

Mobile Learning in the Classroom: Past, Present, and Future

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This paper will first provide an introduction and insight into the development of *mobile learning*. Emphasis will be placed on how the rapid expansion in ownership of mobile devices and the growth in the Mobile Internet have created an ideal opportunity for language learners, instructors, and institutions to embrace mobile technology. *Mobile learning*, particularly using devices such as smartphones and tablets, can offer assistance in breaking down these tightly controlled language learning environments and help learners and instructors to move away from traditional settings and attitudes toward language acquisition by individualising the learning process. Finally, the paper will project into the near future and present three scenarios that indicate how *mobile learning* can continue to provide potential solutions to challenges that have faced more traditional-based language-learning programmes.

BACKGROUND

The field of mobile learning has its origins in the 1970s when companies including Xerox created a project titled Dynabook. This pioneering project created a personal dynamic medium that was remarkably similar in size and shape to the modern tablet device. The Dynabook device included a small flat screen and a built-in keyboard. Its biggest achievement was that it was relatively simple to use and included within its software capability simulations and materials from around the world (Educational App Store, 2014). Even though, at the time, it was an amazing piece of technological development, it was severely limited in what it could achieve. Although the device itself was ‘mobile’, the information stored within its memory was not, as it had to be installed during the manufacturing phase. So, even though the Dynabook was ahead of its time, it was limited in its use by the technology of the era.

Mobile learning really started to develop around the introduction of technologically advanced mobile devices at the beginning of the 21st century. Around this development in mobile technology a school of research developed that pressed the scholarly advantages of using mobile devices within a language learning setting. As *mobile learning* is wedded to the technology available at the time, the early phases in research focused solely on the mobile device. In the 1990s and early 2000s these mobile devices were likely to be Personal Digital Assistants (PDAs) or laptop personal computers. However, as technology evolved in the 21st century with the introduction of smartphones and tablets so has *mobile learning* offered greater opportunity for language learners, instructors, and institutions.

Smartphones and tablets have allowed for a greater focus on the mobility of the learner and the instructor rather than just on the mobility of the device. This created an environment that allowed activities to be undertaken outside of the traditional parameters of a language learning classroom. Additionally, these mobile devices have provided greater freedom for learners, instructors, and institutions to incorporate these devices into a more interactive language learning experience (Pachler, Bachmair & Cook, 2010).

WHAT IS MOBILE LEARNING?

As *mobile learning* has evolved as an academic discipline in a relatively short space of time, there is on-going disagreement between scholars as to how to correctly define the ‘mobile’ in *mobile learning*. Does it refer to the mobility of the device, or the mobility of the learner, or the mobility of the knowledge? (Kukulska-Hume, 2009). Initially *mobile learning* was identified as the use of mobile devices such as PDAs as a learning device (Quinn, 2000). The next attempt to update the definition came in 2003, just before the widespread introduction of smartphones. This definition expanded the parameters of what constituted *mobile learning* by defining it as, “Any sort of learning that happens when the learner is not at a fixed, predetermined location, or learning that happens when the learner takes advantage of learning opportunities offered by mobile technologies” (O’Malley, Vavoula, Glew, Taylor, Sharples & Lefrere, 2003). This second definition placed a greater emphasis on contextual, pedagogical, and then finally technological aspects within mobile learning. A third definition became popular two years after the first massively popular smartphone was introduced – Apple’s iPhone Series 1 in 2005. It attempted to define *mobile learning* as, “The process of coming to know through conversations across multiple people and interactive technologies” (Sharples, Taylor & Vavoula, 2007).

Yet this third definition also lacks clarity, as it appears to place great emphasis on the term ‘conversation’, which would seemingly limit how mobile technology could be used. Therefore, attempting to define mobile learning is not a straightforward task, as developments in technology combined with debates over the interpretation of the term ‘mobile’ provide, at best, ambiguous definitions.

For the purpose of this article a fourth definition will be used as this one offers the clearest interpretation of what constitutes *mobile learning*. This definition states that, “*mobile learning* refers to learning mediated via handheld devices, and potentially available anytime and anywhere” (Kukulska-Hume & Shield, 2008). This definition allows for learning to take place inside or outside of a traditional classroom or course structure. *Mobile learning* could also be defined as participation in a formal lesson whilst using a mobile device, and it could also be self-directed or spontaneous learning. The environment may also be part of the learning experience, or it could even have a neutral role such as reading articles or an eTextbook whilst travelling on public transport (Crompton, 2013).

INVASION OF THE SMARTPHONE

Mobile learning needs to be divided into two separate, yet connected categories: mobile devices and mobile access. For the success of mobile technology in the learning environment, it is crucial that both elements, devices and access, are readily available for use by instructors, learners and institutions.

The first of these elements, mobile devices, must also be separated into two different types: a smartphone and a tablet. Both devices are portable and can easily fit inside a small bag or pocket. They share many similar software platforms, and will usually include WiFi and Bluetooth connectability. Mobile devices are defined as “able to perform many of the functions of a computer, typically having a touch screen and an operating system capable of running general-purpose applications” (Oxford Dictionaries, 2016).

Although smartphones were first introduced in 1992 with IBM’s Simon Personal Computer, it was not until 15 years later when Apple released their First-generation iPhone that worldwide sales started soaring. The current world market is dominated by two technologically companies: Apple and Samsung. These

multi-national giants have developed two competing software systems: iOS and Android. Together, these two companies account for 97% (Android - 84% and iOS - 13%) of current world market share.

Since the First-generation iPhone was introduced in 2007 the total number of smartphone users worldwide has increased year on year. In 2016 there were 2.082 billion smartphones worldwide, an increase of 961 million on 2015. By the end of the decade, smartphone usage is predicted to increase to 2.659 billion (eMarketer, 2016). To put that into perspective, by 2019 there will be enough smartphones for 35% of the world's population. With this number predicted to have doubled by the middle of this century, smartphones offer language instructors and institutions a valuable opportunity to exploit these high ownership levels for the benefit of improving student engagement with the language learning process.

However, unlike their older cousins, tablet devices have not sold as well as smartphones, thus greatly limiting their impact within the language learning process. In 2010, when the First-generation iPad was launched by Apple, there were 19 million tablet devices sold worldwide. By 2014 this number had increased to 230.1 million units sold. Yet by 2016, the number of tablets sold globally had dropped to 183 million, and by 2020, the number will still be below 2014 level.

When discussing the benefits of mobile devices, the figures show that the global sales of tablets are significantly lower than those of smartphones. In fact, by comparing the two sets of figures in Table 1 and Table 2 the disparity can be clearly highlighted. Therefore, the development of *mobile learning* in the 21st century has been driven by the invasion of smartphones into homes, schools and work places the world over.

TABLE 1. Smartphones Sales World Wide Year by Year

Year	Number Sold	World Population	Percentage
2007	122.32 million	6.673 billion	1.8%
2009	172.5 million	6.834 billion	2.5%
2011	494.5 million	6.997 billion	7.1%
2013	1.019 billion	7.162 billion	14%
2015	1.432 billion	7.324 billion	19.5%
2017	1.579 billion	7.484 billion	21.1%
2019	1.862 billion	7.640 billion	24.3%

(Statista, 2016)

TABLE 2. Tablet Sales World Wide Year by Year

Year	Number Sold	World Population	Percentage
2011	76 million	6.997 billion	1.1%
2013	219.9 million	7.162 billion	3.1%
2015	207 million	7.324 billion	2.82%
2017	181 million	7.484 billion	2.41%
2019	189 million	7.640 billion	2.47%

(Statista, 2016)

As the above tables highlight, the rapid number of smartphones sold year on year continues to grow, whilst, in comparison, tablet sales have plateaued and will continue to sell at much smaller numbers than smartphones. Tablets have contributed towards the expansion of *mobile learning*, but they are very much secondary players as, quite simply, there are far fewer tablets sold, owned, and used in comparison with smartphones. As smartphone sales are predicted to increase year-on-year until 2020 whilst tablet sales start to stagnate, this indicates that, for the foreseeable future, smartphones will be the mobile devices that continue to be at the centre of any *mobile learning* research or use.

A SMARTPHONE WORLD

Global sales and use of smartphones continues to grow year on year, including in areas that are considered to be less developed places of the world. Of the top 10 strongest economies in the world based on GDP, only three – the United States, Canada and the United Kingdom - are in the Top 10 list of countries with the highest smartphone penetration in the world (Investopedia, 2016). In fact, the country with the highest smartphone ownership percentage is South Korea with 88%. This is followed by Australia with 77%, United Arab Emirates with 75%, and Israel with 74% (SMS Global, 2016).

TABLE 3. Smartphone Penetration 2016

Country	Penetration Rank	Penetration %	GDP Rank
South Korea	1	88%	11
Australia	2	77%	13
U.A.E.	3	75%	32
Israel	4	74%	35
U.S.A.	5	72%	1
Spain	6	71%	14
U.K.	7	68%	5
Canada	8	67%	10
Chile	9	65%	45
Malaysia	10	65%	38
China	14	58%	2
Argentina	19	48%	21
Japan	25	39%	3
Nigeria	29	28%	26
India	35	17%	7

(SMS Global, 2016 & Wikipedia, 2016)

Still, the table above is dominated by countries that are considered either to be economically industrialised or with a strong economy and high GDP (Gross Domestic Product) rating. Clearly, smartphones are growing in number, but they are not a cheap accessory that is easily available to everyone around the world. Although the cost of the device is not as prohibitive as in the early years of smartphone development, purchasing a mobile device remains expensive. The worldwide growth of smartphones is still driven by richer, industrialised nations, but what Table 3 also shows is that in other less-developed areas of the world,

such as South America and Africa, smartphone sales are increasing. This means that *mobile learning* is not restricted to richer areas of the world, but can have a genuine impact in the language learning process in all areas across the world.

SMARTPHONES TAKE OVER THE CLASSROOM

An ongoing longitudinal study conducted by the author at Hiroshima University has reflected the huge growth in smartphone ownership amongst the students. In the first year of the research (2011) smartphone ownership was 30% (87/290). This was only four years after the First-generation iPhone was introduced. However, by 2012 that figure had risen to 57% (292/510). Interestingly, when students were asked if they felt using a smartphone would make studying English easier, the affirmative results also showed an increase from 2011 to 2012. In 2011 the figure was 46% (134/290) and in 2012 it had jumped to 77% (392/510) (Selwood, 2013). Additionally, in both 2011 and 2012 the percentage of students who felt that smartphones would make studying English easier was higher than the actual number of students who owned smartphones.

TABLE 4. Student Ownership at Hiroshima University

YEAR	Number of Students	Smartphones Owned	Smartphones Not Owned	No Mobile Phone
2011	290	30% (87)	69% (199)	1% (4)
2012	510	77% (392)	22.5% (116)	0.5% (2)
2013	420	92.5% (386)	7.5% (33)	0.5% (1)*
2014	387	96% (372)	3% (12)	1% (3)*
2015	312	97% (303)	2% (7)	1% (2)*
2016	322	99% (319)	0.5% (1)	0.5% (2)*

*These students owned a tablet (iPad, etc.) and used the device instead of a smartphone. Surveys were conducted at Hiroshima University from 2011-2016.

Table 4 indicates that 2013 was a significant ‘game-changing’ moment in the ownership of smartphones. This explosion in the number of smartphones owned was also reflected globally, which also saw smartphone ownership leap past the one billion mark. Therefore, 2013 signified the date when smartphones truly became more than just the latest digital gadget and started to become a widely-owned device.

What is perhaps even more interesting is that Japan only had a 39% smartphone penetration in 2016, yet almost 100% of university students in the survey owned smartphones. Although no definitive conclusions can be drawn from one study, countries with higher smartphone penetration, such as South Korea, the United States and Chile, would likely also have high levels of smartphone ownership amongst university students. If, in Japan, 99% of university students own smartphones, and the country’s penetration percentage is 39%, it seems unlikely that countries with much higher penetration levels such as South Korea, Australia, the U.A.E, and the United States have significantly lower percentages of smartphones owned by university students. The smartphone age is well and truly here.

THE MOBILE INTERNET

If the first part of the development of *mobile learning* is the growing number of smartphones, both inside and outside of the classroom, the second part is equally important – how those mobile devices can access language learning materials. Therefore the importance of the mobile Internet to the field of *mobile learning* cannot be understated. Simply put, without easy and widespread access to the Internet ‘on-the-go’, mobile devices such as smartphones would only be able to play a very limited role in any language learning process.

Smartphones allow for lightweight and portable hardware to be easily and conveniently moved from place to place. Furthermore, the mobile Internet allows these devices to access the Internet whilst avoiding the need to stay in one particular place for any length of time. Just as a smartphone or tablet is ‘mobile’ so is the technology required to access the Internet ‘mobile’.

The mobile Internet is defined as “The Internet accessed by means of a smartphone or other mobile device such as a tablet, data card, USB stick, WiFi units and wireless adapter” (Oxford Dictionaries, 2016). The mobile Internet, when accessed through a smartphone or tablet, eradicates the need for routers, cables, or telephone lines, and, therefore, truly allows the user to be mobile.

In 2002, the estimated number of people with regular access to the Internet world-wide stood at 544.2 million which was only 8.6% of the world’s population (Infoplease, 2016). However by 2010, there were around 500 million mobile Internet subscribers or 7.2% of the world’s population. By 2016, this number had exploded to 3.9 billion mobile Internet subscribers, or 52% of the world’s population. By 2019 predictions are that there will be approximately 5.6 billion mobile Internet subscribers. This means, in raw data, 73% of the world’s population will have regular access to the mobile Internet (Statista, 2016).

If 2013 was the year which saw the number of smartphone ownerships massively increase, it was also the year that 4G LTE (Long Term Evolution), which is a hi-speed wireless communication system, became the standard for the mobile Internet. This super-fast connection network allowed mobile devices to access and download bigger files faster and more cheaply than ever before. The larger and faster LTE network has enabled smartphones and tablets to exploit the expansion in free WiFi hotspots, in places such as malls, bars, cafes, and on public transport to create an environment where users can easily and conveniently access language-learning materials through their mobile devices.

Once again, developed nations in Europe, Pacific Asia, and North America have the highest percentage of LTE penetration globally. In 2015 South Korea again topped the list with a penetration percentage of 97%, followed by Japan with 90%, Hong Kong with 86% and Kuwait with 85%. In fact, of the Top 20 list of countries with the highest rates of LTE mobile Internet penetration, only two – Kazakhstan and China – could be considered to not be developed countries. Yet, what is encouraging is that the country ranked 66th on the list, Sri Lanka, has an LTE penetration percent of 39% (Open Signal, 2015).

TABLE 5. Global Hi-Speed Wireless Penetration

Rank	Country	Percentage	Rank	Country	Percentage
1	South Korea	97%	57	Argentina	51%
2	Japan	90%	58	France	51%
3	Hong Kong	86%	59	Bulgaria	50%
4	Kuwait	85%	60	India	49%
5	Netherlands	84%	61	Chile	47%
6	Singapore	83%	62	Ireland	44%
7	United States	81%	63	Philippines	43%
8	Uruguay	81%	64	Ecuador	41%
9	Hungary	79%	65	Costa Rico	41%
10	Taiwan	79%	66	Sri Lanka	39%

Smartphone and mobile Internet numbers will continue to grow globally through to the end of the decade. Students will come to classrooms already owning mobile devices that will allow them access to the mobile Internet without an educational institution needing to purchase additional expensive equipment, as is required for CALL classrooms. This presents an ideal opportunity for those who believe that mobile devices can be cost-efficient language learning tools.

MOBILE LEARNING IN/OUT THE CLASSROOM

Mobile learning is not just limited to accessing content through mobile devices such as smartphones and tablets. The use of mobile devices to support learning and performance is constantly evolving as today's mobile devices have, in less than a decade, radically altered how people interact with the world around them. Technological developments such as mobile applications (apps) have allowed for mobile devices that enhance and, perhaps crucially, personalise the way people interact with them. Yet, the potential of these mobile devices for language learning is still largely underappreciated. Many language instructors and educational institutions still restrict the use of mobile devices out of fear of being unable to control what materials are accessed on them. However with increasing numbers of people owning mobile devices and with LTE mobile Internet networks and free WiFi hotspots also expanding, these mobile devices have the potential to fundamentally change the language learning process.

Online courses that incorporate mobile technologies are becoming a more frequent component in universities, and the number of web-based mobile courses has also increased since the introduction of the iPhone (Inan, Flores, & Grant, 2010). Moreover, information and communication technology that can be shared between online students through mobile devices has promoted opportunities for online co-operation and collaboration (Barhoumi & Rossi, 2013). Ultimately, mobile technology has offered learners, instructors, and educational institutions an increased choice and opportunity in the context of what, where, and how materials can be accessed and studied within the language learning process.

However, there is, perhaps, to the chagrin of proponents of *mobile learning*, a truth that needs to be accepted: technological advances are unlikely to begin with *mobile learning*. Consequently, *mobile learning* develops in response to new technology. This technological development is almost always driven by

consumer demand or profit-seeking by huge corporations (Caudill, 2010). There were no smartphone apps until Apple’s series of iPhones or Samsung’s Galaxys became universally popular. Even podcasting, which was around prior to the introduction of the First-generation iPod in 2001, could not have grown to such an extent as a publishing outlet without the success of a mobile device to access podcasts. In fact, the very name ‘podcast’ is taken from the name of Apple’s popular series of mobile MP3 devices – the *iPod*.

Ultimately, it has been the desire of the customer that has been the deciding factor in which technology has become popular and which has failed. This obviously has consequences for the language learning classroom, as any mobile learning programme has had to be synchronised with technology that is not only available, but widely in use. The explosion in social media sites, such as Facebook, Twitter, and Instagram, has resulted in these being adapted so as to be conveniently accessed through a mobile device. Meanwhile, popular search engines such as Google, Yahoo, and Bing have also been redesigned to fit better the smaller interfaces and keyboards of mobile devices. Even YouTube, the video-sharing website, allows for convenient uploading and access to content via smartphones and tablets. If mobile devices had not become massively popular, these huge multi-national corporations would not have spent a lot of time and money creating platforms that could be easily used on smartphones.

Studies have also shown that students have embraced mobile technology, when taught through pedagogically-sound courses, and learn equally well from online materials as from in-class tutorials. A study carried out by six academics at universities in Australia in 2010 found that 70% of students enjoyed using online materials through mobile devices as a central tenet of a language learning course (Preston, G., Phillips, R., Gosper, M., McNeill, M., Woo, K., & Green, D, 2010). Similarly, a 2015 study carried out by the author at Hiroshima University showed that 81% of first and second year students enjoyed using mobile technology as an integral part of a language learning course (Table 6).

TABLE 6. Student Satisfaction on Mobile Technology

Year	Number of Students	Enjoyed Using Mobile Technology	Did Not Enjoy Using Mobile Technology
2015	309	81% [250/309]	19% [59/227]
2014	321	80% [257/321]	20% [64/321]

*Surveys carried out at Hiroshima University from April 2014 to January 2016

Encouragingly, the number of successful *mobile learning* programmes that have been introduced in both developed and less developed areas of the world continues to grow, as do the different ways in which mobile technology can be used inside a wide number of language learning programmes, either structured or more fluid. The three examples highlighted in the following paragraphs offer insight into how mobile technology has helped to educate learners in the Middle East, Africa, and Japan.

The first programme set up at Taibah University in Saudi Arabia in 2014 created a language course centred on the free WhatsApp instant messaging service. WhatsApp is an app that was launched in 2009 and is a service that is only accessible on smartphones. The aim of the course was to identify the impact of combining in-class activities with WhatsApp. The result of the study found that students valued the process of using WhatsApp to share knowledge, improve learning, exchange experiences, discuss topics further, and

seek support for learning activities. Furthermore, end-of-course student feedback indicated that in a language learning course, mobile applications such as WhatsApp were preferred over face-to-face in-class discussions, particularly in regard to completing compulsory course activities (Barhoumi, C. 2015).

Another *mobile learning* programme that operates outside of the traditional classroom structure and in a developing part of the world is the Eneza Education App, operated from Nairobi in Kenya. Eneza claims to have 1.4 million users, mostly school-aged children, across rural Africa. Currently, 30% of the users are outside a formal school setting, many are in war-torn areas such as Garissa and the Dadaab Refugee Camp. The mobile app, which is available on either iOS or Android software platforms, allows students, teachers and children to interact, complete online activities, and engage in live teacher - student chats (Eneza, 2016). The company offers both free and cheap paid content and is one example of how mobile technology can assist language learning (as well as general education) in less-developed areas of the world.

Finally, a programme created at Hiroshima University places mobile technology at the very core of the language learning process by making all of the materials within the course available only on mobile devices. This ‘digital’ course, first created in 2014, utilises an eTextbook that can be downloaded and accessed via a smartphone or tablet. Other materials included in the course are free apps that allowed the students to record audio and video content, participate in out-of-class discussions and provide instant feedback during class time that can be displayed on a class homepage in real-time. Over the two years in which the course has been run, student feedback has constantly been positive. Students have indicated that after their initial wariness of using a mobile device, they greatly enjoyed the course and would be happy to participate in future courses centred around mobile technology (Selwood, 2016).

What these three programs highlight is that there is a willingness on the part of students to embrace mobile technology as part of their language learning process. This is, after all, the ‘*Generation Mobile*’; students who are still in tertiary education have grown up with mobile technology as an everyday aspect of their lives. The programmes introduced above show that students are willing, in developed, developing, and developed regions of the world, to embrace mobile technology when it assists their learning processes.

THE FUTURE OF MOBILE LEARNING

Mobile learning has helped to transform pedagogy to appeal to the current generation of language learners because it offers them the opportunities to use active learning strategies and to study in their own contexts (Cochrane, 2013). Mobile technology already allows a group of learners to access, create, and validate content, as well as offering assistance regardless of location (Traxler, 2009).

The flexibility, effectiveness, and increasingly inexpensive cost of mobile technology offer a very bright future for *mobile learning*. The growing popularity of mobile devices, especially smartphones, has transformed the way learners and instructors interact and share information. Additionally, the technological and pedagogical advances in *mobile learning* software have created the potential to revolutionise language-learning (Topolewski, 2014).

In the future *mobile learning* can benefit learners because they can use mobile technology to learn in their own learning community, where situated learning, authentic learning, context-aware learning, contingency learning, augmented reality learning, and personalized learning are encouraged (Quinn, 2013). Learning and teaching will increasingly move outside the classroom and into the learners’ chosen

environment, both real and virtual or a combination of the two. This will allow learning to become more situated, personal, collaborative, and lifelong (Naismith, Lonsdale, Vavoula, & Sharples, 2006).

As learners, instructors and institutions become more aware of the benefits of *mobile learning*, the next step will be greater investment and research into pedagogy and software development. This will also allow for further development in the learning of other, less-studied languages. For tonal languages such as Mandarin, this will be a game-changer as new software will be able to detect exactly when a learner has made a pronunciation error (Goodwin-Jones, 2009). This technology will continue to develop over the next few years, opening more areas to teaching and learning.

Currently mobile apps, regardless of what operating platform they run on, aim to create an easy and seamless interactive experience. Every app a student uses needs to emphasise interactive convenience; if not, then they will soon be deleted. Educational apps have already provided easy, if not always low-cost access to educational resources that can be used inside or outside of the classroom. Yet apps, no matter how good, are accessed via hand-held mobile devices. Surveys still indicate that students prefer composing an essay or conducting research on a desktop computer or laptop. This is understandable, as computers provide bigger keyboards, interfaces and larger memory storage. Unfortunately, there still remains, despite the advancement in cloud technology, a problem in integrating technology across different technological platforms. However in the near future, virtual global connectivity will support a vast array of learning experiences, including ones that allow students to begin a practice test or video chat lesson on a mobile device during a commute home, and then continue the activity easily where they left off on a desktop computer (Cohn, 2016).

Another area where mobile technology will likely have an impact in language learning includes virtual reality software (VR). A mobile VR interface would involve the learner wearing eye monitors, using earbud speakers, and being connected to a mobile processing device that would allow for a broader, richer, and more interactive learning experience. Somebody watching a 3D movie at a cinema wears specially designed glasses that enhance their viewing experience; yet, ultimately they are still a spectator. In contrast, a VR participant makes choices and navigates through a virtual world on their own. This type of mobile technology could radically transform the learning experience for students, of any chosen language.

Perhaps the area of mobile technology that could provide the biggest impact in the next few years is ‘serious gaming’. A serious game is a software game intended for a purpose other than entertainment. A research study undertaken by Ambient Insight reports that simulation-based learning will be an €8.09 billion industry by the end of 2017 (Takahashi, 2013). With the explosion in the usage of mobile devices, particularly smartphones, it is only natural that serious games will make the crossover and utilise these high ownership numbers.

It is of course an inexact science attempting to predict the future; after all, history is full of future inventions that either did not become popular or failed to ever produced. During the next few years it is unlikely we will see any radical technological development that will completely alter the landscape for language learning with mobile technology. However, *mobile learning* is a constantly evolving discipline and the next new technological leap may already have been introduced. Or, like YouTube or Facebook, a new product could come out of nowhere and within a very short amount of time become the new norm. What seems certain is that mobile learning is not going to disappear and will continue to have a growing presence

within a wide variety of educational disciplines. Therefore, it is essential that across the educational spectrum, learners, educators, and institutions embrace the advantages that mobile learning can offer the language learner.

CONCLUSION

Some of the *mobile learning* schemes discussed in this paper may happen quickly, whilst others may be many years away and may require shifts in technology or pedagogical approaches. However, the modern language learner is increasingly mobile and is increasingly at the centre of their own learning process. Mobile technology allows the modern language learner to learn in any location. Additionally, *mobile learning* has become a social rather than a technical phenomenon. It is for people on the move, constructing spontaneous learning environments and navigating through everyday life by negotiating knowledge through interactions with settings, people, and technology (Vavoula & Sharples, 2009).

The current language learning model is outdated because it was developed before the advent of information and communication technologies. It is still largely focused on the language learning process being heavily based on classroom learning and face-to-face delivery between learners and instructors. An additional problem is that current instructors are still being trained for the current model of education and will, therefore, continue to use this outdated model when they enter the classroom for the first time. Education leaders need to examine how language learning resources are designed and delivered, and must also take into consideration not just the requirements, but also the characteristics of current and new generations of language learners. Educators have to adapt and reimagine the language learning process, to shift away from the notion that education is geared around certain ages and toward one that involves life-long learning (Brown, 2005).

The increasing availability of open educational resources using mobile technology has created an affordable environment for a growing number of people who want to learn, regardless of location. More research on how to better design and deliver useful language learning materials to as many people as possible is essential. At the same time, it is vital that mobile learning programmes and technology consider those learners' cultures, values, locations, and economic viability so as to be as accessible as possible.

Mobile learning has come a long way in a relatively short amount of time. It has not even been ten years since the first-generation iPhone was launched, and in that time mobile devices have become essential tools in our lives. They have radically altered not just how people interact with each other, but how students can access language learning materials. Mobile devices will continue to have greater processing capacities, larger storage, faster networking access, and lower costs. Yet, there is a truth that needs to be acknowledged: *mobile learning* should not be centred on technology; it must always be focused on what is best for the learner.

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ABSTRACT

Mobile Learning in the Classroom: Past, Present, and Future

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This paper will first provide an introduction and insight into the development of *mobile learning*. Emphasis will be placed on how the rapid expansion in ownership of mobile devices and the growth in the Mobile Internet have created an ideal opportunity for language learners, instructors, and institutions to embrace mobile technology. *Mobile learning*, particularly using devices such as smartphones and tablets, can offer assistance in breaking down these tightly controlled language-learning environments and help learners and instructors to move away from traditional settings and attitudes toward language acquisition by individualising the learning process. Finally, the paper will project into the near future and present three scenarios that indicate how *mobile learning* can continue to provide potential solutions to challenges that have faced more traditional-based language-learning programmes.

要 約

携帯端末を用いた語学教育発展の経緯と今後の展望

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本稿では、モバイルラーニングの発展を概観し、語学学習におけるその可能性について考察する。特に、携帯端末の急速な普及と携帯端末を用いたインターネットの利便性の向上によって、語学学習者にとってだけでなく、語学の教員や教育機関にとっても理想的な語学学習環境を利用することが可能となった経緯に焦点を当てる。また、スマートフォンやタブレットなどの携帯端末を用いたモバイルラーニングが、従来の語学学習環境に偏在する様々な制約や問題の解決法となることを指摘し、3つの事案を挙げて語学教育におけるモバイルラーニング活用の利点について述べる。