A Meta-analysis of the Literature on Mobile Assisted Language Learning in Response to COVID-19 in Saudi Arabia

Khaled Almudibry[1]

[1] Associate Professor of Applied Linguistics, Majmaah University, Saudi Arabia

Correspondence: Khaled Almudibry, Associate Professor of Applied Linguistics, Majmaah University, Saudi Arabia.

Received: August 29, 2022 Accepted: September 30, 2022 Online Published: October 6, 2022

doi:10.5430/wjel.v12n8p106 URL: https://doi.org/10.5430/wjel.v12n8p106

Abstract

This study attempts a meta-analysis of research conducted in Saudi Arabia on Mobile Assisted Language Learning (MALL) related to the teaching and learning of English language in response to COVID-19 that led to the lockdown of education institutions. In this connection, a comprehensive search on Google Chrome and Google Scholar was conducted to collect data to answer the research questions and thus achieves its objectives. Fifty research articles and PhD dissertations were identified, but only seven of them met two selection criteria used in this study: the study should be conducted during or after COVID-19; and it should focus on mobile applications per se. These criteria excluded forty-two articles and PhD dissertations from selection. The studies that were not selected for meta-analysis were either review research articles or data-driven research articles that did not center upon specific mobile applications as in the case of articles that simply focused on "pronunciation applications" without naming one such application. The studies selected for meta-analysis used qualitative, quantitative, and mixed methods to collect their respective data. Positive results emerged from all the studies regarding the use of mobile applications in EFL learning in the Saudi context. This conclusion is equally true for motivation, perception and attitude studies. The results fell roughly into three major categories: the use of mobile applications in informal learning, learners' motivation, perceptions and attitudes towards mobile phone applications as learning platforms, and the effect of mobile applications on learning style.

Keywords: meta-analysis, COVID-19, Mobile Assisted Language Learning, MALL

1. Introduction

Education was one of the human activities that were seriously affected by the COVID-19 pandemic, which severely hit the world in early 2020. A joint UNESCO, UNICEF, and World Bank report asserts that the world-level hindrance to education caused by the COVID- 19 pandemic represents the worst educational catastrophe in that countries locked down educational institutions as part of their strategies to combat the pandemic. As a result, the vast majority of students in schools and universities worldwide were unable to access to formal education (UNESCO, 2020; Affouneh & Burgos, 2021). The joint UNESCO, UNICEF, and World Bank report predicts that as educational institutions, especially schools, remain closed, millions of students are likely to leave schools permanently. In an attempt to deal with the aggravating situation, many governments across the globe decided to shift to distance education so that students could still learn even though they were socially distant. This choice involved the employment of multi-modal strategies such as the internet, educational TV channels, educational radio, and instant messaging, to guarantee learning continuity. In this connection, there were several initiatives to bring internet-connected learning into play in many educational communities. These include mobile internet buses as a solution for remote communities in Texas, USA, the innovative portable digital classroom 'School in a Bag' solution in the Philippines, stratospheric internet-connected digital balloons in Kenya, and low orbiting satellites to bring connection to remote communities in Australia, to mention but a few (Leask & Younie, 2022). Initiatives also involved attempts made by teachers to learn how to record and upload videos, how to manage learning platforms, how to participate collaborative learning, how to engage students in educational forums, and how to regulate time and accomodate learners' assumption (Affouneh & Burgos, 2021).

Although this shift provided rich educational opportunities, it was also fraught with serious challenges. For instance, educational institutions needed to rethink the existing infrastructure, the pedagogical resources, and the capacity building of teachers and students to be able to engage in online/distance education. These obstacles particularly affected the education continuity in poor countries (ibid). More specifically, the joint report mentioned above observes that teachers in many low-and middle-income countries were scarcely trained be able to engage in remote learning; and that children from disadvantaged households were less likely to benefit from remote learning than non-disadvantaged households due to a lack of electricity, connectivity, and suitable devices.

The Saudi distance education experience during the pandemic was exemplary. This experience is so conceived because it drew on a rich digital culture that had been initiated almost two decades earlier in Saudi tertiary institutions. Generally speaking, the Saudi digital culture drew on e-learning conferences, e-learning departments and deanships, an e-university, and a national digital library. Thus, it was not hard for Saudi academia to shift to distance and e-learning in response to COVID-19. On the eve of the pandemic, the globalmediainsight.com estimated that Saudi Arabia had the largest social media presence in the world, with **40.2 million** mobile subscribers. This agency also

reported that Saudis actively use Instagram, Twitter, and Snapchat in the Middle East and North Africa (the Mena region). This situation can be argued to best serve the initiative to use mobile applications in teaching English as part of the policy to keep members of the educational community socially distant during the pandemic. This in turn triggered a plethora of research to document and evaluate the choice to use mobile applications in response to the lockdown necessitated by the spread of COVID-19.

Thus, there arose a need to conduct a meta-analysis of the research on Mobile Assisted Language Learning (MALL) in the Saudi context to achieve a number of objectives: to understand best practices in the employment of mobile applications as a teaching/learning strategy; to recognise the most preferable mobile applications used in EFL learning; to identify the most recurrent themes in the relevant studies; and to report the major findings of MALL research in the study context. To achieve these objectives, an attempt will be made to answer three research questions:

a. What are the frequent themes addressed by MALL-related research?

b. What mobile applications received most attention among EFL researchers?

c. What are the major research findings conducted with regard to the use of mobile applications in teaching/learning English in response to COVID-19 in the Saudi context?

2. Review of the Literature

MALL has recently triggered extensive research into the vital role that mobile applications have been playing in language teaching and learning. The available literature informs that these applications lend themselves forcefully to language education through a variety of mobile phone affordances. A key affordance of mobile phones is that they are ubiquitous. According to DATAREPORTAL.COM, 66.9% of the world population are unique mobile users, of whom 59% are social media users. The statistics pertaining to mobile phone ownership in Saudi Arabia reported in section (1) above provides strong evidence with regard to this affordance. Other mobile phone affordances include portability, multi-functionality, connectivity, context-sensitivity, and location awareness (Farmer & Nucamendi, 2012; Lin et al., 2019). These affordances render mobile phones appropriately conducive to language teaching and learning through myriad educational applications. To review the literature on the appropriateness of mobile phone affordances to language learning, there are three questions that this section attempts to answer: What is the rationale for using mobile applications in language learning? How do the mobile affordances reshape language learning? Finally, what mobile phone applications and, thus, language materials, can best be presented on these applications to facilitate language learning?

To begin with, a huge body of research has been devoted to the rationale for using mobile phone applications in language learning. Research informs us that the motivation for the use of these applications come from a plethora of sources. Generally speaking, Diaz-Vera (2012) accentuates that, in an age characterised by considerable mobility, foreign language learning/learning approaches should reflect new requirements. In other words, learners should acquire certain language skills to function properly in different socio-contexts. These situations, require language learning materials to be appropriate, and malleable to be easily learnt and transferred to other more general contexts.' More specifically, Kukulska-Hulme (2013) holds that MALL suits the educational purposes of learners who are frequently mobile, either because of their mobile lifestyle, or because their work requires movement to different locations. In a more recent publication, Kukulska-Hulme (2018) adds that mobile applications facilitate learning for students who are lacking in confidence. Thus, with these applications, they can practice speaking or pronunciation and receive of private feedback from teachers (Kukulska-Hulme, 2018). The aacquisition of similar language materials is associated with an entirely different rationale for the use of mobile applications that are needed in an EFL classroom. According to Al-Jarf (2012, p.105), Languages and Translation students at King Saud University hardly listen to native English speakers; do not practice English out of class; cannot pronounce some English vowel, consonant clusters, word and sentence stress, intonation, etc.' Al-Jarf hypothesized that the use of appropriate mobile applications, e.g., graded mp3, will help these learners to acquire pronunciation, fluency, listening comprehension and speaking skills.

As to the ways mobile applications reshape language learning, Hashim et al. (2017) posit that currently mobile technology significantly changes the landscape of language learning, and as thus widely investigated for its role in improving learning and teaching processes. The portability affordance of mobile phones is conceived as introducing new methods that can shape learning styles and pedagogies that could become increasingly personalized, and allow learners to learn on the move. As such, MALL opens up new "possibilities in terms of learner autonomy by providing not only a potential means of learning anytime and anywhere, but also access to a virtually endless variety of rich, multimodal content" (Lyddon, 2016, p. 303). Consequently, MALL can both be formal and informal by virtue of providing flexible models of language learning that can take place, both within the classroom and out of the classroom, respectively (Kukulska-Hulme, 2018). MALL also serves to engage the students, motivate them, and result in improved learning outcomes (Chwo et al., 2018). It can also help to overcome many of the challenges found in a traditional classroom, e.g., a lack of communication opportunities, teacher's feedback, and interaction (Shadiev, 2017).

The literature relating to the third research question reports a variety of applications that are deemed appropriate for language learning. For instance, Kukulska-Hulme (2013) observes that applications designed for the study of vocabulary and grammar prove to be particularly popular. Other applications include e-book readers, integrated e-dictionaries, and e-translation. Mobile phones can also be used to access newspapers and other news channels that provide opportunities to engage in a foreign language (Kukulska-Hulme, 2018). Apart from reading, vocabulary and grammar, mobile phone applications have also been reported to play an effective role in speaking and pronunciation (cf. Al-Jarf, 2012). Moreover, writing applications have their rich share in terms of mobile applications designed for

language learning. For instance, Comas-Quinn & Mardomingo (2012) stress the importance of blogs in enhancing writing. They maintain that blogs are rich, flexible, multi-modal applications that allow for student-student and student-teacher interaction, with students functioning both as consumers and producers of content. Classified as instructor blogs, student blogs and classroom blogs, they are perceived to promote varying levels of learner engagement, and lead to different kinds of learning.. Thus, sharing their writing openly through blogs, makes learners more thoughtful because they know that there is a real audience. Google Docs is another application that provides learners with training in authentic language materials. One way this application can be used is that a teacher or learner can create and share a task on Google Docs. This enables all participants to 'select the tasks they would like to do, update the status of the task and track the progress of others' work using this document.' (MacCallum, 2017, p. 64)

3. Methods

As the title indicates, this study attempts a meta-analysis of research conducted in Saudi Arabia on the use of mobile applications to teach English language in response to the COVID-19 pandemic that led to a lockdown of education institutions. In this connection, a three-week comprehensive search on Google Chrome and Google Scholar was conducted to collect data to answer the research questions and thus achieve its objectives. Fifty research articles and PhD dissertations were collected, but only seven of them met the two selection criteria used in the study: the study should be conducted during or after COVID-19; and it should focus on mobile applications per se. These criteria excluded forty-two articles and PhD dissertations from selection. The studies not selected for meta-analysis were either review research articles or data-driven research articles that did not center upon specific mobile applications, as in the case of articles that simply focused on "pronunciation applications" without naming one such application. The studies selected for meta-analysis used qualitative, quantitative, and mixed methods to collect their respective data. These are Albogami & Algethami (2022), Alenezi & Bensalem (2022), Alamer & Al Khateeb (2021), Aljaber (2021), Jesudas & Sajeevlal (2021), Almusharraf & Khahro (2020), Basheikh (2020). Detailed information of each study is given in Table 1 below.

4. Results

This section shows the study's findings after reviewing the studies that met the selection criteria as shown in Table 1 below. Table 1 has been thematically organised to serve the study objectives and questions.

Table 1. Results of the meta-analysis study

Study	Participants	Instrument(s)	Applications	Major findings
Albogami & Algethami (2022)	Taif University students, Taif City.	Questionnaire & Interview	WhatsApp	• The use of WhatsApp as an instructional tool improved the participants' speaking performance. • The use of WhatsApp increased the participants' motivation and attitude with regard to speaking. The use of WhatsApp decreased the participants' fear of making speaking mistakes.
Alenezi & Bensalem (2022)	North Border University students	Questionnaire	WhatsApp	Participants thought that WhatsApp enhanced learning vocabulary.
Alamer & Al Khateeb (2021)	Imam University, Riyadh students	Questionnaire	WhatsApp	• The use of *WhatsApp* was the major cause of 'increase in autonomous motivation in the experimental group compared to the control group in the post-test.'
Aljaber (2021)	Saudi Electronic University students	Questionnaire & Interview	Blackboard, Twitter and WhatsApp	• Smartphone apps are extensively used for learning purposes • Smartphone used to check their emails • Most participants communicate with other learners and instructors. • Many participants use smart phones to access learning materials. • Many participants use smart phones to engage in general learning activities.
Jesudas & Sajeevlal (2021)	North Border University students	Questionnaire	YouTube	• The participants showed positive attitudes towards the use of YouTube in teaching literature. Compared to the textbook, YouTube was more effective in helping the students to remember events.
Almusharraf & Khahro (2020)	Prince Sultan University, Riyadh.	Questionnaire	Google Hangouts, Google Classroom & Moodle	The participants were satisfied with lecture delivery through Google Applications, Google Classroom, and Moodle in that order.
Alshammari (2020)	Hail University students	Interview	Twitter, Instagram, YouTube & WhatsApp	• Mobile applications are used informally for learning purposes by most participants Social media provided rich opportunities for practice.
Basheikh (2020)	Jeddah University	Interview	Twitter,	• Followed posts by celebrities in English.

	students		Facebook, Snapchat & Instagram YouTube	• Chat with friends in English. • Post topics in English. Send voice messages in English

As can be seen in Table 1, five pieces of information have been given for each study, including author name and date of publication, the participants, the instrument(s), the application(s) being used, and the major research findings. Generally speaking, the studies were geographically distributed across the Kingdom of Saudi Arabia. Some studies were conducted in the far north, the centre, mid-south and west of the Kingdom. However, no study has been reported form the eastern region. The use of 16 applications was investigated, the most frequent of which were WhatsApp and YouTube.

5. Discussion

The use of mobile applications in teaching and learning English in Saudi Arabia draws on a rich digital culture that was initiated in Saudi academia almost two decades ago. The efforts made to integrate digital technology into mainstream education included the establishment of e-learning deanships in public universities, and the setting up of the National Center for E-learning and Distance Learning. The digitization of Saudi education culminated in the foundation of the Saudi Digital Library and the Saudi Digital University. What is more, the National Center for E-learning and Distance Learning has been regularly organizing an international conference on e-learning to benefit Saudi academia with exposure to the best e-learning practices from across the globe. As reported in Section 1 above, Saudi Arabia is characterised by having the largest social media presence in the MENA region owing to the high rate of smartphone ownership on the part of its citizens and residents, who are particularly active users of Instagram, Twitter and Snapchat.

It is interesting to note that, for a decade or so, most Saudi tertiary institutions have released mobile versions of their portals, along with more specialized applications for their e-services such as learning management systems, e-meeting systems, email, and edugate with regard to academic services, so that students, staff and faculty can pursue relevant services on their mobile phones while they are on the move. It is natural, therefore, that the Saudi EFL community was well prepared for the use of mobile applications in teaching and learning in response to COVID-19, which hit the world in the early 2020s, and resulted in the total lockdown of education institutions.

Empirical research findings inform us that Saudi academia was aware of the use of mobile phones for educational purposes even before the pandemic. For instance, Al-Shehri (2012) explored the use of Facebook as a learning platform to practice speaking English at King Khalid University. The findings revealed that the students effectively used their mobile phones to take and share authentic photos and videos and then to comment on their contents in English. Second, Al-Fahad (2009) examined the effect of the use of mobile phones in terms of content retention among arts and medicine students at King Saud University. The results showed that the use of mobile phones aided the retention of the academic information studied in different courses. The students also reported that the use of mobile phones improved their communication with their professors. A third topic that was explored in relation to the use of mobile phones in Saudi academia was mobile technology acceptance among Saudi students at the tertiary level (Alasmari & Zhang, 2019). The findings showed that the students were highly positive in using mobile technology in learning. In this connection, the meta-analysis reported in Table 1 above will be discussed in relation to the three research questions posed in Section 1 above.

5.1 What Are the Frequent Themes Addressed by MALL-related Research?

Table 1 did not provide a column for "themes" for two reasons. First, in most of the studies examined there were no clear themes, as some titles entailed a number of themes at the same time. For example, a study with a clear focus on smart phone affordances could end up exploring the participant's perception of the use of the mobile phones in learning English pronunciation, while telling little about the original theme embodied in the title. Second, the column dealing with the major findings of each study would give accurate information about the themes. The table shows that the themes fall roughly on three categories: learning communication skills in English (Basheikh, 2020; Albogami & Algethami, 2022; Alenezi & Bensalem, 2022), general learning purposes (Alshammari, 2020; Alamer & Al Khateeb, 2021; Aljaber, 2021), and student motivation, perception and attitude towards the use of mobile applications as learning platforms (Almusharraf & Khahro, 2020; Alamer & Al Khateeb, 2021; Jesudas & Sajeevlal, 2021; Albogami & Algethami, 2022). This grouping of research themes follows partially from the Saudi digital culture reported above regarding the use of mobile phone applications as platforms for teaching and learning, and for academic communication. In other words, these themes illustrate the use of mobile applications in informal learning only, leaving formal computer-assisted language learning (CALL) and traditional classrooms. For example, Basheikh (2020) showed that participants use mobile devices for exposure to authentic language materials through watching documentaries and news channels in English. They also regularly watch English-language films or series with English subtitles, assuming that such activities would improve their oral skills and vocabulary. Other forms of informal learning are reported in Almusharraf & Khahrom (2020). That is, the study findings revealed that the participants had used smart phones to promote informal student-student/student-instructor interaction.

5.2 What Mobile Applications Received Most Attention Among EFL Researchers?

Although globalmediainsight.com estimated that Saudi were the most active users of Instagram, Snapchat and Twitter in the MENA region, the studies summarized in the table show that these were the least-used applications for educational purposes. By contrast, WhatsApp was the most commonly-preferred application (occurring in 60% of the studies) followed by YouTube. However, each application was prioritized for different reasons. As far as WhatsApp is concerned, it has gained an official status in Saudi academia. In other words, it is almost the only application used for administrative and academic communication. Departments, committees, and courses create WhatsApp

groups to use in formal and informal discussions, to share documents and course materials, to mention but a few. It is natural, therefore, that it was top smart phone application for use with regard to academic purposes. For instance, WhatsApp can be used for serious academic discussions, both synchronously and asynchronously. It can also be used to produce and disseminate educational videos and podcasts, articles, e-books, links to educational resources, to mention but a few. As to the second most preferable mobile application, YouTube is the richest resource with regard to educational materials. This has far-reaching consequences for teaching and learning foreign languages for a variety of reasons. First, it can provide learners with authentic audio-visual content. Second, it promotes autonomous learning on the part of students (Gakuin & Wilkins, 2011). Third, many faculty members not only post classes and presentations on YouTube, but have also established educational channels that students can use for formal and informal learning purposes.

5.3 What Are the Major Research Findings Conducted on the Use of Mobile Applications with Regard to Teaching/Learning English in Response to COVID-19 in the Saudi Context?

Positive results emerged from all the studies regarding the use of mobile applications in terms of EFL learning in the Saudi context. This conclusion is equally true for motivation, perception and attitude studies. As can be seen from Table 1, the results fall roughly into three major categories: the use of mobile applications in informal learning, learners' motivation, perceptions and attitudes towards mobile phone applications as learning platforms, and the effect of mobile applications on the learning style. These categories will be discussed in turn below.

To begin with, informal learning activities included attempts to improve communication skills in English (Almudibry, in press; Alshammari, 2020), enrich English vocabulary (Alenezi & Bensalem, 2022), access learning materials (Aljaber, 2021), enhance memory (Jesudas & Sajeevlal, 2021), and chat, post topics and send voice messages in English (Basheikh, 2020). Needless to say, these activities can equally be conducted in non-crisis times. In other words, foreign language contexts always tempt the students to seek authentic resources that could provide them with opportunities to practice. Thus, it is unknown why these studies were related to COVID-19. At the beginning of this section it was reported that the Saudi digital culture qualifies both institutions and individuals to use smart phone applications in formal education. In fact, it was widely reported that when the official learning management system (i.e., Blackboard) broke down, teachers and students resorted to other mobile applications to get the job done.

The critical view directed to the use of smart phone applications in informal learning during the COVID-19 pandemic also applies to the study of the students' motivation, perception and attitudes towards these applications. Emphatically, studies pertaining to themes at times of crisis are irrelevant. Two decades ago, the students who were born after the invention of digital technologies, were referred to as "digital natives"; they were so conceived because they would spend "their entire lives surrounded by and using computers, videogames, digital music players, video cams, cell phones, and all the other toys and tools of the digital age." (Prensky, 2001, p.1). What is more, for more than three decades, digital technology has been accepted in academia across the globe because of its perceived usefulness and perceived ease of use (Davis, 1989). Thus, there was no point in exploring student perception, motivation and attitude toward the use of smart phones for educational purposes in a country known for its rich digital culture.

Third, research focused on the effect of mobile applications on learning style. That is, digital technology is perceived to promote learner-centred education that allows the students to be responsible for their own learning. Thus, as a result of the incorporation of digital technology into the system of education, instructors who were once considered educational authorities have recently assumed more moderate roles as facilitators (Ezza & Almudibry, 2018). Furthermore, Dowling contends that in a learner-centred environment, a great deal of student learning takes place without the teachers' intention, or sometimes even despite it (Dowling, 2003). Once again, these characteristics are conceived to have been developed over the last three decades.

6. Conclusion

This study has been an attempt to apply meta-analysis to studies conducted on the use of mobile technology applications in Saudi academia. Owing to the rich affordances of the mobile phones, along with the extensive ownership of smart phones on the part of Saudi citizens, it was generally assumed that they could play an important role in learning English among Saudi students during the pandemic, particularly when the official learning management system broke down. The meta-analysis shows that studies roughly explored the use of mobile phone applications in developing English communication skills, examined students' motivation, perceptions and attitudes towards the use of mobile applications in language learning, and measured the role of mobile phone applications in promoting learner-centred education among Saudi EFL learners. It was concluded that these studies did not consider the history of the rich digital culture in the Saudi context, nor did they observe conceptual frameworks pertaining to the acceptance of technology in education (Davies, 1989) and reference to new generations of learners as digital natives (Prensky, 2001). In other words, researchers could have integrated smart phone applications into the formal education process based on these developments, and in response to COVID-19 in that it imposed rigorous social distancing measures.

References

Affouneh, S., & Burgos, D. (2022). A 6-Key Action Plan for Education in Times of Crises. In D. Burgos, A. Tlili, & A. Tabacco (Editors), *Radical Solutions for Education in a Crisis Context COVID-19 as an Opportunity for Global Learning*, 11-21. Singapore: Springer. https://doi.org/10.1007/978-981-15-7869-4_1

Al Shammari, M. H. (2021). Devices and Platforms Used in Emergency Remote Learning and Teaching during Covid-19: A Case of English

Major Students in Saudi Arabia. *Arab World English Journal (AWEJ) Special Issue on COVID-19 Challenges, 1,* 80-94. https://doi.org/10.24093/awej/covid.6

Alamer, A., & Al Khateeb, A. (2021). Effects of using the WhatsApp application on language learners' motivation: a controlled investigation using structural equation modelling. *Computer Assisted Language Learning.* https://doi.org/10.1080/09588221.2021.1903042

Alasmari, T., & Zhang, K. (2019) Mobile learning technology acceptance in Saudi Arabian higher education: an extended framework and a mixed-method Study. *Education and Information Technologies*, *24*(3), 2127-2144. https://doi.org/10.1007/s10639-019-09865-8

Albogami, A., & Algethami, G. (2022). Exploring the Use of WhatsApp for Teaching Speaking to English Language Learners: A Case Study. *Arab World English Journal (AWEJ) 2nd Special Issue on COVID-19 Challenges, 2,* 183-201. https://doi.org/10.24093/awej/covid2.12

Alenezi, S., & Bensalem, E. (2022). The Effect of Using WhatsApp on EFL Students' Medical English Vocabulary Learning During the Covid-19 Pandemic. *English Studies at NBU, 8*(1), 29-42. https://doi.org/10.33919/esnbu.22.1.2

Al-Fahad, F. N. (2009). Students' attitudes and perceptions towards the effectiveness of mobile learning in King Saud University, Saudi Arabia. *Turkish Online Journal of Educational Technology*, *8*(2), 111-119.

Aljaber, A. (2021). *The reality of using smartphone applications for learning in higher education of Saudi Arabia.* PhD thesis, University of Glasgow. Received from http://theses.gla.ac.uk/81974/

Al-Jarf, R. (2012). Mobile Technology and Student Motivation in Oral Skill Acquisition. In J. E. Diaz-Vera (Ed.), *Left to my own Devices: Learner Autonomy and Mobile-Assisted Language Learning*, 105-130. Bingley: Emerald Group Publishing. https://doi.org/10.1108/S2041-272X(2012)0000006009

Almusharraf, N., & Khahro, S. H. (2020). Students' Satisfaction with Online Learning Experiences during the COVID-19 Pandemic. *IJET*, *15*(21), 246-267. https://doi.org/10.3991/ijet.v15i21.15647

Alshammari, R. (2020). The Current Use of Mobile Devices among Students and Faculty in EFL Teaching in a Saudi Arabian Context. TOJET: *The Turkish Online Journal of Educational Technology*, *19*(2), 34-51.

Alshehri, A. M. (2012). E-learning in Saudi Arabia: To E or not to E, that is the question. *Journal of Family & Community Medicine*, *17*(3), 147-150. https://doi.org/10.4103/1319-1683.74333

Basheikh, A. (2020). *Smartphone Use for Language Learning Before and After the COVID-19 Lockdown.* Hillary Place Papers, 32-42. Received from https://hpp.education.leeds.ac.uk/issues/issue-six-2020-2021/

Chwo, S. M. G., Marek, M. W., & Wu, W. C. V. (2018). Meta-analysis of MALL research and design. *System, 74,* 62-72. https://doi.org/10.1016/j.system.2018.02.009

Comas-Quinn, A., Mardomingo, R., & Valentine, C. (2009). Mobile blogs in language learning: Making the most of informal and situated learning opportunities. *ReCALL*, *21*(1), 96-112. https://doi.org/10.1017/S0958344009000032

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly, 13*(3), 319-340. https://doi.org/10.2307/249008

Diaz-Vera, J. E. (2012). Great Expectations: Formalizing and Transforming Mobile-Assisted Language Learning. In J. E. Diaz-Vera (Ed.), Left to my own Devices: Learner Autonomy and Mobile-Assisted Language Learning. xi-xix. Bingley: Emerald Group Publishing. https://doi.org/10.1163/9781780526478

Digital 2022. Saudi Arabia (2022). DATAREPORTAL.COM. Received from https://datareportal.com/reports/digital-2022-saudi-arabia?rq=Saudi%20Arabia

Dowling, C. (2003). The Role of the Human Teacher in Learning Environments of the Future. *IFIP Working Groups 3.1 and 3.3 Working Conference: ICT and the Teacher of the Future. Melbourne, Australia.* Retrieved June 16, 2011, from http://crpit.com/confpapers/CRPITV23Dowling.pdf

Ezza, E., & Al-Mudibry, K. (2018). ICT as Index of Transparency in a Saudi EFL Classroom. *TESOL International Journal*, *13*(2), 76-81.

Farmer, F., & Nucamendi, M. E. L. (2012). Towards a Rationale for Mobile Learning. In J. E. Diaz-Vera (Ed.), *Left to my own Devices: Learner Autonomy and Mobile-Assisted Language Learning*, 21-44. Bingley: Emerald Group Publishing. https://doi.org/10.1163/9781780526478_003

Hashima, H., Yunusa, M. M., Embib, M. A., Ozira, N. A. M. (2017). Mobile-assisted Language Learning (MALL) for ESL Learners: A Review of Affordances and Constraints. *Sains Humanika, 9,* 1-5. https://doi.org/10.11113/sh.v9n1-5.1175

Jesudas, R., & Sajeevlal, U. (2022). The Use of YouTube in Teaching English Drama the Case of College and Arts, NBU University (Case Study). *Specialusis Ugdymas (Special Education), 1*(43), 450-468.

Kukulska-Hulme, A. (2013). Mobile-Assisted Language Learning. In C. A. Chappelle (Ed.), *The Encyclopedia of Applied Linguistics,* 1-8. https://doi.org/10.1002/9781405198431.wbeal0768

Kukulska-Hulme, A. (2018). Mobile-assisted language learning [Revised and updated version]. In Chappelle, Carol A. (Ed.), *The Concise Encyclopaedia of Applied Linguistics.* Wiley.

Leask, M., & Younie, S. (2022). *Education for All in Times of Crisis Lessons from Covid-19.* London & New York: Routledge. https://doi.org/10.4324/9781003155591

Lin, C., Lin, V., Liu, G., Kou, X., Kulikova, A., & Lin, W. (2019). Mobile-assisted reading development: a review from the Activity Theory perspective. *Computer Assisted Language Learning*. https://doi.org/10.1080/09588221.2019.1594919

Lyddon, P. A. (2016). Mobile-assisted language learning and language learner autonomy. In S. Papadima-Sophocleous, L. Bradley & S. Thouësny (Eds.), *CALL communities and culture – short papers from EUROCALL*, 302-306. Research-publishing.net. https://doi.org/10.14705/rpnet.2016.eurocall2016.579

MacCallum, K., Day, S., Skelton, D., & Michael, V. M. (2017). Mobile Affordances and Learning Theories in Supporting and Enhancing Learning. *International Journal of Mobile and Blended Learning*, *9*(2), 61-73. https://doi.org/10.4018/IJMBL.2017040104

Prensky, M. (2001). Digital Natives, Digital Immigrants. *On the Horizon*, *9*(5), 1-6. https://doi.org/10.1108/10748120110424816

Saudi Arabia Social Media Statistics (Inforgraphics). (2022). Global Media Insight.com. Received from https://www.globalmediainsight.com/

Shadiev, R., Hwang, W., & Huang, Y. (2017). Review of research on mobile language learning in authentic environments. *Computer Assisted Language Learning*. https://doi.org/10.1080/09588221.2017.1308383

UNESCO, UNICEF and WORLD BANK REPORT (2021). *The State of the Global Education Crisis: a path to recovery.* The World Bank, UNESCO, and UNICEF.

Watkins, J., & Wilkins, M. (2011). Using YouTube in the EFL Classroom. *Language Education in Asia*, *2*(1), 113-119. https://doi.org/10.5746/LEiA/11/V2/I1/A09/Watkins_Wilkins