Introduction

It is well-known that we live in the age of technology, so much so that the use of Information and Communication Technology (ICT) has spread to all corners of the globe and has infiltrated every aspect of our lives. One of these places is our educational systems which, in recent years, have provided research, infrastructure and resources to integrate ICT into learning environments. In particular, this chapter looks at mobile devices in the hands of young English learners and the challenges and opportunities that these handheld portable devices and wireless technologies represent for supporting the process of teaching and learning to young learners, also identified as mobile learning or mLearning.

Towards a definition of mLearning

As the term denotes, mLearning is a compound of two different but powerful words: mobile and learning. The first one, mobile, immediately conjures up images of learning through smartphones, but it also refers to learning via a wide range of mobile technology, such as tablets, PDAs (or personal digital assistants), audio players, netbooks, laptops and digital readers. All of them share a series of characteristics that help define what is understood as mLearning.

Traditionally, the educational implications of mobile devices have been associated with the concept of elearning because most of the preceding electronic technologies were used to access the educational curriculum outside a physical classroom. That was the case when elearning platforms, such as WebCT (1997) or Moodle (2002), educational web platforms or other Virtual Learning Environments were web applications that integrated a set of tools for online teaching-learning, as an alternative to face-to-face teaching. However, the twenty-first century has seen an evolution and elearning now refers to the use of ICT in conjunction with traditional face-to-face methods, where Internet teaching is combined with experiences in the face-to-face classroom (Ramboll 2004, Jenkins et al. 2005).

Nowadays, due to the fast evolution of mobile devices and the ambiguity of the term ‘mobile’, there is no agreed upon definition. Does ‘mobile’ refer to the technology itself?
Or, does the concept have to do with the notion of learner mobility? Hashemia et al. (2011, p. 2478) propose: ‘Mobility needs to be understood not only in terms of spatial movement but also the ways in which such movement may enable time-shifting and boundary-crossing’.

Providing a single definition of mLearning in this chapter is therefore challenging because of the growth and diversification of mobile devices (Sharples 2006). However, a reasonable definition of mLearning, and the one that will be used for this chapter, is that offered by Molenet (an initiative which supported 104 projects involving approximately 40,000 learners and over 7,000 staff from 2007 to 2010 to introduce and support mLearning): ‘the exploitation of ubiquitous handheld technologies, together with wireless and mobile phone networks, to facilitate, support, enhance and extend the reach of teaching and learning’. mLearning therefore implies learning anything, anywhere, at any time, through mobile devices.

Historical perspectives

The emerging area of mLearning, a development from online learning, originates in the junction between technological development and learner-centred pedagogy (Crompton 2013). Briefly, the origin of mobile technologies began during the 60s and 70s with a series of experiments such as head-mounted devices (1968), the development of the first mobile phone (1973) and the conceptual articulation of the Dynabook, a hand-held electronic book (1972). In the next two decades, the functionality of these devices was improved and both size and cost were reduced, triggering a sharp rise in their use. With the arrival of Web 2.0 (O’Reilly 2005) and the access to computer technology and the Internet through small devices such as smartphones or tablets, powerful products such as iPhones (2007), Android operating systems (2008), iPad (2010), Google Glass (2013), Apple Watch (2014) and all their related applications, or apps, have become the face of innovation.

These advances in technology, underpinned by philosophical and conceptual pedagogies regarding learning, have generated the pre-requisites for new models of education such as mLearning (Crompton 2013). These pedagogies are principally based on learner-centredness. That is to say, educational approaches and methods that focus instruction on the student in order to develop learner autonomy, responsibility, problem solving and lifelong learning and to let the students construct meaning from new information and prior experience (Collins and O’Bien 2003). Particularly, these theories can be synthesised as follows: discovery learning (1970s) which considers that knowledge develops through active participation; constructivist learning (1980s) which takes into consideration interaction with the environment in the process of learning; constructionism (1980s) which contemplates knowledge achievement through the active creation of social objects; problem-based learning (1990s) which develops knowledge as the result of the work on authentic tasks and skills in a context in which they would be used; and socioconstructivist learning (1990s) which studies how knowledge is constructed interdependently between the social and the individual.

Although the evolution of learning and technologies has thus far been described dichotomously, it is important to understand that learning and technology have not occurred as disconnected theories; they have developed as interconnected theories in the digital age. In Crompton’s words (2013, p. 10): ‘the essence of m-learning is not in the learning or in the technology, but in the marriage of the two entities’. For this reason, current trends in mLearning should follow the theoretical assumptions of connectivism (Siemens 2004), which supports the connection of specialised information sources that can be improved by plugging them into an existing network, including those offered by mobile devices. The starting point
of connectivism is the individual. Personal knowledge is comprised of a network or a database, which in turn feeds back into the network, and then continues to provide learning to individual. This cycle of knowledge development (Personal Learning Environments (PLEs) and Open Network Learning; Ozan and Kesim 2013) allows learners to remain updated in their field through the connections they have formed.

Succinctly and to conclude, drawing on a theory of mLearning means accounting for the mobility and the competences of learners; that is, learner autonomy, responsibility, problem solving and lifelong learning and letting students construct meaning from new information and prior experience (Collins and O’Brien 2003). It also means accounting for formal and informal learning, the constructivist and social processes of learning, which are implicit in the fact of being connected through mobile devices, and the analysis of learning as a personal activity mediated by technology (Sharples et al. 2010).

ICTs, and especially mLearning cannot be dissociated from the development of learning in early childhood education, since the attraction experienced by children in the face of technology and multimedia devices is undoubtedly a very important aspect. mLearning can be attractive, for instance, for the development of reading and writing in the foreign language; it can involve the first contact with letters, sounds, pronunciation of new words and chunks of language, as well as be a vehicle for learning how to produce language, initially by trial and error, and later by interacting with other children, always taking into account that mLearning tools can facilitate language learning and the development of cognitive skills.

**Critical issues and topics**

When mobile devices become teaching and learning tools, they come with their share of complications. In the following paragraphs, I look at some of the critical issues in the use of mLearning with young English learners. In particular, I explain the limitations of mLearning and some of the challenges teachers must deal with, together with feasible ways of overcoming these challenges. I also consider some of the ideal characteristics of mLearning content.

With the adoption of more and more smartphones and other mobile devices, the scope of mobile communication has clearly broadened, as young people engage in new practices and address new audiences (Bertel and Stald 2013; Ling and Bertel 2013). In the last decade, children and adolescents have learned to skillfully manage computers and all kinds of handheld devices; nevertheless, although they can be experienced users, most of them ignore the potential risks and issues of mobile communication and mobile devices.

One of the most widespread critiques of mobile devices is the belief that, far from supporting learning, they distract from schoolwork (Kuznekoff 2015). This is because young people use them assiduously in their social life, mainly for things that are unrelated to class. The solution to reduce this possible handicap is that, when using mobile devices for learning, teachers need to set the content to be addressed and make the learning objectives clear before starting any activity.

In this sense, it is important to point out many researchers support the idea that the implementation of mobile technology in the classroom requires careful planning and commitment from all those involved in the learning process, including teachers, the educational administration and parents (see, e.g., Wang et al. 2012). In the case of young learners, it is adults who are responsible for the use of mobile technology and must monitor in some way the work done in classrooms or at home. As has previously been said, mobile devices used in a school context give the opportunity to enrich learning, but also offer the possibility of
being tools of distraction or leading to unethical behaviour (such as cheating and cyber-bullying). Moreover, there may be health concerns due to an excessive time in front of screens and privacy problems when children overshare personal information or when unsuitable sites are not limited by adults. One solution to these issues is to include digital literacy in the Primary curriculum, since websites and mobile applications can often track user behaviour and collect user data. Applications used for mobile learning should comply with national privacy laws and generally accepted mobile privacy principles. Measures should be in place to ensure that private and possibly sensitive data collected by educational institutions are kept safe and are only available to those with access rights (i.e., the learner and his or her teachers). As McQuiggan et al. (2013, p. 14) argue: ‘Teaching digital literacy is certainly preferable to, as is often the case, letting the risk of liability lead to overly restrictive policies’.

A second important issue to consider is that we currently know very little about the efficacy of mLearning content (or apps) or about the experience needed to deliver on the software’s educational promises. While a few studies show students improving in certain skill areas after using particular pieces of software (Ananiadou and Claro 2009), a set of generalizable rules, hallmarks and features that might guide early educators’ choices is not yet available. Related to this second issue is the importance of how engaging content is, both in terms of language learning and from a cognitive or pedagogical point of view. The findings suggest, for example, that when hot spots (a place where a wireless Internet connection is available) support, reinforce or extend the e-story children are reading, the children are better able to retell the story (Stewart and Gachago 2016), whereas extraneous or incidental ‘bells and whistles’ from the app had the opposite effect.

The aim of a particular app is also an important concern for teachers. Some badly designed learning apps are simply a collection of buttons, and the role of the child is either to keep tapping on random images and switches to see them move or make noises or to listen to a narrator and then tap on a button to advance the game. The first type is an open-ended game with no meaningful learning experience behind it; the second type is essentially a multiple-choice quiz without useful feedback. Instead, an app should offer young learners a real and interactive experience, whether it is an open-ended experience or a structured one, toward a certain learning goal, or a language focus (i.e., naming the parts of the body, making pairs, etc.). The key aspect of apps lies in how they empower a child to try different things and experience the consequence of their actions in that virtual world, whether it is a ‘correct’ action or an ‘incorrect’ one. Knowing why a decision or an answer is incorrect (choosing a picture that matches a noun in a memory game, for instance) is much more important than just knowing it is not correct, since it has to do with cognitive processes and decision-making actions. To sum up, before the process of teaching-learning begins, the teacher has to take into consideration device usability, social technology and interaction technology (Koole 2009) and ensure that the learning experience truly brings advantages over other learning modalities.

Another important topic is how an app adapts to the learner’s progress. This issue has to do with the term adaptive learning.

A learning environment is considered adaptive if it is capable of: monitoring the activities of its users; interpreting these on the basis of domain-specific models; inferring user requirements and preferences out of the interpreted activities, appropriately representing these in associated models; and, finally, acting upon the available knowledge on its users and the subject matter at hand, to dynamically facilitate the learning process.
The preceding informal definition should differentiate the concept of adaptivity from those of tailorability/configurability, flexibility/extensibility, or the mere support for intelligently mapping between available media/formats and the characteristics of access devices.

*(Paramythis and Loidl-Reisinger 2004 p. 182)*

When teaching language to young learners, this means that as the child masters one skill set, the app needs to recognise their progress and give them more complex problems to solve. If they require a little more time in one area, it should recognise that as well and give them the guidance they need on that subject.

Motivation and the will of the learner to explore the app is another important aspect. The best apps are the ones that children return to again and again with enthusiasm. It is relevant that teachers spend some time observing children as they play to familiarise themselves with the characteristics of apps that a particular group of children find engaging and thereby support appropriate selection of content. Maybe the music in the app is not appealing, or perhaps the learner cannot make sense of what is going on in the app and needs some additional guidance, both in terms of language or actions.

Together with motivation, another important aspect to take into account is what happens after the implementation of the mLearning activity. As with any learning activity, it is necessary to assess the activity and the learning that has taken place. Vavoula and Sharpes (2008) propose six challenges for evaluating mLearning through a framework of three levels (usability, learning experience and integration within the educational and organisational context): capturing and analysing learning in context and across context, measuring mLearning processes and outcomes, respecting learner/participant privacy, assessing mobile technology utility and usability, considering the wider organisational and sociocultural context of learning and assessing in/formality. Through all these actions, the teacher is assessing not only the mobile device used in the mLearning activity, but also the process of learning of his/her students. At the same time, learners are evaluating their progress, both in knowledge (content) and experience (process).

Other critical points to consider are the problems technology could have *per se*. For example, the fact that some software needed for an activity could be incompatible with the device used is an issue which must be solved before the implementation of the activity. The limited information that some devices can store may also be a challenge. Using mobile technology that is connected to the cloud helps ease concerns about the weight of the files and to work simultaneously in the classroom and at home, or anywhere else. There is also the question of the screen size and resolution. Some technologies can strain the eyes after long periods of reading or writing and, therefore, it would be counterproductive to write a 100-word text in a mobile phone instead of doing it on a tablet, for instance.

Some other limitations that do not depend on the control of those involved (teachers or students) in the learning process but which must be considered when teaching are the connectivity and the cost. Sometimes, poor or totally absent mobile network signals or overloading when users are uploading or downloading content could cause connectivity problems and, as a result, a stop in the learning process. In relation to the cost, some governments and/or schools purchase mobile devices but if children must bring their own devices, there would be issues of inequality of access due to economic differences between the most privileged and the least fortunate students.
Mobile learning for young English learners

Current research

As Liu et al. (2014) pointed out, the most well documented possibilities of mobile devices are their inherent portability (the small size allows mobility with the user) and their wireless connectivity (access to information on the network). In addition, the literature indicates that because of the ubiquity and the immediacy of mobile devices, students have access to knowledge from any place at any time and can continue learning beyond the classroom (Fallon 2008). Additionally, these technologies, compared to other tools such as laptops or desktop computers, have a lower cost, so their accessibility means they can be used in the classroom by most students (Liu et al. 2009). Other studies (Banister 2010) consider that app access and multifunction sensors (GPS, camera, etc.) incorporate intrinsic characteristics of mLearning that encourage students through their process of learning.

However, taking into account the technical characteristics of mobile devices must be accompanied by an understanding of what mLearning means pedagogically. Research has identified the educational advantages of technological tools as being motivation, activation, individualization, responsibility and interactivity.

To begin with, the level of motivation will influence what and how effectively students learn, so motivation could be contemplated as an essential precondition for student involvement in any type of learning activity. Thus if teachers use mobile devices for learning purposes, students’ motivation plays a significant role in engaging and sustaining them in the process of mlearning (Vogel et al. 2009). Secondly and related to activation, using mobile technology as a cognitive tool enhances constructivist learning whereby learners become the centre of the didactic process and play a more active role (Herrington, Herrington, Mantei, Olney and Ferry 2009). Third, individualization has been mentioned as an educational characteristic derived from the use of mobile devices (Grant and Basye 2014) because their utilization gives students the chance to work at their own pace, taking extra time in the areas where they need it most or going in depth when they wish to. Therefore, working with these tools allows teachers to adapt the process of learning to the needs of each learner (Banister 2010). The fourth listed characteristic, responsibility, comes from the possibilities that mobile devices provide to educators to motivate, activate and individualise learning, giving a greater sense of ownership to learners (mobile devices belong to each user) and responsibility for their own learning (Ridenour, Blood et al. 2011). Last but not least, interactivity is believed to play a significant role in the use of mobile devices thanks to the fact that learners interact with the instructor and their peers and can access course materials and collaborate with each other.

Current research in mobile learning has illustrated learning across different educational contexts (universities, schools, both formal and informal learning contexts, professional development and workplace settings), with diverse target groups including children, adult learners, vocational schools and professionals (Kukulska et al. 2009) and there have been a number of recent reviews.

Petrova and Li (2009) analyzed more than 300 articles about mLearning, identifying three main research domains: technology, educational technology and pedagogy. Their analysis also indicated that there was a shift from focus on technology to focus on theory in 2006 and 2007, whereas research on the pedagogical implications of mLearning still remains today in third place.

According to the review carried out by Rikala (2013), Cheung and Hew (2009) found four main research areas: usage profile, viability as an assessment tool, learning outcomes and attitudes.
Wu et al. (2012) also carried out a review of research in the area of mlearning between 2003 and 2010. They found that 58% of the 164 studies they reviewed took *evaluating the effectiveness of mobile learning* as the primary research purpose, and the second-most frequently cited research purpose was *mobile learning system design* (32%). Research into mobile learning has therefore focused most on user acceptance and attitudes, the effectiveness of mobile learning, personalization and the design principles and recommendations for educational purposes (Rikala 2013).

In spite of the number of recent reviews, it must be noted that research specifically related to young language learners and mobile learning is minimal. However, there are some relevant recent studies, for example, related to mobile assisted language learning (Chinnery 2006), the challenges of vocabulary teaching through mobile devices (Snow and Kim 2007) and mobile-device-supported peer-assisted learning systems for collaborative early EFL reading (Lang, Sung, and Chang 2007). From 2013 onwards, attention seems to have shifted mainly to tablet technologies, such as Apple iPads, and how these devices are used, for example, to promote L2 motivation through exploiting its affordances to enhance collaborative learning and social development (Alhinty 2015). Bannister and Wilden (2013) and Kukulska-Hulme et al. (2015) both elaborate on the numerous ways in which tablets can be used in foreign language classrooms as a research tool, a recording tool and a sharing tool. Details of these practices are discussed in the next section.

**Recommendations for practice**

**How to make mLearning work**

In the previous section, it was claimed that the use of mobile devices and the implementation of mLearning activities in a classroom requires careful planning. Thus, a ‘pre-teaching’ phase is required to integrate mobile technologies and it is necessary to develop a framework that exploits the possibilities of mLearning.

According to Lara (2012) some useful recommendations before starting are: defining the learning objective to be achieved; being aware of whether the technology available allows the creation of the task; considering the skills needed (for both teachers and learners); thinking about the cost of implementation (the mobile device itself and the access to some applications which may require paying extra fees); asking how to facilitate the motivation from the users towards the device, and how to measure the success of learning; and ensuring that all students have a mobile device, that they know how to use it and that there is a good connectivity.

While the mLearning activity is being implemented, it is essential to undertake continuous monitoring of the experience with a view to getting feedback from the learners and confirming that the objectives are still active and that the activity continues accomplishing the language learning aims the teacher had planned. It is also recommended that simple activities are designed, promoting the use of audiovisual language (photos, video, etc.), at least at the beginning of the experience. Another important aspect is the storage of the files created. Choosing the right cloud service in advance is essential, as it offers numerous benefits including lower costs, faster experimentation, user-friendly experience and no physical infrastructure to manage. Children are also likely to be more used to it, since most of the devices they use today are based on cloud services. Lastly, there is a need to consider the extremely dynamic mobile learning context and the different ways that mobile technologies
can be used to support teaching and learning for young children, such as individual tasks, group work, data collection, recording reflections/diaries, skills practice, feedback/Questions to teacher, peer-to-peer communication/support, reviewing knowledge and warm-up/cool-down exercises (Attewell et al. 2010).

Practical applications of mLearning for young learners can have a number of different foci and there are many tools for each. The following paragraphs explain the main types of practical applications, while some examples of specific tools are given in the appendix. Web 2.0 Tools can be used to teach curriculum content, store data, create/edit video, edit photos, collaborate and so much more. These programmes are often free and are used by teachers, students and sometimes parents, both in and out of the classroom, on a regular basis. However, when using Web 2.0 tools, teachers need to remember that it is not about the specific tools themselves, but why and when the tool is needed, taking into consideration the learning outcomes and the key competences the students already have, or will need, to use them as learning tools. Ideally there also needs to be a culture within the school that values technology use in the classroom, and teachers trained in both the use of mobile devices and good teaching skills. Finally, it is also important to mention that these tools were current at the time of writing the chapter, but because of the constant evolution of mobile technology, they are likely to be replaced by others very quickly.

Before reviewing the tools, it is worth reiterating concerns regarding possible risks for children. When using 2.0 tools, teachers need first of all make sure that these are intended for educational use, instruction, research and the facilitation of communication, collaboration and other educational-related purposes. When teaching children in an mLearning environment, careful consideration of the privacy policy and terms of service; that is, what is happening with children’s personal data that they are providing, is of paramount importance. One key component of keeping young children safe from having their data misused is to teach them to be digital citizens who can assess the risk associated with putting information on the Internet and identify trustworthy software providers, apps and tools. It is imperative that children be taught the skills needed to guard secure information and evaluate threats. Consequently, teachers need to make sure that the terms of service and privacy policies of the tools we choose to use are appropriate. A straightforward way of doing so is to use websites and 2.0 services that do not need registration, since most 2.0 tools that require a registration are intended for users aged 13 or older. Of course, there are many other websites and 2.0 tools that can be used without age restrictions and that are fully intended for children and educational purposes (i.e., Edmodo, Edublogs, Glogster EDU, Google Apps accounts, Kahoot or story bird, among others).

**Tools for expressing and creating**

There are four main types of applications for expressing and creating content: image and multimedia processing, graphics and diagrams, movement and virtual books.

First, some tools offer an active place for image and multimedia processing. Highly technical skills are not required because they use very intuitive interfaces and any student can make their own creations. Tools such as Storybird or VoiceThread can help children create short, visual stories. Students can select artwork, drag and organise photos and add their own text. These creations can then be published on the web with adjustable privacy settings. In most cases, there is also the option to allow comments, which is perfect for teachers to encourage student collaboration
Secondly, elaborating graphics and diagrams is also a good activity for organizing knowledge and involving creative thinking. Students can create flowcharts, mind maps, concept maps and many types of helpful visual communication.

Thirdly, there are also multiple 2.0 options, both within the programme usually used by Windows and online options that allow children to play (see Tamis-LeMonda and Rodriguez 2009 for the role of play in early language learning). In general, these types of tools are also easy to use and useful, for example, for creating and editing audiovisual texts, fostering children’s movement while learning or listening to music.

Lastly, with tools focused on virtual books, students can make creations combining text and images, fixed or mobile and in many different formats, from the traditional book to the magazine or the newspaper. These applications develop the digital competence not only of an individual, but also collaboratively, since most offer possibilities for collaborative writing.

**Tools for publishing and sharing content**

The concepts of publishing and spreading must be understood as active processes in which students interact with the contents and with other users, in the sense of sharing information. There are four applications in this section: photos, audio and podcasts, multimedia presentations and videos and television.

To publish photos and share them with other users, learners can use various applications. Photos are organised into albums, turning the space into an image catalogue. This is particularly useful to facilitate the learning of vocabulary and to work on oral and written expression by means of the insertion of photos into a blog, in a wiki (a website or database developed collaboratively by a community of users, allowing any user to add and edit content) or in a class web page.

Another group of tools are characterised by enabling the publication of and collaboration on audio files, generally in mp3 format. These files are downloaded through the podcast syndication. As Godwin-Jones (2005) comments, the use of podcasts develops oral communication, in the sense that it enables the practice of oral comprehension and expression through the recording and editing of oral productions. Other content, such as music, stories or oral presentations, can also be downloaded, which can support the teaching-learning process.

The applications called multimedia presentations are web services that host content. In them, teachers and pupils can create works, add to them and control the downloads and readings that a specific document has had. The teacher and the students are enriched by the collaboration and the search for diverse content to support the materials offered.

Videos and television are very useful tools for the teaching-learning process. These applications allow users to share stored videos and tag, download and comment on them and are particularly useful in promoting understanding of content. In addition, teachers and students can use them to publish videos to support learning and view activities, for example. Undoubtedly, the best-known video and television application is YouTube (www.youtube.com). However, its restrictions of use are limited to over thirteen years old, so its educational use must always be supervised by the teacher who needs to review the contents.

**Tools for searching and accessing information**

All applications with the ability to express and create, and/or publish and spread are stored on the Internet and, consequently, they become tools that allow access to information.
Therefore, a comic book or a video, for example, constitute published content to be located and used in the classroom. In this category of searching and accessing information, it is opportune to include those tools that contain search engines, aggregators, maps and music. As in the two previous sections, the following lines explain them and their applicability in the primary classroom.

Search engines are tools that allow for the location of information in various formats (documents, images, videos, etc). One of the main concerns of all educators is the large amount of information to which their students have access that is not appropriate to their age. To this end, there are adapted search engines that detect and eliminate the adult content of their search result. As an example, there is Googlekids.

An aggregator is an Internet programme or service. Its main function is to collect the latest news published on the Web 2.0. For this, the user has to predefine a favourite news list. In the classroom, it is beneficial if there is another application for expressing and creating or publishing and sharing, such as a virtual book or a multimedia presentation to build students’ collaborative skills. The aggregator will keep users informed of the changes that are being made on the web.

At a first sight, it could seem that maps are educational resources for specific subjects, namely, geography and natural sciences, among others. Maps, however, make it easy to locate content, find different geographical locations, view images from satellites and explore landscapes from different places, often inaccessible to many students.

**Tools for sharing and thinking**

The applications based on social networks put people in contact according to some kind of common interest. Social networks can be of two types: vertical or horizontal. The former are created by users, whereas the latter already exist and users are incorporated into them. Many authors have addressed the potential benefits of social networks in the educational process. De Haro (2010), for instance, considers that they allow centralisation in a single site of all teaching activities; there is an improvement of the work environment by allowing students to create their own objects of interest; they increase the fluency and the simplicity of communication between teachers and students; they increase the effectiveness of the practical use of ICT, by acting as a means of agglutinating people, resources and activities; and, they facilitate the coordination and work of diverse learning groups by creating them.

Currently, the most widespread social network among the population in terms of its use is Facebook (www.facebook.com), but its restrictions mean it cannot be used with young learners. However, there are some networks focused on the educational field that can be used in the primary classroom.

There are also a number of useful tools which cannot be classified within the above-mentioned categories because they contain several of the features listed; these include storage, calendars, social bookmarks, online office, microblogging, Virtual Learning Environments, wikis, blogs and generators, and are described below.

**Storage**

Storage applications store information in web services. This allows people to have the information available at any time and from any site through the network. At the same time, these tools facilitate not only the download of files, but also their distribution between the teacher and the student.
Calendars

As its name implies, calendars are online calendars. The educational applicability allows the creation of shared calendars through which students can know the temporary organization of contents of the subject and the notification of events, for example, the delivery of a task.

Social bookmarking

Social bookmarks are Web 2.0 applications that serve to store, classify and share Internet links. They are virtual libraries that allow the realization of customised and/or collective webography and the organization of information according to the user’s interests. They can be very useful for teachers and students. For example, the teacher can create a database to structure the contents of the subject while the student can have a list of all those web pages integrated in his/her process of learning.

Online office

These Web 2.0 tools create and share the work online. Consequently, teamwork, collaboration in projects and content editing are promoted simultaneously by several students and/or the teacher. For example, in the elaboration of a group multimedia presentation, the students can upload the document in the Prezentit, and each one can participate from wherever they want.

Microblogging

The microblogging or nanoblogging is a short messaging service, usually text, but to which you can add photos or audio. The program authorises the creation of messages, and the user publishes them to be read and/or commented on by the other members or followers. Lomicka and Lord (2009) recognise that the microblogging makes easier and maximises the interactions between the students and the teacher with a fluent communication. In addition, through this tool, students can work as a team in a collaborative task.

Virtual Learning Environments (VLE)

A VLE, also called a virtual classroom or platform, is an environment through which the computer simulates a classroom with teaching and learning activities, such as documents, exercises, work, etc. Thus, a VLE gives the possibility of presenting to the participants of the learning process a new space on the Internet to develop the teaching and learning act. Boenu (2007) proposes four essential characteristics for any virtual classroom: interactivity (learner as the protagonist), flexibility (with the institution, the curriculum and the content and pedagogical styles), scalability (ability to work with any number of users) and standardization (possibility to import and export courses). Belloch (2003) is more specific and proposes a series of technical and pedagogical characteristics. In reference to the technical aspects, the author emphasises if the VLE is free or not, if there is the possibility of changing the language, if the system is operative with the organization that implements it, if there are manuals or documentation of support for the users and if there is a community of users to consult problems and/or doubts about the dynamics of the virtual platform. In terms of pedagogical aspects, the author lists six characteristics: management, personalization,
communication, interaction, collaboration and evaluation. The knowledge of these characteristics of EVA and its possibilities in the teaching-learning processes will be the elements that have to determine its use in an mLearning context and the pedagogical methodology according to the tools that it offers.

**Wikis**

A wiki is a website where users can create, modify and/or delete information they share. Their educational applications are multiple: to plan and to carry out works promoting constructivist and collaborative work; to create web content banks, glossaries, dictionaries, manuals, etc., with photographs, videos, files and/or links to expend the curricular content; and to interact with students.

**Blogs**

A blog is a website that collects information chronologically in entries (or post), composed of texts, images, audios, videos, etc. There are several educational applications, mainly: creating, publishing and spreading knowledge, opinions, questions, etc. The most popular blogs in the educational field are:

- Blogger → www.blogger.com
- Blogspot → www.blogspot.es

**Future Directions**

As stated in the Current Research section, if teachers use mobile devices for learning purposes, aspects such as students’ motivation, learning in a constructivist way, working on their own pace, responsibility and interactivity are believed to play a significant role. However, research in these areas is still lacking.

Cheung and Hew (2009) also identified four main research areas that need to be addressed in the future: (1) usage profile, (2) viability as an assessment tool, (3) learning outcomes and (4) attitudes.

Research in the field of mobile learning should offer explicit proof of educational outcomes and impacts: how the use of mobile technology helps young learners learn better, develop digital competences and make learning a positive experience while they develop their learning-how-to-learn competence. These educational outcomes and impacts cannot be assessed before the use of mobile devices in education has been fully integrated into the day to day operations of the classroom. Consequently, one major challenge is that mobile learning practises have not become endemic to educational contexts or to classroom practices. There should be a cohesive theoretical mobile learning framework and a set of best practices addressed to young learners for educational purposes. As Jenni Rikala (2013) suggests, without these it simply takes too much of teachers’ time and energy to interweave all crucial aspects together. Teachers alone will unlikely be able to bring the breadth of implementation needed.

Also, as has been shown in the previous section, mLearing tools are especially relevant to the young learner English classroom, as they enable access to all kinds of information and educational materials, as well as offer a communicative channel. They offer teachers and learners a new educational paradigm without spacial or time barriers for information and communication.
Furthermore, according to McQuiggan et al. (2015), the future adoption of mobile learning and the success of such efforts require continuous awareness and integration of new technologies and functions, especially in regard to teaching. Thus, teachers must stay informed of the latest updates to these devices. The landscape of mobile learning has shifted dramatically in just the past five to seven years, with the advent of new and cheaper tablets, and the proliferation and evolution of other types of handheld devices and wearable technologies. The capabilities of today’s smartphones and tablets have revolutionised the concept of mobile learning, and according to edtech experts, the majority of the hardware and software can be moved to ‘the cloud’ and the product itself will mainly be the input and the display (Huiyu 2015). Similarly, although the theoretical foundations behind mobile learning remain relevant (i.e., constructivism, motivation, collaborative learning), research in the field is very much in its infancy.

It can be concluded that as current or future teachers of young learners we must not forget that the main focus in education today is learning, not technology, despite the rapid growth of technological changes. All the information and the tools mentioned in this chapter are means to help create exciting, engaging and effective activities for young learners, which can be achieved by learning about, implementing and redesigning mLearning to enrich the curriculum in the areas of creativity and innovation, collaboration, critical thinking, problem solving and communication.

Further reading


The chapter begins by explicating the philosophical, pedagogical and conceptual underpinnings regarding learning, particularly towards learner-centred pedagogies. This is followed by a discussion of the technology, covering the evolution of the hardware and software, its adoption in society and how these technological advancements have led to today’s new affordances for learning.


This article was written by a group studying an iPad pilot program and focuses on technical infrastructure, administrator and leadership buy-in and redesigning instruction with iPads in mind. This article asks some of the same questions as this chapter: are the devices a distraction? Does the time setting up and using the devices take away from reflection? Ultimately, this article supports the notion of integrating instruction into learning devices that today’s students are familiar with and continually planning for the technology changes of the future.


This article focuses on practical applications for mobile learning and information to find apps and other resources. The article links to blogs of teachers who use mobile devices in their classrooms. This article reinforces some of the resources already mentioned but provides a peer-reviewed source of quality information for beginning teachers and instructors to use when piloting a mobile device program.

Related topics

Motivation, projects, CLIL, English outside the classroom, classroom management
APPENDIX

1 Tools for expressing and creating

A Image processing

Picnik → www.picnik.com
Pixton → www.pixton.com
Glogster → www.glogster.com
Canva → www.canva.com

B Elaborating graphics and diagrams

Text2mindmap → www.tex2mindmap.com
Sketchboard → https://sketchboard.io/

C For the management of movement

Jango → http://es.jango.com/music/Tool
Kidjo → www.kidjo.tv/

D Virtual books

Storybird → http://storybird.com/

2 For publishing and spreading

A To publish photos

Flickr → www.flickr.com/
Picasa → http://picasa.google.com/

B For the publication and collaboration of audio files

Evoca → www.evoca.com/
Odeo → www.odeoenterprise.com/

C Multimedia presentations

Prezi → www.prezi.com
Slideshare → www.slideshare.net/

D Videos and television

Teachertube → www.teachertube.com
Livestream → www.livestream.com/
Blip → http://blip.tv/
For searching and accessing information

All applications with the ability to express, create, publish and spread are online tools that facilitate finding information. Therefore, a comic book or a video, for example, is published content that can be located and used in the classroom. Nevertheless, in this section on searching and accessing information, it is useful to include the following tools: search engines, aggregators, maps and music. As in the two previous sections, explanations of the tools and their applicability in the classroom, especially the primary one, are provided below.

**Search engines** are tools that allow you to locate information in various formats, namely, documents, images, videos, etc. The most popular search engines are:

- Google → www.google.com
- Yahoo → www.yahoo.com

One of educators’ main concerns is the large amount of information to which their students have access that is not age appropriate. To alleviate this concern, there are adapted search engines that can detect and eliminate explicit content, e.g., Googlekids.

An **aggregator** is an Internet program or service that collects the latest news published on the Web 2.0, based on the user’s predefined list of favourites. In the classroom it is helpful to use one in tandem with another application for expressing, creating, publishing and spreading, such as a virtual book or multimedia presentation. The aggregator will keep users informed about the updates to the web. The most famous one is:

- Feedly → http://feedly.com/i/welcome

At a first impression, it could seem that maps are educational resources for very specific areas and their geography, natural sciences and so forth. However, maps make it easy to locate content, find different geographical locations, view images from satellites and explore landscapes from different places which are often inaccessible to students. Two applications for maps are:

- Community walk → www.communitywalk.com/
- Google maps → http://maps.google.com/maps?hl=en&tab=wl

The Web 2.0 contains applications for listening to **music**, creating and sharing distribution lists. Therefore, the Web 2.0 facilitates the search for music and its digital reproduction, thanks to software such as:

- Lastfm → www.lastfm.es/
- Yes → www.yes.fm/
- The radio → www.theradio.com/

3 For sharing and thinking

- Neo LMS → www.neolms.com/
- Edmodo → www.edmodo.com/
### 4 Storage

 Dropbox → www.dropbox.com/
 Box → http://box.net/
 Live drive → www.livedrive.com/

### 5 Calendars


### 6 Social bookmarking

 Delicious → www.delicious.com/
 Mister-wrong → www.mister-wong.es/
 Diigo → www.diigo.com/

### 7 Online office

 Stilus → http://stilus.daedalus.es/stilus.php
 ArtPad → http://artpad.art.com/artpad/painter/
 Prezentit → www.prezentit.com
 Zoho → www.zoho.com/
 Schoolrack → www.schoolrack.com/

### 8 Microblogging

 Twitter → http://twitter.com/ (as with Youtube and Facebook, Twitter is restricted to users over age 13)
 Tumblr → www.tumblr.com/
 You are → http://youare.com/

### 9 Wikis

 Wikispaces → www.wikispaces.com
 Escolar → www.escolar.net7wiki
 Nirewiki → http://nirewiki.com/en

### 10 Blogs

 Blogger → www.blogger.com
 Blogspot → www.blogspot.es

### References


