Wherever You Are: There You Can Learn; Mobile Devices for Informal and Lifelong Learning

Ruby Bohannon
University of North Texas, Denton, TX,
United States
rubybohannon@my.unt.edu

Abstract: The world of work and living relies on collaboration, creativity, definition and framing of problems, dealing with uncertainty, change and distributed cognition. Education from a lifelong learning perspective should help learners enhance their abilities to learn, engage in meaningful activities, and exploit the power new technologies. At the end of formal education, mobile devices can help learners keep abreast of the latest developments in their careers as well as other personal interests, thus continuing to learn all through their life. As the "shelf life" of information continues to decrease the importance of being able to access the most current information becomes especially important, and this can be accomplished through the use of mobile devices. In this article, literature related to the use of mobile devices in learning will be reviewed with a focus on the use of these devices in informal learning settings.

Introduction

Wherever one looks, there is likely someone using a mobile device. A proliferation of these devices seems to exist. "No demographic is immune from this phenomenon. From toddlers to seniors, people are increasingly connected and are digitally communicating with each other in ways that would have been impossible only a few years ago" (Corbeil &Corbeil, 2007, p. 52). As mobile devices, especially mobile phones continue to grow in computing power and the capability to support rich media, the application of these devices for learning will likely continue to expand. These devices can be used not only to assist in the delivery of formal education but can also help learners access learning experiences outside of those in a formal curriculum or learning setting. At the end of formal education, these devices can help learners keep abreast of the latest developments in their careers as well as other personal interests, thus continuing to learn all through their life. As the "shelf life" of information continues to decrease the importance of being able to access the most current information becomes especially important, and this can be accomplished through the use of mobile devices. In this paper, literature related to the use of mobile devices in learning will be reviewed with a focus on the use of these devices in informal learning settings. The concept of using informal mobile learning for lifelong learning will also be explored.

What is Mobile Learning?

What is mobile learning? It depends on who you ask. As mobile learning is an emerging paradigm it is still in the process of being defined. According to McLean (2003), mobile learning, or m-learning, is a term coined to cover a complex array of possibilities opened up by the convergence of new mobile technologies, wireless infrastructure and e-learning developments. As with any emerging paradigm there are many attempts to define its essence. Mobile learning is "the intersection of mobile computing and e-learning: accessible resources wherever you are, strong search capabilities, rich interactions, powerful support for effective learning and performance-based assessment" (Quinn, 2000, ¶ 8). Vavoula and Sharples (2002) suggest that there are three ways in which learning can be considered mobile: in terms of space, between different areas of life, and with respect to time.

As part of research in designing a system to support everyday learning, Vavoula and Sharples (2002) investigated learners' daily learning over a period of four days. They found that learning is mobile with respect to place, (occurring in the workplace, at home or in other locations); it is mobile between different areas of life (e.g., is related to work or to leisure or to self improvement); and is mobile with respect to time (happening at different times of day and at different points in the week). Their findings distinguished between learning *episodes* (single learning

experiences) and *activities* (where such experiences are grouped together by theme and projects, involving purposes and outcomes). In carrying out these episodes, activities, and projects, learners used a number of very different kinds of learning resources and reported a variety of ways of organizing their learning.

Mobile learning has often been described in the literature in terms of the use of mobile technologies, proposing that if the learner uses some sort of mobile device, then the learning is mobile. This suggests a technology-led practice that will potentially lead to learning, while it overlooks mobility as an attribute of the learner rather than, or as well as, the technology. By turning our attention to learners and their particular circumstances and needs while on the move, the question of what is mobile learning turns into the question of what is unique about mobile learning (Vavoula & Lonsdale, 2007).

The distinctive features of mobile learning are that it takes place at any location, and not necessarily in the classroom, and that it enables learners to enter an information network by using a portable learning device and a wireless network (Seppala & Alamaki, 2003). Since it is the learner who is mobile as well as the technology, learning is "interwoven with other activities as part of everyday life, learning generates as well as satisfies goals. The control and management of learning can be determined by the learner" (Muyinda, 2007, p. 99). With the control of the learning being assumed by the learner, the type of learning experience can change from a formal to an informal learning experience.

What is Informal Learning?

What is informal learning? There is also some debate over this question. Sefton-Green (2004) addresses this question:

> Does informal learning simply mean learning that happens in a different way from in schools, in a different place, about different things, or does it refer to anything that is learnt that isn't currently valued by our education system? Today, the term 'informal learning' is used quite loosely to describe all or any of these. Some people use it to describe the location of learning – suggesting that all learning outside the school is 'informal.' Others describe the purposes of learning – suggesting that all learning that is part of leisure activity, rather than for examination purposes, is 'informal.' (p. 6)

According to Livingstone (2000, p. 3) "informal learning is any activity involving the pursuit of understanding, knowledge or skill which occurs outside the curricula of institutions providing educational programs, courses or workshops. Informal learning may occur in any context outside institutional curricula." The basic terms of informal learning such as the objectives, content, means and processes of knowledge acquisition, duration of sessions, evaluation of outcomes, and applications are all determined by the individuals and groups that choose to engage in the learning. Learning occurs without the presence of an imposed curricula. "It happens in context and everyday situations, often spontaneously" (Frohberg, 2006, p. 6).

Clough, Jones, and Scanlon (2008) provide an evolution of the definition:

> Schugurensky describes informal learning as a loose category that encompasses any forms of learning that are neither formal nor non-formal (short courses, workshops, professional development). According to Tough, an informal learning project '. . . is simply a major, highly deliberate effort to gain certain knowledge and skill (or to change in some other way)'. Livingston defined informal learning as '. . . any activity involving the pursuit of understanding, knowledge or skill which occurs outside the curricula of institutions providing educational programs, courses or workshops'. By 2006, Livingston had refined his definition of informal learning to include 'all forms of intentional or tacit learning in which we engage either individually or collectively without direct reliance on a teacher or externally organized curriculum'. He referred to these forms of learning as 'self-directed or collective informal learning', and highlighted the fact that unintentional or tacit informal learning has been relatively underestimated or ignored. (p. 360)

For Mason and Rennie (2007, p. 197), the concept of informal learning "involves all that is learned throughout life in the day-to-day processes at home, work, and leisure. The acceptance of informal learning acknowledges that there is more to learning than the absorption of 'explicit' knowledge codified in texts and delivered during formal courses." According to Cross (2007), informal learning is not the opposite of formal learning but is a different range on the spectrum of learning. Other analysts agree that the boundaries between formal and informal learning are blurred and can only be meaningfully drawn in relation to particular contexts. Berth (2005) states, "Informal learning is not to be seen as the antithesis to formal learning but it is, however,

equally important" (p. 1). According to Coffield (2000, p. 8), "Informal learning should no longer be regarded as an inferior form of learning whose main purpose is to act as the precursor of formal learning; it needs to be seen as fundamental, necessary, and valuable in its own right." One thing is clear, however; the terms 'informal' and 'formal' are not intended to imply that informal approaches to learning are all fun and games, while 'formal' approaches are all seriousness and gravity. Rather, the distinction between informal and formal learning, "can more clearly be made around the intentions and structure of the learning experience" (Sefton-Green, 2004, p. 6).

Informal Learning and Lifelong Learning

The lifelong approach to learning emphasizes the development of individual abilities and learning skills. The core concept is that students should be prepared and encouraged to "learn how to learn" (Benedek, 2007). The basic premise of lifelong learning is that it is not feasible to equip learners at school, college or university with all the knowledge and skills needed to prosper throughout their lifetimes (Bentley 1998). Lifelong learning as it takes place outside school differs in numerous dimensions and in fundamental ways from school-based learning: the learning is often self directed and driven by interest and needs; formal learning activities and environments are often less prominent compared with informal ones; it takes place in tool-rich environments; and it is often carried out as a collaborative activity (Fischer & Sugimoto, 2006). "There has been and continues to be an increasing emphasis on lifelong learning over the last 10 years. This kind of learning, which often takes place outside formal courses, is very diverse and there is evidence that such learning is a significant activity in people's lives. Learning outside formal educational institutions can also include incidental learning—where learners have not set out with specific learning goals" (Waycott, Jones, & Scanlon, 2005, p. 110).

Research on informal and lifelong learning recognizes that learning happens all of the time and is influenced both by the learner's environment and particular situations. Informal learning may be intentional and occur through intensive, significant and deliberate learning projects, or it may be accidental such as acquiring information through conversations, television, and newspapers, observing the world or even experiencing an accident or embarrassing situation. Such a broad view of learning takes it outside the classroom and, by default, embeds learning in everyday life, thus emphasizing the value of mobile technologies in supporting it (Naismith, Lonsdale, Vavoula, & Sharples, 2004).

Informal Learning and Mobile Technology

Sharples likened mobile learning to the concept of lifelong learning, arguing that learning can take place at various points over a person's lifetime, and is not confined to the classrooms or lecture halls of formal educational institutions. Therefore, according to Sharples, the design of personal technologies to support lifelong learning should aim to facilitate 'anytime, anywhere' learning, and should encourage the participation in learning activities across a lifetime (Sharples, 2000; Waycott et al., 2005).

Wireless and mobile technologies provide a set of key features that support these dimensions of lifelong learning (Sharples 2000). Mobility facilitates learning in situations determined by the learner, "wireless networks enable communication and collaboration across physical boundaries and embedding the right ubiquitous computing devices in the environment allows people to exploit the power of embodied virtuality and engage in activities and learning" (Fischer & Konomi, 2007, p. 339).

Technology that is used to support learning should be blended with everyday life in the same way that learning is blended with everyday life: seamlessly and unobtrusively. Mobile technologies, with their reduced size and ease of use, provide the potential to support such activities. With regard to accidental learning, learning episodes are impossible to predict. The personal and portable nature of mobile technologies makes them very strong candidates for recording, reflecting on and sharing this type of informal learning (Naismith et al., 2004).

Informal Learning Experiences

Waycott et al. (2005) describe the use of an activity theory framework to analyze the ways that distance part time learners and mobile workers adapted and appropriated mobile devices for their activities and in turn how their use of these new tools changed the ways that they carried out their learning or their work. It revealed a two-

way process in which users adapt the tools used according to their everyday practice and preferences in order to carry out their activities; and how, in turn, the tools themselves also modify the activities in which the users engage. They use three case studies to illustrate these processes: distance learners' use of e-books on PDAs to supplement their access to other static media such as books and computers, use of mobile devices by workers in the energy industry to access information when away from the office, and the use of mobile devices in an art gallery. They also discuss information access needs that are apparent in each of these learning contexts, and highlight the pertinent issues in the use of mobile technologies to support lifelong learners' information needs. They also explored the possibilities of informal learning in science settings and areas difficult to study because of the complexity and the difficulty of defining informal learning. They considered the learning as a continuum from the formal settings. The main focus of their work was how mobile devices could support informal learning in science and research (Scanlon et al., 2005).

Some of the studies undertaken have involved the use of mobile devices as part of museum and gallery tours at the Tate Modern, San Francisco Exploratorium, and as support to walking history tours (Scanlon, et al., 2005; Fleck, 2002; Hsi, 2003). These studies show that while the device can be helpful in learning they can also be a distraction and, in the worst case, a detriment to the learning when the technology does not perform as expected. An interesting comment by those using the devices on city streets was a concern about being mugged.

De Crom and Jagger (2005) wrote about the use of PDAs in support of ecotourism. In these studies it was reported that 95% of participants had a positive experience. The PDAs eliminated the need to carry books to identify birds and provided a convenient way to take notes. "The PDA was a tool and not the experience" (p.31).

The "Mobile Learning Tools for Children with Life-threatening Allergies" project initiated research into a new application area: supporting learning and information-giving to help anaphylactic children and their families' live safer and more flexible lives (Vavoula & Lonsdale, 2007).

Mobile technologies enable learning outside traditional learning environments, thus facilitating learning in real-world contexts. However, mobile learning experiences should not be viewed in isolation of other learning experiences. Each learning episode builds on previous learning, and is the basis for future learning. The outcomes of a learning experience can, and should, be used in subsequent learning experiences. Mobile technologies have the integral ability to support the mobility of learning outcome artifacts (collections of data, personal notes, etc.); the challenge is to also support the continuation of learning across different locations and contexts, both formal and informal (Vavoula & Lonsdale, 2007).

Summary

If the world of working and living relies on collaboration, creativity, definition and framing of problems, dealing with uncertainty, change and distributed cognition – then education needs to prepare students for meaningful and productive lives in such a world. Education from a lifelong learning perspective should help learners enhance their abilities to learn, engage in meaningful activities, exploit the power of media, and promote new civic discourses, as a major role for new technologies is not to deliver predigested information but to provide for social debate and discussion (Bruner, 1996). "We are beginning to see significant adoption of these technologies in further and higher education, in schools and the community, and in training and updating. They are having an impact on teaching, learning, and on the connections between formal and informal learning, work and leisure" (Kukulska-Hulme, 2005, p. 1).

"During the past few years there have been tremendous strides in the advancement of technology with the rise of mobile devices leading to an era characterized by the instant access and mobility of information. Mobile devices such as cellular phones, personal audio players, personal digital assistants, and portable computers have reshaped and redefined the ways in which information is constructed, accessed, and communicated among individuals and societies. As these mobile devices converge and wireless connectivity becomes more prevalent, remarkable technical capabilities are offered and profound innovative learning possibilities are now made feasible" (Avraamidou, 2008, p. 347-348). Mobile technologies are becoming more embedded, ubiquitous, and networked, with enhanced capabilities for rich social interactions, context awareness, and internet connectivity. Such technologies can have a great impact on learning. Learning will move more and more outside of the classroom and into the learner's environments, both real and virtual, thus becoming more situated, personal, collaborative and lifelong. The challenge will be to discover how to use mobile technologies to transform learning into a seamless part of daily life to the point where it is not recognized as learning at all (Naismith et al., 2004).

In Muyinda's (2007) opinion, the future of mobile learning is forecast to be bright. The capabilities of mobile phones, PDAs, and smart phones are on the move to higher ends. Integrated context-aware capabilities will transform everyday activities. The entire internet will become both personal and portable. Such technologies will

have a great impact on learning. Learning will move more and more outside the classroom and into the learner's environment. As the already hectic pace of our lives increases we will need to find faster and more inventive ways to utilize previously unproductive time (Geddes 2004). Lifelong learning will be essential to maintain a competitive edge in the global economy, for personal growth, and to function in an increasingly technical environment.

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