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What is Mobile Learning ? Challenges and Capabilities

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Abstract

There are currently 1.7 billion mobile phones in use around the world, while the total world population is 6 billion (Keegan, 2004).! In the past 10 years, the increasing development of mobile phone technology has been unbelievably swift: from from plain and simple cell phones to the current high-tech phones which can serve as a PDA ,mini-computer, telephone, or camera, and transfer data as well as video and audio files. There is a constant stream of new technology breaking into the mobile phone market (Attewell, 2005). M-learning is the acquisition of any knowledge or skill through using mobile technology, anywhere, anytime (Geddes, 2004). M-learning happens when people are away from their offices or classrooms. On the way back home from school or office, most people prefer to listen to music, the radio news, or sports programs. When they get home, if they want to learn, mobile devices are not likely to be their main choice. M-learning does not replace traditional learning, but is just another way of learning using a new technology. This paper tries to show the capabilities as well as the limitations of M-(Mobile) Learning which generally fall into: Psychological , Pedagogical , Technical limitations .

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1. Introduction

For the first time E-learning emerged in the late 80s and in the 90s. Since then we have seen the processing power of handheld devices grow exponentially while becoming more affordable and even ubiquitous due to the demand for games, business communications, and in general the connected lifestyle of the wireless society. These things have opened a new door to learning on the go which we now call M-Learning.

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

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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).

1 . 1 What is Mobile Learning?

According to Molenet, mobile learning can be broadly defined as '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. Mobile learning can take place in any location, at any time, including traditional learning environments such as classrooms as well as in workplaces, at home, in community locations and in transit. Mobile technologies include mobile phones, smartphones, PDAs, MP3/ MP4 players (e.g. iPODs), handheld gaming devices (e.g. Sony PSP, Nintendo DS), Ultramobile PCs (UMPCs), mini notebooks or netbooks (e.g. Asus EEE), handheld GPS or voting devices, and specialist portable technologies used in science labs, engineering workshops or for environmental or agricultural study. Mobile learning involves connectivity for downloading, uploading and/or online working via wireless networks, mobile phone networks or both, and linking to institutional systems e.g. virtual learning environments (VLEs) and management information systems (MIS).

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 & 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).

1.2 Why Use Mobile Devices For Learning?

Most mobile devices are useful in education as administration, organization and teaching aids for practitioners, and also as learning support tools for learners. Here are some of the main benefits:

- Learners can interact with each other and with the practitioner instead of hiding behind large monitors.
- It's much easier to accommodate several mobile devices in a classroom than several desktop computers.
- PDAs or tablets holding notes and e-books are lighter and less bulky than bags full of files, paper and textbooks, or even laptops.
- Handwriting with the stylus pen is more intuitive than using keyboard and mouse.
- It's possible to share assignments and work collaboratively; learners and practitioners can e-mail, cut, copy and paste text, pass the device around a group, or 'beam'? the work to each other using the infrared function of a PDA or a wireless network such as Bluetooth.
- Mobile devices can be used anywhere, anytime, including at home, on the train, in hotels - this is invaluable for work-based training.
- These devices engage learners - young people who may have lost interest in education - like mobile phones, gadgets and games devices such as Nintendo DS or Playstation Portable.
- This technology may contribute to combating the digital divide, as this equipment (for example PDAs) is generally cheaper than desktop computers.

However, you may also need to consider the following potential disadvantages:

- Small mobile and PDA screens limit the amount and type of information that can be displayed.
- There are limited storage capacities for mobiles and PDAs.
- Batteries have to be charged regularly, and data can be lost if this is not done correctly.
- They can be much less robust than desktops (although tablet PCs are beginning to tackle this problem).
- It's difficult to use moving graphics, especially with mobile phones, although 3G and 4G will eventually allow this.
- It's a fast-moving market, especially for mobile phones, so devices can become out of date very quickly.
- Bandwidth may degrade with a larger number of users when using wireless networks.

What can we do with m-learning?

1. Access documets or document libraries
2. Access quizes and self-assessment as question or games
3. Prticipate in lessons and tutorials
4. Receive lectures archived or broacasted live
5. Access to video clip or audio libraries
6. Read asynchronous postings
7. Exhibit student work
8. Participate in virtual learning communities on the go

1 . 3 The Technology Of M-Learning

a) SMS: Short Message Service allows users to send/receive messages of up to 160 characters between mobile phones (text messaging).
b) MMS: Multimedia Messaging Service serves the same purpose as SMS but allows the inclusion of graphics.
c) WAP: An international protocol that allows users to access the internet via their WAP enabled mobile phones.
d) GPRS: An always on internet connection for mobile devices that provides greater speed of connection (171kb/s).
e) Bluetooth: A short range wireless connection. This enables PDAs (Personal Digital Assistants) to pass messages to and from other mobile devices.
f) 3G and 4G phones: By the end of the decade 4G (4th Generation mobile phones) will provide upto 100 megabits per second transmissions adequate for multimedia.
g) PDAs: Personal Digital Assistants have evolved to mini PCs able to carry out many of the basic functions of a larger PC using the Palm OS or MS Pocket PC operating system.
h) MP3s: Audio file format that efficiently compresses files and enables them to be shared.
i) CAMs: Video cameras now embedded into mobile phone and PDAs.

1. 4 The Availability Of M-Learning

The size, shape, weight and portability of mobile devices make them particularly effective for users with disabilities. The organizer functions usually included in mobile devices are extremely useful for learners with learning difficulties to help them organize their lives and achieve some independence. PDAs often also incorporate dictionaries and thesauruses, which provide handy reference tools for learners with dyslexia or other learning difficulties. Tablet PCs include text-to-speech and voice recognition as standard tools, which are valuable for users with disabilities or learning difficulties. The devices can also be attached to wheelchairs with the use of small brackets.

1. 5 Benefits Of M-Learning

a) Interaction: Student interaction with instructors and among each other.
b) Portability: PDAs are lighter than books and enable the student to take notes or input data directly into the device regardless of location either typed, handwritten or using voice.
c) Collaborative: Enables several students work together on assignments even while at distant locations.
d) Engaging learners: The new generation likes mobile devices such as PDAs, phones and games devices.
e) Increase motivation: Owner ship of the handheld devices seems to increase commitment to using and learning from it.
f) Bridging of the digital divide: Since handhelds are more affordable than larger systems they are accessible to a larger percentage of the population.
g) Just-in-time learning: Increases work/learning performance and relevance to the learner.
h) May assist learners with some disabilities.

1. 6 Disadvantages Of M-Learning Devices

- Small screens of mobile phones and PDAs
- Limited storage capacities in PDAs
- Battery life/charge
- Lack of common operating system
- Lack of common hardware platform make it difficult to develop content for all.
- Less robust

- Still difficult to use moving graphics
- Limited potential for expansion with some devices
- Devices can become out of date quickly
- Wireless bandwidth is limited and may degrade with a larger number of users
- Difficulties with printing, unless connected to a network

2. Conclusion

Mobile learning is currently the most useful tool in ICT world. It is believed that mobile learning could be a essential factor in involving young adults in learning, where more traditional methods have failed. As mobile phones combine PDA functions with cameras, video and MP3 players, and as tablets combine the portability of PDAs with the functionality of desktops, the world of learning becomes more mobile, more flexible and more exciting. 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.

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