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Living and Learning with Technology: Language Learning with Mobile Devices

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Mobile-assisted language learning has expanded beyond relatively humble beginnings of replicating computer-based activities assigned in formal language learning contexts, and it now often consists of a complex mix of formal and informal learning activities that take place at different times and places throughout learners' daily lives. Decisions about what tools to use are often driven by the costs, choice of hardware, and the knowledge of what tools actually exist, and how these tools are then used will depend on learners' skills, motivation, as well as their short- and long-term goals. Language learning no longer needs to be an activity that is separated from learners' daily lifestyles, but can be an integral part of their lives in the long term. The complexities involved in understanding each individual learner's own ecological context and how these ecologies shift over time will be discussed with an eye on optimising learning opportunities for learners that will keep them engaged in learning throughout their lives.

Key words: mobile learning, formal learning, informal learning, lifelong mobility

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1. INTRODUCTION

There is no doubt that mobile devices have changed the face of education in both formal and informal learning contexts, and in what happens inside and outside of the classroom. Defining mobile learning, however, has been surprisingly complex, with blurred lines between the types of devices used and when and where they are used. Even the concept of "mobility" itself has proven to be elusive. Crompton (2013) defines mobility as encompassing the use of personal mobile devices to learn across "multiple contexts, through social and content interactions" (p. 4) and this in itself exemplifies the intricacies associated with it, flagging the relevance of the contextual, social, and content aspects. These aspects are also alluded to by Pegrum (2019) in his 3 Mobilities Framework, where he discusses mobile devices, mobile learners, and mobile learning experiences. In simple terms, mobile devices refer to the actual tools that are used by the learners, and while there is debate over what might actually fit into this category, it may include tablets, mobile phones (recently predominantly smartphones), MP3 players, electronic dictionaries, personal digital assistants, and even laptop computers. The second point of mobile learners includes the idea that learners are able to interact with the activities, tasks, and resources provided by the teacher from various locations as a result of the use of mobile and other technologies, facilitated by cloud-based content and course management systems. Finally, the idea of mobile learning experiences encompasses interaction with not only resources and people, but also with the environment itself, through the use of tools such as global positioning (GPS) and augmented reality. This enables learners to interact with the language as a part of real experiences rather than from isolated learning events in more formal settings.

Whether as a part of formal or informal learning contexts, it is becoming more obvious that mobile technologies are likely to play a central role in language education, with each of the types of mobility that Pegrum mentioned having its own place in the overall ecology of the learning environment. The purpose of this article is to explore how mobile-assisted language learning (MALL) can be a part of a learner's life, ranging from formal context through to informal ones, and how mobile technologies can facilitate learning throughout their lives. Many educators are faced with the dilemma of how to encourage learners to start to take responsibility for their own learning as they go through their lives.

2. MALL IN FORMAL LEARNING CONTEXTS

For the sake of simplicity, formal learning contexts can largely be divided into two distinct settings: in the classroom and outside the classroom. In the classroom, learners are typically directed by the teacher and carry out tasks and activities under some degree of supervision

while outside of the classroom, they are expected to complete assigned work, review previously covered material, or prepare for future classes at a time and place of their choosing. Each of these contexts could and should be viewed independently of one another, although there is obviously an interrelationship between them.

Looking firstly at classroom contexts, there are several questions to be asked about what is expected from mobile devices in the classroom. What materials or resources will learners have access to? Will mobile devices be a constant presence in the class to be used at any time the student needs them, or will their usage be restricted to certain activities that are monitored closely by the teacher? And, a question of relevance to many teachers is, what are the concerns about keeping learners on task? The answers to these questions lie in the expectations that teachers have about mobile technologies. Mobile technologies do make it possible to have ongoing access to information as required, which may be from fixed information repositories that have been curated and/or provided by the teacher, or even from the Internet as a whole. At the same time, mobile devices also make it possible to interact with communities, which may consist of other learners, teachers or experts in the field, or even a support community. In classroom situations, learners may also have access to multimedia that links resources being used in class to their mobile devices (e.g., O'Bannon, Waters, Lubke, Cady, & Rearden, 2017), adding elements to classroom resources that can be viewed at a personal level in learners' own time rather than waiting for the teacher to play video or audio to the class. This added interactivity to traditional learning materials through the use of mobile devices has also been seen in emerging tools such augmented reality, which has been based on design principles including three-dimensional multimedia content, hands-on interaction with physical learning materials, and gamification (Fan, Antle, & Warren, 2020). In this way, mobile devices have the potential to change the learning experience into something that is interactive, versatile, and enables activation of multiple senses, providing an enhanced environment for learning.

At the same time, in contrast to the very bright prospects of learning through mobile devices, there is also an aspect that has been of great concern to many teachers, namely, the problem of distractions. There is no doubt that mobile devices have the potential to add to the classroom environment, but at the same time, many teachers fear the downside of distractions of mobile devices, seriously impacting upon their pedagogical decision-making, relationships with their students, and even their professional satisfaction (Flanigan & Babchuk, 2020). This has prompted many teachers to introduce broad preventative measures including blanket bans on technological devices due to concerns of student addiction to technology and how this adversely affects students' participation in class (e.g., Selwyn & Aagaard, 2021). The addictive nature of the Internet is now quite well documented (see Alter, 2017), and some have argued that the way in which we cognitively function now has been affected by how information is presented and accessed as a result of the Internet (Carr, 2011).

Notifications in mobile devices have in some regards conditioned us to respond quickly to communications that we receive, and there is evidence that students can feel higher levels of anxiety when they are not able to access their mobile devices during the day (Gajdics & Jagodics, 2021). Studies have even shown that concentration can be so adversely affected that even having a mobile device close at hand is enough to lower a person's attention to their surroundings (Chee, Irwin, Bennett, & Carrigan, 2021). The severity of this addiction helps to illustrate why it is that many teachers feel at a loss as to how to deal with mobile devices in the classroom and why preemptive measures such as blanket bans are introduced.

Finding a solution to this is proving to be elusive, but understanding the mechanism behind such behaviour can also go some way towards a potential means of alleviating it. One theory that sheds some light on these cognitive processes is dual systems theory (Evans, 2003, 2008; Lyngs et al., 2019), which describes the interaction between two different systems of behaviour. The first system (System 1) is responsible for quick, subconscious behaviour, such as scratching a mosquito bite. The person is rarely aware that this type of behaviour is taking place, and they do so without concern for their surroundings as they undertake it. The second system (System 2) is responsible for slower conscious behaviour, and the person is not only aware of this behaviour, but they control when, where, and how it is done. According to dual systems theory, it is possible for System 2 to influence behaviour in the domain of System 1, meaning that if a person makes themselves aware of their subconscious behaviour, then it is possible to constrain that behaviour to a certain extent. In other words, if a student sets their mind to it, they are able to prevent themselves from compulsive checking of their phones and other mobile devices while they are in class. One of the problems is, however, that many learners just do not see the need to limit their behaviour of checking their mobile devices. Although they are aware that compulsive device usage in class can be destructive, many believe that they are sufficiently able to multitask, that is that they are able to still take in the content of the class as they access their mobile devices (Ott, Magnusson, Weilenmann, & Hård af Segerstad, 2018). In many ways, this quite sharply contrasts with concepts such as "digital natives" as proposed by Prensky (2001), where he argues that younger learners who have been brought up with technologies have lower affective barriers towards them, and are better able to multitask. There is a growing body of research that shows that this is not supported by research, and rather, that learners are in fact experiencing time loss as they focus their attention on their mobile devices (e.g., Newell, 2017). Stockwell (2021) refers to this as *selective attention shifting*, as the learner makes decisions about where it is that they would like to direct their attention. When their attention is shifted towards their mobile devices, then it is not—or only very peripherally—being directed towards the teacher or the classroom materials. Dispelling the myth of multitasking in class may go some way towards helping learners to make the decision to keep their attention on the task at hand rather than on their devices.

A large part of formal learning often also involves what happens outside of the classroom as well. When mobile devices become a part of the learning environment outside of class, then similar questions need to be asked as to how they are to be used. For example, what are teachers expecting from learning with mobile devices outside of the classroom? What materials or resources do they anticipate learners will be accessing? These questions correlate closely to the types of questions about in the classroom, and while there may be some overlap in the materials and resources, given the fact that the teacher is not physically nearby, there may also be a need for some kind of support system to be in place should difficulties arise. Furthermore, one additional key question that arises for out-of-class environments is when and where will learners actually use the mobile devices? It appears that this is a question that is often not considered when requiring learners to carry out such activities, and assumptions are made that the learners have access to environments that are conducive to the tasks or activities they have been provided with. Naturally tasks that require longer periods of time to complete will require quieter environments, which is likely why Stockwell (2010) found that many learners opted to use their mobile devices at home, often deciding to use their computers instead for logistical reasons. Smaller sub-tasks that can be completed in shorter periods, often called microlearning (Dingler et al., 2017), would enable learners to use small gaps of time such as while commuting. Therefore, the selection of materials should include some concept of when and where learners will be able to engage in these tasks in order to understand how they will carry them out.

Central to any discussion relating to carrying out any activities outside of class time, whether through mobile devices or otherwise, is whether the learners have the capacity to engage in them with some degree of autonomy. It should be pointed out here, however, that simply having learners engage in assigned tasks and activities outside of class time does not constitute autonomy (see Stockwell & Reinders, 2019, for a discussion). While it could be assumed that a tacit goal of having learners carry out tasks and activities outside of class time is to assist them in being able to work with some degree of autonomy without direct supervision or assistance. Autonomy is, however, an elusive term, and there have been several attempts to define it. Two of the central definitions are by Dörnyei and Ushioda (2011), who refer to it as experiencing oneself as the origin of one's behavior, and Benson (2013), who describes it as the capacity to take control of one's learning. A more specific definition is provided by Murray (2014) defining autonomy as "learners taking on the responsibility for goal-setting, material selection, activity and strategy implementation, progress monitoring and outcomes assessment" (p. 5). What becomes clear from this discussion is, however, that it is unlikely that learners will be able to accomplish that simply by carrying out required tasks and activities outside of class. Developing autonomy requires a plan that helps them to gradually relinquish their dependence on the teacher, but this is in reality difficult to achieve.

To get one step closer to understanding how autonomy can be developed, it is helpful to think about the constructs that make up autonomy. Put simply, autonomy is a combination of motivation and skills. Motivation is necessary to prompt the learner into some kind of action that will lead them towards learning goals, and the skills are these actions themselves. If a learner is motivated but does not know how to set and achieve these goals, then it is unlikely that they will be successful in achieving them. At the same time, even if a learner has the necessary skills but lacks the motivation to put them into practice, then these skills will likely be wasted. Thus autonomy is a product of motivation and skills—the "*skill* and the *will* to learn" (Woolfolk, Winne, & Perry, 2000, p. 384, as cited in Martin, 2004, p. 135)––and both of these need to be nurtured individually (Stockwell, 2021). Expecting learners will be able to accomplish this without the assistance of others is perhaps in many ways being somewhat optimistic. As Lewis (2014) suggests, development of autonomy is a social process, and support from the teacher is an essential part of this process. At the same time, dispelling myths of autonomy is also key to formulating a realistic plan to help learners develop their independence in learning. Firstly, there is a danger in equating technology use with autonomy. Technology in itself cannot create autonomy. Autonomous learners will make use of technologies, but it is extremely difficult for both motivation and skills to be created through technology unless without this being included as a part of the instructional design (see Stockwell, 2013, for a discussion of technology and motivation). Teachers often hold unrealistic expectations of motivation, believing that task-specific autonomy can be applied to other tasks or even to some form of global autonomy (Schwienhorst, 2008). In short, autonomy is something that will take time to develop, and procedures to develop it must be a part of an overall systematic design to be effective.

This leads to a fundamental question as to *why* the development of autonomy is important. One of the primary reasons for this is that most of us as teachers want our learners to continue with their learning even after the formal learning contexts are completed. Depending on the educational environment that teachers find themselves in, the amount of time that they have with learners will typically be limited to several months or at most one or two years. Learners are usually in formal learning environments for a fixed period of time, and after that time they are required to seek out their own learning opportunities. Accordingly, the short span of time that teachers have with learners is in many ways a precious one, something that can transform the way that learners engage in language learning for decades to come, possibly even for the rest of their lives. The discussion below looks at how teachers can help prepare their learners for their lives after formal learning is finished.

3. MALL IN INFORMAL LEARNING CONTEXTS

Learning in informal contexts is a challenge, but mobile devices are becoming a larger part of the range of tools that learners rely upon in order to achieve their learning goals. Encouraging learners to actually engage in that learning when there is no external pressure to do so is of course one of the greatest hurdles that needs to be overcome, but equipping learners with the skills that they may need in the future when the motivation to continue with or recommence their learning emerges. Part of achieving this comes from assisting learners in understanding their own ecology of learning, that is, to see where they fit within their overall environment, and what tools, resources, and networks are available to them that can assist them in their learning. It is unlikely that mobile devices will be the only tool through which this occurs, but the portability of mobile devices makes it possible for learners to have access to them for learning when they require them, and in many cases in the context in which their language skills are needed (see Lave & Wenger, 1991, for a discussion of *situated learning*). Consequently, if learners are able to have an increased awareness of how they can use the range of resources available to them, it raises the potential for "on-demand" learning opportunities when required.

Of relevance to this is the *Ecology of Resources* model (Luckin, 2010), which explores the entire environment that learners are a part of and how they may make the most of all of the possible resources within that environment. Luckin expands upon elements of Vygotsky's Zone of Proximal Development (ZPD), which she suggests sits central to a larger ecology that she terms the Zone of Collaboration, which she describes as being "full of potential forms of assistance that might act as resources to facilitate learning" (p. 29). Within this Zone of Collaboration, Luckin suggests that there are two other constructs, which she terms as the Zone of Proximal Adjustment (ZPA) and Zone of Available Assistance (ZAA). The ZPA refers to those resources that fit the learners needs, while the ZAA is the broader variety of resources that the learners can access when required. Although it was designed when mobile devices lacked the sophistication of the smartphones of today, their relevance to Luckin's model is immediately obvious, in that these tools may not only make up the resources in the ZPA but also provide access to various forms of assistance as may be seen in the ZAA.

The concern is, however, how learners can make the best of the resources in the ZPA and ZAA, and this is where the link between formal and informal learning experiences comes into play. Through envisaging the types of resources that will be in learners' ZPA and ZAA after finishing their period of formal learning, teachers can help to prepare learners by guiding them to understand what resources there are and how to use them. This can be achieved through learner training, where learners can be shown the types of technologies that are available in addition to how to use them for learning purposes. Stockwell and

Hubbard (2013) argued that learners will likely need assistance in learning how to effectively use mobile devices for learning based on early work by Hubbard (2004), who argued that training was often given very sporadically in language courses, typically only within the first week or two of the course, and almost always focussed only on the technical aspects. Romeo and Hubbard (2010) introduced the concept of three distinct but overlapping types of training which they termed technical training, strategic training, and pedagogical training. Technical training refers to teaching learners about the functions of the technology, such as understanding what the technology can do, where options are located, and, if applicable, the help functions in the technology. Strategic training refers to teaching the learners how to use the technology specifically for learning a language through providing detailed strategies that can be used with that technology, and pedagogic training includes training that has learners reflecting on and evaluating their strategies, and teaching these strategies to others. There is already research that shows the potential for training to influence how learners engage in tasks and activities (Stockwell, 2019), with training impacting positively not only on the amount of time that learners spend on tasks on mobile devices but also on learning through other means, ultimately resulting in higher achievement and a greater degree of satisfaction.

As stated above, autonomy should not be viewed as a natural outcome of learning, and the goal is to encourage learners to continue engaging in tasks more than just behaviorally (i.e., time on task) and to also do so cognitively, where the learners think about the tasks they are doing and how they may benefit their learning (see Philp & Duchesne, 2016, for a discussion of task engagement). Through doing this, it is hoped that learners will think about their strategies, and how these strategies may be applied to different learning contexts and learning objectives. Unfortunately, it is dangerous to make assumptions that learners have developed broader skills and/or autonomy just from sustained usage, and it is common (if not the norm) for learners to cease undertaking tasks when the pressure to do so ends. If the goal of training is to guide learners to be self-sufficient in their learning in informal contexts once they have moved on from formal ones, then the training needs to be ongoing and cyclical, leading them to independence from the teacher. As stated above, this can only be achieved if learners are suitably equipped with skills, and more importantly—the means through which to equip themselves with more skills—after they finish their formal language learning. To do this, however, training needs planning, with a beginning and an end to lead towards autonomy (Stockwell, 2021), where learners will have the skill and the will to continue in their learning throughout their lives.

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3.2. Lifelong Mobility

The discussion above leads us to the final concept that will be introduced in this paper, that of lifelong mobility. The foundation for achieving this is that both teachers and learners need to understand that real-life learning starts when formal education ends, and that most learners will be unlikely to possess all the skills that they need to use the target language in the full range of situations and contexts that they will need in the future. Even though many teachers attempt to provide authentic materials and resources for learners as they are in their

courses of study, the vast majority of learners will move from artificial to real-world linguistic and social contexts as they transition from formal to informal learning environments. This is a time of enormous change in terms of the overall ecology of learning, and one of the few constants will in fact be the mobile devices that learners own.

While people typically tend to keep devices such as mobile phones on average for two to four years (Statistica, 2020), the major operating systems in place at the time of writing (namely, Android and iOS), allow for a continuity of data even if devices are replaced. Data and information about apps are backed up in the cloud, and when a person purchases a new device, this information is downloaded onto the new device providing a relatively smooth transition. This is a feature that can be of benefit for language learners as well. Despite the enormous range and transience of apps that are available for language learning, there are several which have started to achieve stability, such as *Quizlet* and *DuoLingo*, that keep records of learners in online accounts that can be accessed from successive devices, or even from different devices such as mobile phones and computers. Assisting learners to achieve lifelong mobility of their language learning is to a certain degree dependent upon encouraging learners to capitalise upon these apps and resources where user data is stored in cloud-based repositories. While some apps will invariably become deprecated over time, if the key data is stored online, even if the providers of these apps upgrade to newer versions of the app, for the most part continuity of service is maintained.

4. CONCLUSION

Learning a language is likely to be a perennial undertaking to most of us. Although many people will undertake periods of formal language learning, such as in school or university or a language school, this time is doubtful that this will last for more than a few years, meaning that for the maintenance or further development of the skills of that language will be in informal contexts where the learner will be required to take responsibility for what, when, and how they will do this. It is proposed that one way to take a step towards achieving this is through lifelong mobility, where learners can carry the skills that they need to learn with them throughout their lives. Lifelong mobility is the product of multiple interrelated factors, including the motivation to continue with the learning of a language, development of fluid and evolving skills in order to learn with existing and emerging technologies, access to resources that maintain relevance to changing language usage over time, and a support network to seek assistance from when required. It is feasible that mobile devices can play a role in each of these, through allowing them to have access to interactive and engaging resources and materials that capitalise upon the affordances of the device, while at the same time enabling access to learners or peers who can assist them in their endeavours, which can

in turn have a positive impact on their motivation to sustain their learning. The biggest challenge that remains however, is how to link these factors into a pedagogy during the invaluable time that teachers have with their learners in formal settings that balances the teaching of language content, skills to learn, and imparting a passion to keep learning throughout their lives

Applicable level: Tertiary

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