

Will mobile learning change language learning?

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Abstract

The use of mobile phones and other portable devices is beginning to have an impact on how learning takes place in many disciplines and contexts, including language learning. Learners who are not dependent on access to fixed computers can engage in activities that relate more closely to their current surroundings, sometimes crossing the border between formal and informal learning. This creates the potential for significant change in teaching and learning practices. Taking the broader field of mobile learning as the setting within which developments in mobile-assisted language learning may be understood, the paper argues that an emphasis on mobility can lead to new perspectives and practices. The paper offers reflections on what mobile learning has to offer and considers whether it is likely to change how languages are taught and learnt. ‘Mobile learning’ is not a stable concept; therefore its current interpretations need to be made explicit. Examples of current projects and practices show an affinity between mobile and games-based learning, and can further illuminate what is distinctive and worthwhile about mobile learning.

Keywords: Mobile learning, mobile devices, handheld learning, games-based learning, situated learning

1 Introduction

Widespread ownership of mobile phones and the increasing availability of other portable and wireless devices have been changing the landscape of technology-supported learning. Use of these technologies turns out to be well aligned with strategic educational goals such as improving student retention and achievement, supporting differentiation of learning needs, and reaching learners who would not otherwise have the opportunity to participate in education (Kukulska-Hulme *et al.*, 2005). A great deal of effort has also been devoted to understanding how mobile technologies relate to both traditional and innovative ways of teaching and learning, showing the applicability of mobile learning across a wide spectrum of activity (Naismith *et al.*, 2004; Kukulska-Hulme & Traxler, 2007) as well as highlighting the most important emerging issues (Sharples, 2006).

Alongside formal education, everyday opportunities to access learning resources on mobile devices have multiplied. When making an online booking for a foreign holiday or a flight, you might be offered a phrasebook to download to your audio player or mobile phone. When wishing to advance your knowledge of a language, it is possible to find downloadable resources and many websites that can be accessed

on the go. In practice, there are issues of cost and usability that often stand in the way of such self-initiated mobile learning.

The aims of this paper are to reflect on what mobile learning has to offer and to consider whether it is likely to change how languages are taught and learnt. Educational practice is not determined by technology. Neither is technology likely to be a determining factor in informal, everyday learning. However, if we understand technology to be a social and cultural phenomenon, it “cannot but influence the ways in which people learn, and therefore what makes for effective learning and effective pedagogy” (Beetham & Sharpe, 2007: 6). It has also been noted that evolving social practices may have implications for the design of mobile technology (Spasojevic *et al.*, 2005), thereby drawing attention to the co-evolution of social habits and technology. To a certain extent, by dint of their ubiquity, mobile devices are already influencing how people learn; on the other hand, educators need to do more than just watch it happen.

For our purposes here, it is helpful to be aware of some key examples where there is evidence or consensus that mobile technology brings something unique or worthwhile to the teaching or learning experience. These examples can be drawn from various disciplines, on the understanding that we are living in an age where learning from what is happening in disciplines other than one’s own is an important competency for education practitioners and researchers. This implies that innovative practices in the use of learning technology drawn from science, geography, art or history, can be examined for their potential relevance to the development of new practices in language learning, insofar as these practices can be seen to demonstrate general principles in terms of ways of using tools, physical spaces, time allocation, means of communication, distribution of roles, resources and so on. In other words, we are examining their relevance to “design for learning”, the process whereby teachers “arrive at a plan or structure or design” for a learning situation they have in mind (Beetham & Sharpe, 2007: 7). In our case we are particularly concerned with the design of learning activities for language learning. Before looking at specific examples, it is important to clarify what is meant by “mobile learning”.

2 What is meant by mobile learning?

It is not the intention to provide in this paper an account of the field of mobile learning; in any case, the field has already grown and diversified to the extent that doing justice to it in a brief overview is now becoming close to impossible. A number of publications offer general orientations and reflections on progress that are suitable for mobile learning researchers and practitioners alike (Naismith *et al.*, 2004; Kukulska-Hulme & Traxler, 2005; Naismith & Corlett, 2006; Faux *et al.*, 2006; Sharples, 2006; Kukulska-Hulme *et al.*, 2009). In this section, we will focus on some points that are essential for understanding mobile learning.

There is no agreed definition of “mobile learning”, partly because the field is experiencing rapid evolution, and partly because of the ambiguity of “mobile” – does it relate to mobile technologies, or the more general notion of learner mobility? In fact both aspects are currently important; in addition, the mobility of content is often highlighted. 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 (see Traxler, 2009, for a discussion of definitions of mobile learning; see Kakihara & Sørensen, 2002, for an analysis of mobility). In the future, when technology is an integral part of our surroundings, it is predicted that we will no longer have to carry a mobile device. Even now, learners tend to move between using desktop computers and mobile devices, and maybe touch-screen displays in public areas, often for different parts of a learning task. Interactions mediated by technology are interspersed with direct interactions with people. The learner's mobility creates an ever-changing environment for learning:

...the mobile technology, while essential, is only one of the different types of technology and interaction employed. The learning experiences cross spatial, temporal and/or conceptual borders and involve interactions with fixed technologies as well as mobile devices. Weaving the interactions with mobile technology into the fabric of pedagogical interaction that develops around them becomes the focus of attention.

(Kukulska-Hulme *et al.*, 2009: 20)

It is possible to claim that the devices learners use are hardly relevant; what is important is the notion of mobility and the construction of learning conversations in that process. Any discussion focusing on the primacy of technology is then liable to be perceived as a techno-centric perspective on education. However, anyone who becomes involved in mobile learning will quickly notice that, at the present time, it really matters which devices learners are using. First, ownership of the device makes a difference, since a tool that has only been borrowed may not be used in the same way as one that is owned and very familiar. Second, learners who have more than one device are likely to behave differently from those who only have one, because the former can more easily overcome common problems of short battery life and reliability. Third, particular mobile devices have strong associations with specific realms of activity, be it work-related or for leisure. If I own a Nintendo DS, designed for games, then one course of action open to me is to look for language learning games I might play on that device. The available technology influences my learning choices.

The association between mobile learning and mobile gaming is in fact already strong and it appears to be getting stronger. A publication targeting Dutch teachers, prepared by Smidts, Hordijk and Huizenga (2008) highlights the potential for playful and creative use of GPS (global positioning system) and mobile technology in education, and many of the examples given are learning games. The authors note that GPS can give "an additional dimension" to mobile learning:

New possibilities emerge when a pupil starts learning with a mobile device with GPS functionality. Via satellites the GPS receives signals that indicate the position of the pupil with the device. On the basis of this position the pupils can receive location-specific information on their devices, or add this information. In this manner a connection will be formed between the physical and the virtual worlds in which the pupils find themselves; several layers of information are accessible at the same time.

(Smidts, Hordijk & Huizenga, 2008: 4)

In summary, mobile learning draws our attention to mobility: not just the fact of mobility, but the effects of mobility, which might include new ways of dividing up one's time and crossing boundaries. With appropriate technology, mobile learners can participate in activities that relate directly to their changing location. Traditionally, location-based learning has included placements, apprenticeships, physical pursuits, and various investigations out in the field; some educational games for children and young adults are also strongly associated with outdoor or location-based activity. One key mission of those who are developing mobile learning is to extend these types of learning and enrich them with new possibilities. To give a flavour of the strengths of mobile learning, a few selected examples, where mobility is emphasized, are presented and discussed below.

3 Current examples of mobile learning

Examples of successful mobile learning projects provide another way of understanding the perceived value or contribution of mobile learning. Within the classroom, it has been shown that mobile devices, with appropriate software, can be highly effective in supporting small group collaborative learning, improving on what was possible to achieve without these tools (Zurita & Nussbaum, 2004; Valdivia & Nussbaum, 2007). Mobility may not be an obvious feature here, but the design of the learning activity is predicated on close interaction, conversation and decision-making between members of a group, which includes some physical movement and can be difficult to achieve with the use of fixed computers.

Outside the classroom, mobile and wireless technologies enable learning to be more directly connected with real world experiments and artefacts. The MANOLO project (2006) has demonstrated the advantages of using handheld computers for university-level fieldwork in subjects like archaeology and environmental sciences: the advantages include better use of limited time, greater accuracy of data recording and improved communication. The Ambient Wood project (Price & Rogers, 2004) enhanced a woodland area with experiments for children to explore the effect of light and moisture on habitats. In the MyArtSpace project, school children on a trip to a museum were able to use mobile phones to access multimedia content linked to specific exhibits and then use the facility to send photos, audio recordings and notes captured at the museum to a website which enabled them to share and discuss their findings back in the classroom (Sharples *et al.*, 2007). The Gidder project (Pierroux, 2008) supports and extends collective knowledge building across classroom and museum settings. In advance of a museum visit, students work in groups in the classroom to select from a wiki artworks that interest them, decide which ones they will be focusing on in the museum, and write related labels. At the museum, students explore the exhibition and their selected artworks, and use their mobile phones to send multimedia messages with labelled information to a blog; this information is shared with the rest of the class. Back at school, the groups use the wiki and blog resources to discuss and develop their group interpretations.

The audio guides often found in museums, galleries and botanical gardens are increasingly being extended to provide multimedia content and context-based services on handheld computers (e.g. Naismith *et al.*, 2005), reminding us that learning takes

place in many different locations but how it happens is continually changing. In numerous situations, the mobile device acts as a bridge between different sites of learning, some of which are “formal” whilst others are more “informal”.

Returning to the theme of games-based learning, several interesting mobile game designs have been trialled in recent years, integrating learning with aspects of the physical environment. The MIT Scheller Teacher Education Program (2008) has created various “augmented reality” simulations to engage people in games that combine real world experiences with additional information supplied to them by handheld computers (see also Klopfer, 2008). TimeLab is one such example – a game about climate change and its effects. As players move around a designated outdoor environment, information about the introduction of possible new environmental laws is delivered via GPS to their devices in different locations and they have to use this information to progress in the game; this is later followed by classroom discussion and activities that build on the results of the game. In *Outbreak @ MIT*, an indoor game, players are equipped with handheld computers which serve as their link between the real world and the virtual world of the game. The handhelds receive information based on Wi-Fi positioning. The scenario is an investigation of an epidemic on campus, caused by someone who has been diagnosed with a suspected case of SARS. A team of experts is brought in to assess the situation and get the spread of the disease under control; the spread of the disease can be modelled based on the actions and whereabouts of the players involved in the game.

The above examples show learning activities that are clearly facilitated by the use of mobile technology; it may even be supposed that the activities would not exist, if the emergent nature of the technology had not stimulated new thinking.

4 Rethinking pedagogy and learning

Mobile technology is not unique in providing an impetus to reconsider existing educational activity, including language education, in the light of availability of new technology (see e.g. Donaldson & Haggstrom, 2006). Irrespective of whether teachers decide to adopt new technologies in formal education, learners are found to be already using them to support aspects of their learning. This has been true with regard to the use of desktop applications, and there is growing evidence that this is also now the case with mobile devices (Pettit & Kukulska-Hulme, 2007). We are living in interesting times, in which teachers and learners must try to work together to understand how portable, wireless technologies may best be used for learning. Teachers’ pedagogical expertise will continue to play an important role, but it needs to be re-examined and expanded to address the specific attributes of mobile learning.

Just as e-learning has undergone an evolution, from a position where “delivery” of learning was paramount, to current thinking which encompasses a learner-generated content perspective, mobile learning is undergoing a similar evolution. For educators, it is relatively easy to imagine learners receiving some content on their mobile device, even if personally they would find it difficult to interact with such content on a tiny screen and in circumstances that they do not associate with learning. What is more difficult is imagining a whole scenario of learning that goes beyond established practices within the classroom. If we can envisage learners carrying out a mobile

learning activity, is it a great deal more challenging to think of learners creating or adapting learning content specifically for mobile use, or creating activities that other learners would be happy to undertake? There are many “kits” now that enable learners to create games and other educational activities for others.

In a volume devoted to “rethinking” pedagogy for the digital age in which we live and learn, Kukulska-Hulme and Traxler (2007) emphasized a conceptualization of mobile learning in terms of learners’ experiences, with an emphasis on device ownership, informality, movement and context that will always be inaccessible to conventional e-learning. The key attributes of mobile learning are identified as the potential for learning to be personalized, situated, authentic, spontaneous and informal. Mobile and wireless technologies certainly fit well with designs for learning which make it personalized, situated and authentic. Admittedly, it is more difficult to design intentionally for learning that will be spontaneous and informal; however, mobile and wireless technologies do have affordances that support these types of learning. As subsequently noted by Kukulska-Hulme *et al.* (2009), although mobile devices enable in-context interaction and content delivery, the most innovative use of mobile devices is in “book-marking areas of interest and creating context annotations that can trigger and support follow-up learning” (*op. cit.*: 26). In other words, a mobile learning experience is an occasion to capture a moment of interest, for example through the action of annotation, with the goal of continuing to build on that interest in another place, at a later date.

5 Mobile assisted language learning

The September 2008 special issue of *ReCALL* provides an orientation within the developing field of mobile assisted language learning (MALL). As Shield and Kukulska-Hulme have pointed out in the editorial to that issue, there are important differences between CALL and MALL; in particular, mobile technology can assist learners at the point of need and in ways that fit in with their mobile lifestyles. Receiving text messages to support learning outside of class hours, assuming the messages are wanted, is one way in which learners are benefiting from their teachers’ experimentation with mobile technology. Podcasting and mobile blogging are also technologies that are not difficult to understand and are beginning to make a mark on language learning.

In their overview paper, Kukulska-Hulme and Shield (2008) note that MALL differs from computer-assisted language learning in its use of personal, portable devices that enable new ways of learning, emphasizing continuity or spontaneity of access and interaction across different contexts of use. Conceived in this way, mobile learning seems to belong more to learners than it does to teachers, although we know that most learners will struggle without a teacher’s direction and guidance. So far within MALL there is little published evidence of approaches that are not teacher-led, although there are some signs that this is beginning to change.

A relatively rare example of learner-led mobile language learning activity is reported by Song and Fox (2008), who tracked advanced learners of English to see how they were using a mobile device to support and extend their learning in self-directed ways, especially to build their knowledge of vocabulary. The initial idea

came from the researchers, but the students who volunteered to take part were happy to give a great deal of time to the project and pursue their own goals. These were highly motivated learners, who were willing to define their own language needs and to select resources, tools and communication methods. The study shows how the mobile device helped them to communicate about word meanings with other students and with their lecturers outside the classroom. In another example where learners' activity is paramount, Michelsen (2008) proposes the design of a mobile, game based, digital revision space which is learner-centred, self-directed and based around a virtual community of practice, enabling second language learners to revise on the go for the challenging third paper of the Cambridge First Certificate in English exam.

As mobile technology becomes increasingly pervasive, we can expect to see more examples of language learning being integrated with everyday surroundings. Beaudin *et al.* (2007) have explored the use of ubiquitous sensing in the home for "context-sensitive microlearning" of vocabulary on a mobile device. Built-in and stick-on sensors detected participants' interactions with objects, furniture, and appliances in the home; this triggered the audio presentation of English and Spanish phrases associated with the use of those objects. There are some obvious limitations to how much learning can be done in this way, but a personalized version of such a system might well find a place among other methods of language learning or revision. Home-based learning, enhanced by technology, certainly holds some potential for future language learning. It can be seen in the work of Fallahkair, Pemberton and Griffiths (2007) on living-room-based language learning, making use of a mobile phone to enable a private and personal learning experience from television programmes watched in an everyday social setting.

The ideas and methods emerging from discussions stimulated by the advent of mobile learning are enabling educators to get closer to understanding their learners' preferences, needs and motivations. In the broader context of how use of technology is changing, we need to look at what motivates people to participate in informal and voluntary activities in online social networks, online games, and other environments which feature some elements of learning. "Free Rice" (www.freerice.com/) is an interesting example of how high scores in vocabulary tests can be converted to donations of free rice to hungry people through the UN World Food Program. This website taps into people's altruistic motivations, combining learning with giving. How much more powerful this could be if such an initiative were adapted for use on a mobile device.

6 Conclusions

The aims of this paper were to reflect on what mobile learning has to offer and to consider whether it is likely to change how languages are taught and learnt. The key is to move beyond a superficial understanding of mobile learning which does not give sufficient consideration to how mobility, accompanied by digital, location-aware technologies, changes learning. By looking at examples across different disciplines, we can notice the benefits being derived from use of mobile technologies and ask whether these are applicable to language learning.

Available technology influences some learning choices; existing associations between types of mobile device and types of activity (e.g. games) cannot be ignored. What makes mobile technology so intriguing is that it has an affinity with movement between indoors and outdoors, across formal and informal settings, allowing learners to lead at least some of the way. If language learners' preferences and needs can be allowed to have a bearing on what is learnt and how, mobile technologies have a clear role to play in realizing such an objective. Mobile technology takes learning out of the classroom, often beyond the reach of the teacher. This can be perceived as a threat, so the challenge is to develop designs that clearly identify what is best learnt in the classroom, what should be learnt outside, and the ways in which connections between these settings will be made.

References

- Beaudin, J. S., Intille, S. S., Tapia, E. M., Rockinson, R. and Morris, M. E. (2007) Context-Sensitive Microlearning of Foreign Language Vocabulary on a Mobile Device. In: Schiele, B., Dey, A. K. and Gellersen, H. *et al.* (eds.), *Ambient Intelligence (Springer Lecture Notes in Computer Science)*. Volume 4794/2007. Berlin: Springer, 55–72.
- Beetham, H. and Sharpe, R. (eds.) (2007) *Rethinking Pedagogy for a Digital Age: Designing and Delivering E-Learning*. London: Routledge.
- Donaldson, R. P. and Haggstrom, M. A. (eds.) (2006) *Changing Language Education Through CALL*. Routledge Studies in Computer Assisted Language Learning. London: Routledge.
- Fallahkair, S., Pemberton, L. and Griffiths, R. (2007) Development of a cross-platform ubiquitous language learning service via mobile phone and interactive television. *Journal of Computer Assisted Learning*, **23**(4): 312–325.
- Faux, F., McFarlane, A., Roche, N. and Facer, K. (2006) *Handhelds: learning with handheld technologies*. Handbook for Futurelab. http://www.futurelab.org.uk/research/handbooks/05_01.htm
- Kakihara, M. and Sørensen, C. (2002) Mobility: An Extended Perspective. In: *Proceedings of the 35th Hawaii International Conference on System Sciences (HICSS-35)*. IEEE, Big Island, Hawaii. 7th–10th January 2002, 1756–1766.
- Klopfer, E. (2008) *Augmented Learning: Research and Design of Mobile Educational Games*. Cambridge, MA: The MIT Press.
- Kukulska-Hulme, A., Evans, D. and Traxler, J. (2005) *Landscape study on the use of mobile and wireless technologies for teaching and learning in the post-16 sector*. <http://www.jisc.ac.uk/whatwedo/programmes/elearninginnovation/outcomes>
- Kukulska-Hulme, A., Sharples, M., Milrad, M., Arnedillo-Sánchez, I. and Vavoula, G. (2009) Innovation in Mobile Learning: A European Perspective. *International Journal of Mobile and Blended Learning*, **1**(1): 13–35.
- Kukulska-Hulme, A. and Traxler, J. (eds.) (2005) *Mobile Learning: A Handbook for Educators and Trainers*. London: Routledge.
- Kukulska-Hulme, A. and Shield, L. (2008) An Overview of Mobile Assisted Language Learning: from content delivery to supported collaboration and interaction. *ReCALL*, **20**(3): 249–252.
- Kukulska-Hulme, A. and Traxler, J. (2007) Designing for mobile and wireless learning. In: Beetham, H. and Sharpe, R. (eds.), *Rethinking Pedagogy for a Digital Age: Designing and Delivering E-Learning*. London: Routledge, 180–192.
- MANOLO project (2006) Project website. Deliverables – case studies. <http://ivm10.ivm.vu.nl/projecten/manolo/deliverables/cases.asp>

- Michelsen, K. (2008) Tradition, innovation, or both? A research and practice model for the design of a digital revision space for the University of Cambridge First Certificate in English exam, paper 3. Master of Arts thesis, King's College London, School of Social Science & Public Policy.
- MIT Scheller Teacher Education Program (2008) Augmented Reality Games. <http://education.mit.edu/drupal/ar/projects>
- Naismith, L. and Corlett, D. (2006) Reflections on Success: A Retrospective of the mLearn Conference Series 2002–2005. In: *Proceedings of mLearn 2006 Conference, 22–25 October 2006*. Banff, Canada: Athabasca University.
- Naismith, L., Lonsdale, P., Vavoula, G. and Sharples, M. (2004) Literature Review in Mobile Technologies and Learning. *FutureLab Report* 11. http://www.futurelab.org.uk/resources/documents/lit_reviews/Mobile_Review.pdf
- Naismith, L., Sharples, M. and Ting, J. (2005) Evaluation of CAERUS: a Context Aware Mobile Guide, Mlearn 2005: 4th World conference on mLearning. <http://www.mlearn.org.za/CD/papers/Naismith.pdf>
- Pettit, J. and Kukulska-Hulme, A. (2007) Going with the Grain: Mobile Devices in Practice. *Australasian Journal of Educational Technology (AJET)*, **23**(1): 17–33. <http://www.ascilite.org.au/ajet/ajet23/ajet23.html>
- Pierroux, P. (2008) *Extending meaning from museum visits through the use of wikis and mobile blogging*. Paper presented at ICLS 2008: International Perspectives in the Learning Sciences, Utrecht, The Netherlands.
- Price, S. and Rogers, Y. (2004) Let's get physical: the learning benefits of interacting in digitally augmented physical spaces. *Journal of Computers and Education*, **15**(2): 169–185.
- Sharples, M. (ed.) (2006) *Big issues in mobile learning*. Report of a workshop by the Kaleidoscope Network of Excellence Mobile Learning Initiative, University of Nottingham, UK.
- Sharples, M., Lonsdale, P., Meek, J., Rudman, P. D. and Vavoula, G. N. (2007) An Evaluation of MyArtSpace: a Mobile Learning Service for School Museum Trips. In: Norman, A. and Pearce, J. (eds.), *Proceedings of 6th Annual Conference on Mobile Learning*, mLearn 2007. Melbourne: University of Melbourne, 238–244.
- Smidts, M., Hordijk, R. and Huizenga, J. (2008) The world as a learning environment – Playful and creative use of GPS and mobile technology in education. http://www.mobieleonderwijsdiensten.nl/attachments/1765201/World_as_learningenvironment.pdf
- Song, Y. and Fox, R. (2008) Uses of the PDA for undergraduate students' incidental vocabulary learning of English. *ReCALL*, **20**(3): 290–314.
- Spasojevic, M., Ito, M., Van House, N., Koskinen, I., Kato, F. and Okabe, D. (2005) *Pervasive image capture and sharing: New social practices and implications for technology*. PICS workshop at Ubicomp 2005 conference. <http://www.spasojevic.org/pics/papers.htm>
- Traxler, J. (2009) Learning in a Mobile Age. *International Journal of Mobile and Blended Learning*, **1**(1): 1–12.
- Valdivia, R. and Nussbaum, M. (2007) Face-to-Face Collaborative Learning in Computer Science Classes. *International Journal of Engineering Education*, **23**(3): 434–440.
- Zurita, G. and Nussbaum, M. (2004) Computer supported collaborative learning using wirelessly interconnected handheld computers. *Computers & Education*, **42**(3): 289–314.