska-Hulme & Shield, 2008) that covered the period before 2010 had already been published. In order to avoid presenting duplicated outcomes, this review focused on a more recent period of time. The searched collocated keywords were mobile assisted language learning AND effectiveness. From the database search, 982 titles/abstracts were identified at the initial screening. After the inclusion and exclusion criteria, 13 articles were found relevant. These criteria were as follows:

- Publication period between January 2010 and May 2020
- Only full text articles in English (conference papers, chapters, editorial notes and reviews were excluded)
- Only empirical (experimental/quasi-experimental) studies
- The primary outcome focused on the effectiveness of MALL applications on language learning, specifically

The 13 articles which focused on the efficacy of MALL in the development of English language skills were compared based on the objectives, main outcome measures, findings and limitations (see Table 1). Yet, in order to provide more insightful and in-depth outcomes, some of these articles were reviewed in detail through a further analysis. A detailed review of 13 articles would not be possible in this chapter, so some additional criteria like the articles that were highly cited and published by journals with high impact factors in the field were used. Based on this systematic yet to some extent subjective assessment, 4 studies were eventually involved into the final analysis.

Therefore, in addition to conducting a general review of the extant MALL literature, this section examines in detail four studies that are Demouy and Kukulska-Hulme (2010), Hsu (2013), Lin (2014) and Park and Slater (2014) which report on using mobile applications in L2 classes.

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*Table 1. An overview of empirical studies on the use of MALL for TEFL*

Study	Objective	Sample	Main outcome measures	Findings	Limitations
Demoy & Kukulskala-Hulme (2010)	To investigate the effectiveness of mobile devices such as mobile phones, iPods, and MP3 players on completing students' listening and speaking activities.	70 university students were divided into two groups (Group 1 would be using iPod/MP3 players, Group 2 mobile phones).	A questionnaire and a follow-up interview.	Group 1 found the activities that were conducted by iPod/MP3 more useful and beneficial than Group 2 in which the activities were done by mobile phones. Phonetics and general listening skill practices were mostly preferred by the participants throughout the six weeks.	Small sample size, high cost of making phone calls resulted in low response rate, to some extent biased findings because of the self-reported data. Different activities conducted by Group 1 and Group 2 might lead to inadequate comparisons.
Hayati, Jalilifar, & Mashhadi (2013)	To explore the effect of Short Message Service (SMS) on students' English idioms learning and to seek students' perceptions and attitudes toward MALL.	60 Persian learners of English aged between 19-24 years from a private English language institute.	Pre- and post-test.	The students who received short mini-lessons on their mobile phones via SMS were more enthusiastic and performed better than their counterparts on paper or contextual groups.	Homogenous sample which might yield results that were not generalizable to the target population.
Hsu (2013)	To discover the perception of participants about the effectiveness and usefulness of MALL in an English as a foreign language (EFL) class at a university in Taiwan.	45 university students were divided into three groups of 15 and each group was assigned a task.	A survey where responses of students were rated on a five-point Likert scale.	The Asian students prioritised usefulness of MALL, whereas their European counterparts concerned with enjoyment. The findings showed the cultural significance of MALL as related to how students use the technology (entertainment vs. learning) and its benefits.	Limited sample size and subjective assessment of MALL effectiveness.
Wang & Smith (2013)	To explore the feasibility and the limitations of developing students' English reading and grammar skills through mobile phones.	10 advanced-level university students.	A questionnaire and a follow-up interview.	The study reports that reading and learning grammar using mobile devices is regarded as a positive language experience by the participants.	Limited sample size and self-reported data.
Jung (2014)	To investigate the determinants of English language learners' satisfaction with ubiquitous learning conducted by MALL.	376 high-school and university students.	Quantitative study that uses regression analyses.	Omnipresence, self-directed learning, perceived enjoyment, interactivity, and context customisation along with the learner characteristic, computer self-efficacy were found to be the main determinants of the satisfaction with ubiquitous learning	Limited generalisability of the findings because of the cross-sectional design.
Lin (2014)	To examine the effects of mobile tablet PCs on extensive reading (ER) abilities and attitudes toward reading.	84 low-intermediate high-school adolescent EFL students were divided into treatment and control groups.	The users' learning records on Raz-Kids, the reading skills tests on Raz-Kids, and the Technology Acceptance Model Questionnaire.	The treatment group showed greater appreciation on the usefulness, ease of use and satisfaction for the online ER programme than the control group.	Heterogeneous group differences that might result in inappropriate comparisons and performance outcomes were not considered. A pre-test might have been useful in extracting differences in performance better.

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**The Effectiveness of Mobile-Assisted Language Learning (MALL)***Table 1. Continued*

Study	Objective	Sample	Main outcome measures	Findings	Limitations
Park & Slater (2014)	To explore English as Second Language (ESL) teachers and learners' patterns of mobile device use and the target language tasks learners need/want to perform while using mobile devices.	23 ESL teachers and 76 ESL students from the same university.	Semi-structured interviews and a follow-up survey.	The findings revealed that only 15% ESL teachers, though they could see the potential of mobile devices, had experienced MALL in their teaching and learning classes, compared to 60% of students.	Small sample size.
Wu (2015)	To discover if a MALL related application can improve students' ability to retain English vocabulary.	70 medical students were divided into experimental and control groups.	Pre- and post-test.	The study found that the participants in the experimental group remembered nearly 89 more new words than the ones in the control group.	A lack of more in-depth methodology to understand the mechanism of the retention of more vocabulary. Some missing functions in the mobile application which might affect learning performance.
Andujar (2016)	To investigate the benefits of Mobile Instant Messaging (MIM) that uses WhatsApp application for Teaching English as a second or foreign language (TEFL) learners.	80 university students were divided into experimental and control groups.	Pre- and post-test.	The study finds a significant relationship between MIM and the improvement of accuracy in TEFL's writing element. Besides, WhatsApp seems to contribute to the interactions between students in English language.	Small sample size and homogenous groups which might yield estimates that were not generalizable to the target population.
Tarighat & Khodabakhsh, (2016)	To explore the feasibility of MALL on language learning and mobile-assisted language assessment.	17 learners of English, aged from 19 to 48.	In-depth interviews.	The findings suggest that MALL may improve speaking skills of the students and mobile-assisted language assessment could help students practice their speaking skills while being assessed.	Small and homogenous sample size.
Hao et al. (2019)	To investigate the effectiveness of MALL on weak students' EFL skills.	10 low achieving seventh-grade junior high school students in an EFL classroom.	Interviews, observation, surveys, and exams.	The results showed that the overall score of most students in the vocabulary tests increased and significant improvements in the spelling of English vocabulary was achieved.	Small sample size, adoption of the school specific teaching materials, and provision of limited time for the tests and interviews.
Klimova (2019)	To illustrate that smartphone apps can contribute to the enhancement of university students' language learning performance.	33 university students.	Qualitative, case study.	The findings show that, in particular, studying and revising English vocabulary and phrases via smartphones is effective in the enhancement of university students' language learning performance.	Small sample size and availability of the app only in the Android platform.
Loewen et al. (2019)	To examine the effectiveness of one specific language learning app, Duolingo, for L2 Turkish learning.	9 graduate students from Michigan State University.	A mixed-methods study that uses both descriptive statistics and thematic analyses to understand the experiences of participants.	The results indicate a positive, moderate correlation between the amount of time spent on Duolingo and learning outcomes such as reading, writing, lexicogrammar, listening, and speaking.	Small sample size, the uncommon characteristics of the participants which might have positively influenced the efficacy of their study.

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#### **Demouy and Kukulska-Hulme's (2010) Study**

The study by Demouy and Kukulska-Hulme (2010) explored if the students found mobile devices such as mobile phones, iPods, and MP3 players helpful to complete their listening and speaking activities and considered the devices applicable for in a French language course. The study which was conducted on a sample of seventy students divided into two groups of thirty-five participants, ran for six weeks. The participants were asked to complete a survey at the end of each week and they were provided a two-week extension to complete their contributions. Both groups had the same questionnaire which included questions about the frequency and the conditions where students did tasks by using mobile devices. Group 1 participants who downloaded materials from the website of the course onto their iPods and MP3, were asked to listen to the audio clips and note the type of audio activity they preferred doing, and their perceptions on how activities contributed their learning. Furthermore, the setting in which they practiced and what they were doing simultaneously were investigated. The audio clips included dialogues and short presentations. Group 2 participants were also assigned interactive speaking and listening tasks that were available through a voice response system and students were asked to complete the activities by their mobile phones. Group 2 participants called through a (low-toll) phone system where they reached the material which consists “short listening comprehensions, pronunciation and intonation activities, grammar practice drills, prompted dialogues and short presentations” (p. 223) and vocalised their responses to questions about them, or repeated target sentences. In addition to the identical questionnaire, they were requested to provide an oral feedback on each activity they did.

While 71% of Group 1 participants responded to the first online questionnaire, 51% of them responded to the second, 49% to the third, 43% to the fourth, 31% to the fifth and 43% to the sixth. Despite the declining trend, Group 1 achieved an average of 48% response rate over the six weeks. The findings for Group 1 showed that the participants engaged with the activities in a variety of locations such as a hotel room, a beach, a supermarket, or at work. Practising while travelling on public transportation (36%), or while exercising (45%) was the most common context for activities among the participants. Nearly all participants of Group 1 found the activities useful. However, when the usefulness of activities was ranked, practicing general listening skills and helping towards phonetics practices scored consistently higher throughout the six weeks. For Group 2, while 28% of the participants responded the first week, the response rate decreased to 10% in the second week. After the third week, 23 new participants were added to Group 2, yet responses for the following weeks still remained very low (12%-9%). Due to the cost of the call charges and pressures from other studies, Group 2 participants refrained conducting the activities outside their homes and did not take advantage of the mobility afforded by the phone.

Therefore, the research design of this study seemed somewhat problematic for several reasons. First, requiring participants to pay to make phone calls led (predictably) to high student attrition in Group 2. Given the cost of making phone calls, the researchers should have taken some precautions. Second, the differences in activities between the groups where frequent speaking was required for Group 2, should have been considered. Besides, while Group 1 did the activities easily by using the DVD-ROM, Group 2 was disadvantaged by mobile telephones since hearing the dialogues and manipulating the exercises quickly such as replaying a clip, or skipping to other exercises were problematic. The study aimed to provide a conclusion through combining the findings of Group 1 and Group 2. However, the situation makes it impossible to draw a conclusion about the performance effects of MALL which was typically mentioned by Burton (2015), “[when] the devices used to access the self-study programs were not tracked, it is impossible to attribute the positive results to the use of any particular listening device”

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(p. 8). Third, in order to deal with student attrition, adding new participants to sample on the halfway through should not be treated as a common practice, rather this would have been considered as a limitation. Finally, one benefit of mobile learning is that it can happen anytime, anywhere, yet the effectiveness and benefit of mobile learning, in particular, listening (or speaking) activities while doing other things might be questioned (Burston, 2015; Moghari & Marandi, 2017). This is an issue at the heart of mobile learning (Burston, 2014; Chinnery, 2006) but the researchers seemed to interpret this situation as a default positive quality. The nature of the listening and/or speaking tasks should have been revealed more in the discussion section since comprehension performance expectations from actively and passively listening (or speaking) can change (Goh, 2010; Vandergrift & Cross, 2017). For example, “doing” the listening while watching sports may not be necessarily the same as “doing” the listening in a structured and focused way. In regard to the reliability of results, apart from the weakness of self-reported data by the participants, no information about the nature of the relationship between the researchers and the students was provided. It is not known whether the researchers were also the teachers of participants and the participants answered the questions in the way that their teachers would like to hear. Furthermore, given the decreasing participation rates, the students who choose to fill the questionnaires each week might have been the ones most engaged with and receptive to using technology. Thus, the survey results might be biased.

### **Hsu's (2013) Study**

The study by Hsu (2013) which was conducted on a sample of 45 students aimed to investigate the perception of participants about the effectiveness and usefulness of MALL in an English as a foreign language (EFL) class at a university in Taiwan. The students from 7 different countries/regions were asked to present their opinions on the constructs of technological affordance, applicability, and the constructivism of MALL. Students represented India (4), Japan (7), Macao (8), Malaysia (5), Singapore (8), Taiwan (6), and Thailand (7). The 45 participants were randomly divided into three groups of 15. Each group was assigned a task to learn the names of 20 popular snacks at a night market. The instructor and students corresponded via mobile phones. A survey where responses were rated on a five-point Likert scale was used to measure the students' attitudes toward mobile learning. The number of items used in the study was not reported, yet the items in the three constructs had an acceptable internal consistency based on Cronbach's alpha coefficients. Group differences based on the nationalities of students were analysed by ANOVA.

According to the results, technological affordances were not highly rated in part because Asian students are believed to highly value teachers and thus see teachers as irreplaceable by technology. Regarding the construct of applicability, while Asian students prioritised usefulness of MALL, their European counterparts seemed to be more concerned with enjoyment. Finally, constructivism was rated highly among all participants as it stated that constructivism is integral in the students' cultural and pedagogical origin (Hsu, 2013, p. 207-208). Hsu (2013) suggests that these findings corroborate previous research that examined the cultural significance of MALL as related to how students use the technology (entertainment vs. learning) and its benefits. The findings of this study need to be replicated in different EFL contexts. While the study based on a limited sample size reflects internal reliability, it might be difficult to generalise the findings. Moreover, the study focuses on the attitudes toward MALL applications rather than the impact of MALL on students' language learning performance in university settings.

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#### **Chih-Cheng Lin's (2014) Study**

Lin (2014) examined the effects of mobile tablet PCs on extensive reading (ER) abilities and attitudes toward reading on a sample of 84 low-intermediate high-school adolescent EFL students from Taiwan. Extensive reading is defined “as a reading pedagogy in which language learners freely choose reading material of their interests and, in a rather fast pace, they read large quantities of material for enjoyment, information and comprehension” (Grabe & Stoller, 2002, p. 259). Considering the paucity of research (Lin, 2014) exploring the effects of mobile learning on ER, the author aimed to bridge a gap. Therefore, with a very specific aim, the study investigated the effectiveness of using mobile integration in online extensive reading programmes (ERP) in natural settings as opposed to desktop personal computer (PC) use in class settings. The study sought to find answers to three questions: Do mobile tablet PC users and desktop PC users show any differences in learning activities (1), in learning performances (2) and in users’ perceptions (3) in the online ERP?

A ten-week online ERP was designed and taught by the same English teacher. The sample was divided into two groups: the control group and the treatment group. Both groups participated in regular classes four times a week and each week one class period (the duration of class period was not clearly mentioned) was dedicated to in-class reading. However, the participants were encouraged to read as much as possible outside of regular class hours. An online platform called Raz-Kids was created in a learning management system to implement the programme. The platform which included several ER activities, enabled the teacher to have information about the frequency of student visits, the time spent on the platform, the books that were read and the activities that were done. Additional information was provided from the reading skills tests to assess participants’ reading comprehension. In total, twenty reading skills were classified into four categories by using Bloom’s taxonomy of thinking processes (1956) that were “knowledge, comprehension, application and analysis”. Furthermore, the perception of participants on the reading devices and the online ERP were collected by the Technology Acceptance Model Questionnaire (TAMQ). Finally, the students were asked to give a written feedback about the programme. Both groups had exactly the same instruction, yet while the control group participated in the classes with their PCs, the treatment group used their mobile devices to complete the activities.

The study presented straightforward and clear research questions to measure preferences, performance and perceptions of the participants on the online ERP. A simple but concise research design that uses control and treatment groups along with a number of control variables such as the same teacher, the same curriculum and instruction on the same ERP platform to measure the pure differences can be considered as a strength of the study. In combination with a thorough study design, consideration of multiple resources (i.e. reading tests, TAMQ, and written feedbacks) to make an assessment on the outcomes can increase the reliability of findings. However, although written feedback from the participants might provide valuable insights about issues that were not mentioned in the other data resources, categorisation of qualitative data could be challenging. The author did not explain how written feedback data were analysed and how properly data was categorised.

Regarding the findings, a significant difference in favour of treatment group was found in terms of spending more time on the ERP platform, reading more books and taking more tests than the control group. Besides, the mobile (treatment) group outperformed the PC (control) group in reading achievement and reading skills both overall and on each reading skill. While both groups perceived the online ERP platform positively, the mobile group showed greater appreciation on the usefulness, ease of use and satisfaction for the online ERP than the PC group. Thus, the findings offered some proof that the

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integration of mobile devices with ERPs can support and enhance learners' reading skills and satisfaction, by giving them the freedom to read whenever and wherever they can.

The ten-week period of the study enabled the researchers to attain significant results from treatment and a strong indication of experimenter effect was seen in the study. Given the impossibility of finding entirely homogenous groups, a pre-test might have been useful in extracting differences in performance better. Overall, the study that used a satisfactory sample size seemed to offer interesting findings which led the researchers to drawing some meaningful conclusions. However, more replication studies are recommended.

### **Park and Slater's (2014) Study**

The literature reviews have generally found that studies on MALL have emphasised the teacher- and research-based nature of MALL and only a few studies so far have investigated the needs, circumstances, abilities and previous experiences of learners as they use mobile devices in both formal and informal learning contexts. This study conducted by Park and Slater (2014) aimed to fill in this gap in the relevant literature by exploring English as Second Language (ESL) teachers and learners' patterns of mobile device use and the target language tasks learners need/want to perform while using mobile devices.

The researchers felt it was highly necessary to identify real-world language tasks that ESL college students would benefit from in order to inform the development of pedagogic tasks, task-based lesson plans, courses, and curricula. They conducted the study in two stages; in the first stage semi-structured interviews were held with four ESL teachers and four ESL students. Interviews aimed to elicit data about the participants' current use of mobile devices, their desired target language tasks for MALL and perceptions regarding potentials and challenges of MALL. The researchers used this data to develop an online survey, completed by 23 ESL teachers and 76 ESL students of the same university.

In section 1 of the survey, participants were asked to list the tasks they felt were important and desirable to develop listening, reading, speaking and writing skills. Section 2 consisted of open ended and closed-response questions related to mobile device use and section 3 involved closed-response items grouped into three skill defined sections.

Before moving on to the results section, we must note that the procedure section of the study lacks order and important information, which makes it hard for the reader to navigate the findings. To begin with, the research questions and data collection tools are presented in a confusing manner; it takes time to find out which tool was used to address which research question. Moreover, online survey as a whole, or at least sample statements from each section, should have been provided either in the procedure section or in the appendix. The reader has to decipher this information from the given tables which are also not presented in the order of the survey sections. It is also not clear if the participants were asked to make a list of "desirable and important" tasks on their own or develop a list from a given list of tasks. If the former is the case, it seems not realistic that college students can think of such tasks for each skill.

Results of the study revealed that only 15% ESL teachers, though they could see the potential of mobile devices, had experienced MALL in their teaching and learning classes, compared to 60% of students. Writing-related practices in MALL were the least preferred activities among the skills; the researchers claim that this finding may be the result of technological limitations in mobile technology referring to specific reasons, which they probably have elicited from the interviews. While presenting the results of the study, researchers regularly add possible reasons for the findings; as the interviews were conducted with a small number of participants and as not much information is provided about the analyses and



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piloting, these additional remarks seem a bit subjective. The second research question of the study was about the tasks on developing four skills that ESL students need or want to perform while using MALL. Results indicate that teachers and students had similar ideas in terms of target tasks for reading skills, reading hyper-text was acknowledged as the most desired target task, which was followed by consulting vocabulary resources. Listening to music was the most preferred task by students whereas teachers felt watching or listening to online lectures was the most necessary listening task. As for speaking skills both teachers and students indicated formal and casual telephone conversations as the most needed task type. However, a discrepancy was found between the groups in their preference for target tasks across language skills: teachers ranked listening/speaking tasks as the most favoured ones whereas for students, writing tasks were in the first place, with eight of the writing tasks ranked in their top 10. This finding highly underscores their need to communicate with professors or friends through diverse media such as e-mail, LMS, social-networking sites, and online chatting.

The results regarding the limitations of classroom-based learning tasks confirmed the findings of previous studies (Prensky, 2010). The contrast between ESL students who generally feel comfortable and willing about MALL and used it frequently outside the classroom and teachers who were also enthusiastic about MALL use in the classroom yet were not much familiar with the technology was deeply investigated in this study as well.

Although it is a small scale study with students and teachers from one university, the typology developed is highly valuable as a resource for the creation of MALL task-based lessons or curricula. Teachers will benefit from the suggested task types and target tasks and find ways to integrate these into their teaching. The needs analysis also provides invaluable information on MALL-oriented activities that can be done outside the four walls of a classroom.

## **SOLUTIONS AND RECOMMENDATIONS**

When writing this paper, there is the global Covid-19 pandemic, which resulted in health and safety measures that forced educational establishments to choose mobile solutions for their staff and students. In such a dramatic context, assessing the effectiveness of mobile assisted learning technologies would bode well. This paper addresses such a need for language learning and explores the effectiveness of mobile devices on several learning outcomes by looking at the related literature and evaluating four studies in detail in the field. There is a duality or positive and negative effects of MALL in the literature. First of all, most of the studies report positive effects of mobile applications on language learning. The main positive effects of MALL can be summarised as: improved L2 learning performance particularly in the area of vocabulary, increased motivation and fun for studying language, acquisition of autonomy of learning, increased allocation of time for practicing language and personalised language learning. The use and implementation of MALL also has some drawbacks such as lack of human contact and interaction, pedagogical justifications, external interference and distraction, high costs of devices and technology related limitations (i.e. small screen size, short battery life, Internet connection problems). The duality of positive and negative outcomes of MALL suggests that there is need for more refined thinking around each MALL application in terms of fit for purpose in a specific context. As such MALL is not good or bad in itself but it would yield different outcomes in relation, i.e. across different settings, institutions and in addressing varied needs.

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In relation to MALL research, a number of issues were identified based on the reviewed articles. Limited sample size seemed to be the most frequently mentioned issue which can limit the generalisation of findings to a wider population. Problematic research designs which included short-term interventions and inequality of treatment and control conditions were another important issues. In line, in the detailed analyses of Demouy and Kukulska-Hulme (2010), Hsu (2013), Lin (2014) and Park and Slater (2014), some considerable differences were observed in terms of using statistically reliable measures of learning outcomes, sample sizes and research designs. In fact, these differences can be related with the claims of Burston (2015) and Chinnery (2006) who assessed the trustworthiness of MALL studies through extensive meta-analyses and found MALL research to some extent questionable. Another noteworthy issue was that there was a dearth of empirical research on the mechanisms that might play important roles in the relationship between MALL and learning outcomes. Although some studies included several psychological constructs like anxiety, self-efficacy, motivation, perception and attitudes that could influence the effectiveness of MALL on learning performance, constructs in relation to people's expectations for future (i.e. hope) were not considered in the field.

Therefore, as a theoretical contribution and for the sake of understanding the relationship between the use of MALL and language learning performance, the concept of hope borrowed from Giroux (2002) can be integrated into the analyses. Giroux (2002) suggests that expectations and hope of people shape their personal and life choices. In line with this suggestion, people's choice of MALL for learning language in a better manner and in a shorter time can be determined by their hopes. Hopes and needs of users could be identified with a view to design MALL for a better fit for purpose.

Hope is defined as a personal feeling or expectation of a better future. As Giroux's (2018) hope is a radical act in itself as hope has the grains of change that orient and motivate people towards shaping their choices and conditions. Yet, hope could be based on multiple sources of inspiration including reality, values, romanticism, as well as falsehoods. Therefore, not all hope would lead to positive changes for society. Innovation in the context of learning technologies could be framed as hope (McMurtrie, 2018). With innovation, there is change in use of technology and changes that such innovation engenders ensue. Hope, in the case of MALL, is a multifaceted construct if we explore the wide range of individual and institutional interests that shape the hope around the use of MALL. We need to ask the critical question of for whom and where does MALL provide what kind of hope and if the basis of that hope is grounded in realism or falsehoods.

The impact of MALL implementations on language learning outcomes is unquestionably positive, yet extracting a general idea about the positive effect of MALL may not provide sufficient pedagogical implications for teachers and practitioners. There was no critical engagement with the growth of MALL industry on the one hand and the relatively untested hope that it sells on the other. Yet, the effectiveness of MALL should also be grounded on idealism and hope than realities of its power. This shows the significance of asking for whom the hope works. The question yields better outcomes for users or for teachers. For the individual users, the hope is that MALL, if it proves an effective medium for language learning, could save time, facilitate learning in unconventional settings such as out of hours, during travel, holiday and other less used extracurricular environments. For the education providers the hope is that MALL provides another channel for reaching a new segment of customers and a different engagement with customers using non-traditional methods. Similarly for the regulator and funders of education, the hope for MALL is that it can enhance learning, add a new dimension to teaching activities and save costs. Furthermore, the hope could be extended to a wider range of stakeholders of MALL.

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The second critical question is where does MALL provide hope? Mobile assisted technological innovation is not spread evenly across the world. In fact, due to the uneven nature of distribution of wealth and innovation across the world (Fagerberg, Lundval, & Srholec, 2018) the hope for the take up of MALL may be limited to a geography that it is often naively assumed.

As a pedagogical implication, before adopting MALL-supported language curricula, teachers should provide a teaching environment to their students that fosters high levels of hope. Self-efficacy and self-determination are considered as the crucial agents of hope (Bernardo, 2010), in this sense, an environment where students' self-efficacy and self-determination to reach their goals are promoted, can be created.

## **FUTURE RESEARCH DIRECTIONS**

In the context of the global pandemic we are experiencing, it would be helpful to have new studies to assess the changes in the effectiveness of MALL when it becomes the only medium of learning for many individuals. In the same way, future research could explore how hope about use of MALL is shaped and it changes in response to the pandemic

Our conceptual offer is to apply the notion of hope to the increased use of MALL in the field. In order to understand whether the hope that MALL brings to language learning is based on reality or falsehoods and inform teachers, heeding the call by Giroux, Freire and MacLaren (1988) to have teachers as better informed intellectuals can be explored. Thus, drawing on the concept of hope, borrowed from Giroux (2002), the extent to which MALL presents a critical and realistic hope that can transform language learning can be examined.

Given the complex nature of language learning that has various dimensions, more adequate research designs which include pre- and post-tests, sufficient sample sizes and longitudinal and quantifiable measures are required (Burston, 2015; Vandergrift & Cross, 2017). Moreover, studies that have pure techno-centric views may only focus on the sophistication of technology and attribute learning achievements to technology rather than the combinative effects of other variables such as “novelty effects, actual content, the nature of feedback, the personal influence of the instructor, learner expectations, motivation etc.” (Burston, 2015, p. 16). Furthermore, we need to question the place where positive impacts may be accrued as technological innovation across all fields is unevenly distributed across the world. Yet, the real gain might emerge from the effects of uncontrolled variables and “the way the technology was manipulated” (Burston, 2015, p. 16).

## **CONCLUSION**

The use and nature of technology changes over time. Covid-19 pandemic has engendered a radical window in which use of MALL became an imperative for many educational establishments. The dynamism that was experienced in the pandemic makes the implications of previous MALL studies largely inappropriate for most contexts and increase the necessity of present-day replication studies. Similarly, early adoption could be costly. Consequently, consideration of technology and MALL as a magical one size fits all solutions might result in reaching to illusion rather than reality. For whom question may provide more sufficient answers for users but not necessarily for informed teachers. Returning to our exploration of hope in the context of MALL, we need to attend to multiple stakeholder interests, relations of power

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in the increasingly commercialised world of education, technology and time. Our reading of the extant literature demonstrates that the hope for MALL may be grounded more in idealism and romanticism that everyone may have equal access to advanced technologies. The pandemic crises has shown us that technological innovations are not equally accessible everywhere. The realities of an unequal world, uneven distribution of financial resources and variations in regulation of use of mobile technologies renders use of MALL a privilege for the few rather than global masses. Nevertheless, time will tell if the hope that MALL has brings grains of radical change that may transform the way language learning is done into the future.

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### ***The Effectiveness of Mobile-Assisted Language Learning (MALL)***

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## **KEY TERMS AND DEFINITIONS**

**Empirical Studies:** The studies that were based on data generated from experience or observation.

**English as a Foreign Language:** The use of English by speakers from different native languages for communicating with each other.

**Hope:** A personal feeling or expectation of a better future.

**Learning Performance:** The accomplishment of a given task and objective in learning process.

**Learning Technologies:** Any kind of technology used to facilitate learning.

**Literature Review:** A survey of scholarly publications in a specific field.

**Mobile Devices:** Portable equipment used for several purposes.

**Mobile Learning:** Educational activities provided by mobile devices.