Mobile Use and Language Learning: Current Status and Future Directions

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Abstract: In this review, we aim to elaborate on research on mobile use and language learning/teaching and suggest the most fruitful research approach that can help in cultivating this area. The studies carried out on mobile use in language teaching and learning process have been introduced and critically analyzed with respect to three broad areas including pedagogical role of mobiles, sociocultural role of mobiles and different stakeholders' perception of mobile use in the language teaching and learning process. In this paper, we argue that previous research on the use of mobiles in the process of learning has not taken all aspects into account to give us a clear picture of how mobile learning works. In addition, the psychological influence of mobile learning on students' language learning is largely ignored. As such, the socio-cultural ecology approach is recommended as an efficient approach for doing research in this field. Finally, further research gaps are mentioned to be considered in future studies. It is hoped that this review would shed light on mobile learning research and development.

Key words: mobile learning, language, research directions

INTRODUCTION

Mobile technology is unique in terms of the unprecedented pace with which it has spread over the last years. As reported by (ITU, 2020) more than four-fifths of the population owns a mobile phone. In particular, in a number of rich countries, almost everyone possesses one. This rapid development and appropriation of mobile technology can be attributed to its unexampled features. Due to its several features including transportability, ubiquity, comfortability, usefulness, context-sensitivity, exclusivity, and ease of accessibility, this device has become the most extensively used handheld device for doing various tasks in the world (Pimmer, 2016; Seraj, Klimova, & Habil, 2021). Taking a broad sociocultural stance, Çakmak (2019) truly

asserts that technology, teaching and the learning culture have taken the direction of adaptation to the innovations, meaning that mobile phones can be seen as cultural tools which can transform sociocultural practices and structures existing in all domains of users' lives. Such transformation can empower the user to involve in practices and interactions which are not constrained by physical proximity and spatial immobility. Despite such positive assessment of the role that mobiles can play in the education arena, it seems that due attention has not been devoted to teaching languages through mobile devises and practical applications of mobiles have been largely ignored.

In this paper, we aim to elaborate on the areas that have been investigated up to this point to identify gaps and suggest the most fruitful research approach that can help in cultivating research in the area of mobile language learning and teaching.

METHOD

In this review, the most relevant and recent key studies on mobile learning were collected from various platforms such as Scopus and Clarivate analytics databases. Then they were analyzed considering their approach towards mobile learning as well as their findings. Finally, the main findings were tabulated and finally reported in the paper. Authors strived to avoid any biases in reporting the findings as much as possible.

PEDAGOGICAL ROLE OF MOBILES

A recurrent theme in the literature on mobile use in academic settings has been its educational role, meaning the function of mobile as a learning device. Mobile learning or m-learning has been the subject of investigation in a large body of research in education, both original articles and reviews (Shadiev, Liu and Hwang, 2019; Kukulska-Hulme & Viberg, 2018; Hwang & Tsai, 2011; Pimmer, Mateescu & Grohbiel, 2016).

An interesting area of research on mobile learning was exploring the theoretical strands upon which the learning process proceeds. A broad categorization was instructionist and constructionist approach which differ fundamentally according to the related learning activities and underlying theories each of them presents which in turn leads to different levels of involvement and instructional results. Laurillard (2009) defines instructionist as a prescriptive approach that focuses on the organization of instruction and is mostly controlled by instructor. As instances of the instructionist design of mobile and ubiquitous learning, one can refer to rote learning and retention which contrast with higher-level learning in regard to deeper understanding, sense-making or transferring knowledge to new situations. Such kind of learning does not generate new understanding in the learners or build their sense of identity. Uses of mobile like testing vocabulary (Brett, 2011) are prime examples of instructionist approach. This approach is comparable to behaviorist trends like audiolingual method which focused on learning by repetition.

Constructionism, coined by Papert and Harel (1991), on the other hand, focuses on the concepts of constructing a learning process. This approach involves paving the way for the learners to create something that make sense in their lives and not just delivering content. Constructionist process centers on social learning settings and necessitates co-construction by learners in pairs and groups which can be brought about by the multimodal and communication capacities of mobile devices.

In a similar vein, Pimmer, Mateescu and Grohbiel (2016) in their systematic review on mobile learning in higher education distinguish instructionist, constructions and situated action approaches in mobile learning studies. They carried out a systematic analysis of 36 empirical papers concluding that the knowledge gained from instructionist approaches in mobile learning is more frequently distributed. This, in turn, will lead to the learners being more active during professors' lectures. The analysis also revealed that hybrid designs can help learners connect learning in formal settings to more informal ones. Overall, they conclude that mobile use and ubiquitous learning in higher education academic contexts is scarce and not transformatory. This is quite relevant in learning and teaching language in the academic context.

Criollo-C, Guerrero-Arias, Jaramillo-Alcázar and Luján-Mora (2021) in an extensive literature review explored the benefits of mobile learning. They pointed to collaborative and constructivist learning, informal and self-directed learning, technology and support, affordability and movability, accessibility and flexibility as the main advantages of mobile learning.

In addition, mobile technologies have great potential for facilitating more innovative educational methods especially language learning. Simultaneously, these patterns in educational methods will likely not only help subject content learning, but may also facilitate the development of communication, problem-solving, creativity, and other high-level skills among students. other innovative uses of mobile learning in educational and academic settings can be mentioned, e.g. its use in teaching approaches/methods such as cooperative learning (Lan, Sung, & Chang, 2007), exploring Instagram as a platform for language learning (Gonulal, 2019), exploratory learning outside the classroom (Liu, Lin, Tsai, & Paas, 2012), and game-based learning (Klopfer, Sheldon, Perry, & Chen, 2012).

SOCIOCULTURAL ROLE OF MOBILE USE

Aside from the pedagogical role of mobile, another attempt has been putting mobile use into a sociocultural perspective. Activity theory was a frequently used analytical framework employed by the researchers in mobile use studies. Specifically, the dimensions of context, tools, control, communication, subjects and objectives were analyzed. Frohberg, Göth, and Schwabe (2009), for example, conducted a critical review of mobile learning projects in which the authors had used the Activity Theory before the end of 2007. Frohberg et al. (2009) observed a paradox. They found that although mobile phones are considered mostly as communication devices, the degree of communication and social interaction was very scarce in mobile learning projects. This can be quite problematic when it comes to language learning as communication is quite vital in the language learning process.

Another systematic review on the empirical mobile learning research was carried out by Chung, Hwang, Lai (2018). They employed the Activity Theory framework to analyze the patterns and tendencies in mobile ubiquitous learning. They found instructors noticed that the implication of situated learning and engaging learners in meaningful tasks using mobile, helped learners to connect their knowledge gains at school and from textbooks to their daily life interactions. Another finding was the fact that mobile devices could help learners gain self-learning materials not just mediating learning over different contexts. Their findings were not similar to the study carried out by Frohberg et al. (2009), mentioned above. This difference can be due to the fact that Chung, Hwang, Lai (2018) have used more recent studies. This can be taken as a representation of the rapid changes of mobile use and learning.

Shadiev, Liu and Hwang (2019) examined research studies conducted on MALL in familiar, authentic environments during last ten years to discover which learning/instructional methodologies support learning in familiar contexts or what the affordances of familiar

contexts are for language learning. The themes which were frequently observed in the reviewed articles were as follows: task-based learning and CLT (educational approaches); questionnaires, pretest and posttests and interviews (data gathering); the local community and campus (locations); daily meetings, language learning and cognitive load (affordances of authentic environments); and small sample sizes and short-term interventions (issues in MALL research). In the same vein, drawing on natural language processing (NLP) tools, Perez-Paredes, Guillamon, Vyver, Meurice, Jimenez, Conole and Hernandez (2019) created a mobile language learning application and following that tested the application to gather the attitudes and perceptions of several groups of language learners all over the Europe. The findings indicated that the application was positively evaluated due to its instant and personalized feedback and also providing direct access to a plethora of tools.

Hamidi and Chavoshi (2018) also investigated various factors which affected mobile learning acceptance in higher education. They maintained that detecting factors related to m-learning could help officials to implement m-learning successfully. To this end, using a model combined from Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use Technology (UTAUT) as well as some other factors due to the cultural and social structure of Iran they conducted a survey. The findings revealed that for the selection of mobile devices as an educational strategy several factors such as of pedagogical, technological, social and individual factors may play a role. The findings also revealed that perceived usefulness is the most important factor in acceptance of m-learning in Iran. Also, due to the cultural and social structure of Iran, personal innovativeness has no effect on the acceptance of m-learning. Moreover, pedagogical factors are effective on perceived usefulness as well as technological and individual factors are effective on perceived ease of use. Social factors likewise have a positive effect on perceived usefulness and perceived ease of use.

MOBILE USERS' ATTITUDES AND PREFERENCES

Learners, teachers and other stakeholders' attitudes and preferences toward incorporating mobile has been subject of a plethora of studies (Hajiheydari, & Ashkani, 2018; Koohestani, Soltani Arabshahi, & Ahmadi, 2018). Attitudes and preferences of different stakeholders like learners, teachers, and professors, have also been investigated. The interesting point which illuminates one's understanding regarding attitudes and perception of mobile learning and use, especially in academic settings, is the diverse geographical contexts in which these studies have been carried out. This helps us grasp the status as a comprehensive picture.

Christensen and Knezek (2017) investigated the teachers' readiness for incorporating mobile into their teaching practices. They asserted that teachers must have supportive professional development fostering enthusiasm and willingness as well as the skills and techniques needed for integrating mobile devices successfully in the classroom. They used the Mobile Learning Readiness Survey (MLRS) scale as a well-established measure of technology integration. In their study, they concluded that educators who possess a higher rank in technology integration, report gaining greatest benefits from mobile learning, prefer online or blended learning and recognize the importance of external influence on implementation. Moreover, their results showed that the four scales of the MLRS generally exhibit desirable properties of step-wise increases in readiness as teacher competence grows and include a basis for beginning the development of a classification framework to assist in targeting types of professional development.

In another study which aimed at developing an integrated research model to combine innovation diffusion theory (IDT) and model of innovation resistance (MIR), Kim, Lee and Rha (2017) investigated influential factors in students' acceptance or rejection of mobile. In so

doing, the notions of inertia and innovativeness were considered with regard to personal features of Korean students' m-learning. The results of SEM method of analysis showed that relative advantage, complexity, and inertia had significant effects on students' mobile learning resistance, with inertia being the most significant factor. The findings also showed that relative advantage, innovativeness, and mobile learning resistance could significantly affect students' intention to use m-learning. Among these factors, relative advantage was reported to be the most significant one.

Moneeb Ali , Mahmood , Anjum and Shahid (2020) probed to find the frame of mind of private sector of Indian universities' students with respect to the English language learning through MALL. The participants selected by simple random sampling responded to an online survey. They reported that the students of public sector universities found themselves comfortable, energetic, and positive and enjoyed learning English through MALL.

Focusing on the use of MALL by higher education learners, Hoi (2019) applied the modified version of the Unified Theory of Acceptance and Use of Technology (UTAUT). Survey data from 293 higher education learners from Vietnam were collected and analyzed by the Rasch-based path model. The results obtained demonstrated that attitude and performance expectancy played a vital role in predicting learners' behavior intention and their usage of MALL. However, no direct effect was observed for facilitating condition on learners' usage of MALL.

Teachers and instructors' perception have also been the subject of investigation in multitudes of studies. A recent instance is the study carried out by Moreira, Pereira, Durão and Ferreira (2019) who specifically investigated the higher education instructors' perceptions in Portugal and Spain with regard to the m-learning, and strived to recognize instructors' needs in this regard as well as how they can be used to encourage students' engagement inside and outside the classroom. The main results obtained allowed the authors to conclude that the a large portion of instructors had knowledge on how to perform the most trivial tasks with mobile devices and as the use of both augmented reality and gamification apps. In the same direction, Nurani (2021) conducted a study in which the teachers' perception in maximizing MALL was explored during Covid-19 in Indonesia. The participants who included 100 English teachers contended that mobile learning can assist and ease the learning process during a crisis due to its advantages in portability, interactive language learning activities and easiness access. Another instance is Marayat, Sudirman, and Platini (2020) who explored EFL pre-service teachers' perception toward the use of mobile assisted language learning in teaching English and concluded that the pre-services teachers had positive perceptions toward the use of MALL (Mobile Assisted Language Learning) in teaching English.

Also, parents as important stakeholders of language teaching and learning merchandise have been the focus of the study carried out by Chena, Mayall, York and Smith (2019) who collected the parents' perceptions about their children's experience concerned with mobile-assisted language learning (MALL). The participants included six immigrant families in the United States from four countries who were home-visited with in-depth semi-structured interviews. Different data collection techniques were used including observations, field notes, analytical memos, and a descriptive survey. The parents' perception of their young children's MALL experience was explored through motivation, physical and material access, digital skills, and usage frequency and diversity of mobile applications. The findings suggested that they were eager to support ELs' language learning using mobile technology. Differences in technology access and appropriation were also observed depending on the families' cultural backgrounds and socioeconomic status.

A NEW PERSPECTIVE FOR STUDYING MOBILE USE IN LANGUAGE LEARNING

A recent less explored framework with a focus on sociocultural perspective is the triangular framework of sociocultural ecology approach to mobile use proposed by Pachler, Cook, Bachmair and Kress (2010). We suggest that this theoretical framework be used by language learning researchers. Cook, Bachler and Bachmer (2011) argued that "mobile phones should be viewed as new cultural resources that operate within an individualized, mobile and convergent mass communication; such a recognition facilitates the options for a cultural ecology" (p. 183). Pachler et al. (2010) proposing this framework, considered a triangular relation between the individuals' agency, socio-cultural and technological structures and the relevant cultural practices. This framework is based on Anthony Giddens' Structuration Model (Giddens 1984) and Buckingham and Sefton-Green (2003)'s theory of media literacy as a cultural practice. Despite the importance of this approach, due attention has not been paid to using it in research on language learning. To best of our knowledge, no published paper has ever used this framework in relation to mobile- assisted language learning.

This framework includes three main elements namely agency, cultural practices and structures which are overlapping and interacting with and influencing each other as depicted below:
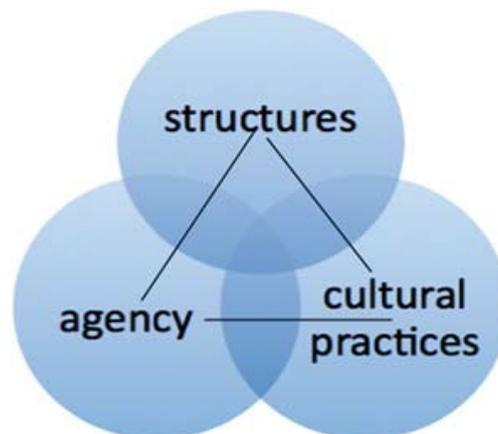
Pachler et al. (2010) -Key components of sociocultural- ecological approach to mobile learning- typology (p. 25)

Pachler et al., (2010) elaborate on the components of their socio-cultural ecology of mobile devices as:

Agency: In agency, a person considers the entire world as a place for learning different materials. This environment is challenging to them and they constantly enrich their expertise through different devices. One of such devices is mobile phone. (Kress & Pachler, 2007).

Cultural practices: mobile devices are widely used by people to communicate and to share information. Therefore, as learning happens in the society it is regarded as social and cultural. In other words, learning and making meaning happens both inside and outside educational institutions through media.

Structures: Individuals' learning is governed by curricular bases of institutions and subsequently affected by their specific cultural properties taken in the learning process. Therefore, mobile mass communication can be highly effective in this system.

The broad sociocultural perspective to mobile use can help locate education in a position to consider students not just as recipients of content knowledge but as individuals who can be actively and meaningfully participating in their surrounding world. That is due to the fact that socio-cultural developments entail identity formation and subjectivity which can lead to agency of the users and to start acting on, influencing or even manipulating socio-cultural structures and practices they experience is of importance. Hence, education is seen as powerful and empowering section that should address the broad cultural, media- related changes in the world.

IMPLICATIONS FOR FURTHER RESEARCH

There are several gaps in the previous research on mobile- assisted language learning research. The first being that almost all the studies carried out within the academic context have investigated mobile learning from a quantitative lens. That is, they have explored the influence of some already-identified factors based on the existing models and theories to explore mobile use behavior or patterns. Attempting to identify the factors grounded in the data, the authors believe that it sounds reasonable to shift into qualitative approach hoping to reach a more in-depth picture and avoid a reduction of meaning. Hence, a bottom-up approach is to be adopted. There is another concern that most studies on mobile use by students have been conducted in higher education levels and on graduate students (as reported by Pimmer, Mateescuand, & Grohbiel, 2016). Undergraduate students both compose a larger population, and they basically have more leisure time compared to the graduate students. Hence, their mobile use patterns are noteworthy and can be illuminating both to themselves and their educators. Last but not least, it is vital to explore the mobile use pattern of college students from a broad sociocultural approach, hoping to develop a big picture which can be powerful enough to both shed some lights on the status quo and to respond to problems and challenges. It is necessary to consider the socioeconomic status of language learners and its relationship with efficient use of mobiles too.

In teaching language using smartphones, there are a number of aspects which need to be considered. Generally, previous studies in the area have focused on the gradual aspects of m-learning and the way that they have influenced the linguistic ability of the students; however, it seems quite necessary to study the social and cultural aspect of language teaching and the way that learners' context can influence learning using mobile phones. As such, further research in the area should focus on the ways that students' learning is influenced by agency, structure, and relationships in the contacts. This will definitely provide us with a clearer picture of mobile learning. In addition, the psychological influence of mobile learning on students' language learning is largely ignored. Taking this crucial aspect into account would give a better picture regarding learners to stakeholders.

Finally, since students are digital natives, teachers should try to include mobile learning in their approach to teaching too. Specially, nowadays that Covid-19 pandemic is quite prevalent around the world; turning to mobile assisted language learning can have several implications for learners and teachers.

CONCLUSION

We have shown in this paper that previous research on the use of mobiles in the process of learning has not taken all aspects into account to give us a clear picture of how mobile learning works. Empirical methods employed in such studies are mostly quantitative which hinder diving deeply into the area. Socio-ecological approach can illuminate this field of research

especially as far as our understanding is concerned. As laid out in the final section, this approach can contribute to several areas of further research.

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