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Guest Editorial

Mobile Learning

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This special IRRODL issue on mobile learning is timely because of the proliferation of mobile technology in society, globalization, and the need to re-examine how learning materials are designed and delivered for the new generation of learners. In today's world, people are on the move and are demanding access to learning materials and information anytime and anywhere. At the same time, there is increasing use of mobile technology in different sectors of society to meet the needs of people on the move. In business, there is increasing use of mobile technologies for individuals to conduct their business anywhere and anytime. In healthcare, medical staff are using mobile technologies to access just-in-time information and to enter information in real time. People working in the field away from the central office use mobile technologies to access information and to communicate with other workers. Also, younger generations of learners are using mobile technologies for entertainment and socialization. These learners are using mobile devices to access information and multimedia materials and to communicate with friends. These new generations of learners do not see technology as something foreign. They readily accept technology and consider technology to be part of their lives. Moreover, the use of mobile technology is a 21st Century skill that students and workers must have to function in society.

Because of the increasing use of mobile technologies in society and by the younger generation, learners will demand course materials be delivered on mobile technologies to be accessed from anywhere and at anytime. At the same time, today's and tomorrow's learners will be nomadic and continuously on the move. As learners move from one location to the next, they must be able to use the infrastructure in the different locations to access learning materials. Hence, learning materials must be designed for easy access by the nomadic learners using mobile technology regardless of where they are located and which network infrastructure they are using to access information.

Despite mobile learning being a relatively new area in the delivery of instruction, many initiatives and research studies have been conducted to investigate the use of mobile technology in learning. For example, MOBIlearn, which is a worldwide European-led research and development project, explored the context-sensitive approaches to informal, problem-based, and workplace learning by using key advances in mobile technologies. In addition, there are papers published on how to design learning materials for delivery on mobile technology (Ally, 2005; Patten, Sanchez & Tangney, 2006; Sharples, Taylor & Vavoula, 2007).

The papers in this special theme issue examining mobile learning will help educators and trainers to be better prepared for the use of mobile technology in education and training. The papers in this special issue also help to clarify what is meant by mobile learning, discuss what has been

achieved so far in the use of mobile technology in learning, and describe the use of different mobile technologies in education and mobile learning applications around the world.

The paper by Agnes Kukulska-Hulme looks at mobile usability in educational contexts. She claims that the successful development of mobile learning is dependent on human factors in the use of new mobile and wireless technologies. Also, the majority of mobile learning activity continues to take place on devices that were not designed with educational applications in mind, and usability issues are often reported. Kukulska-Hulme's paper reflects on progress in approaches to usability and on recent developments, with particular reference paid to usability findings reported in studies of mobile learning. One of the areas frequently ignored in research studies on learning technology is the user of the technology. Kukulska-Hulme examines the requirements of education as well as the needs of students participating in distance education – discipline-specific perspectives and accessibility issues. She also summarizes usability findings from research studies of mobile learning and reports on two mobile learning projects. This paper sets the stage for reading the other papers in this special issue.

John Traxler's paper addresses the global use of mobile technology in society and how mobile devices are transforming the way people learn and communicate. He claims that with increased popular access to information and knowledge anywhere, anytime, the role of education – especially formal education – is now being challenged, and that the relationships between education, society, and technology are now more dynamic than ever. Traxler examines this relationship in the context of mobile learning and the sustainability of mobile learning. Most learning in the workplace is done through informal learning. Traxler's paper provides information on how mobile technology can be used in informal learning.

Torstein Rekkedal's and Aleksander Dye's paper draws on experiences from three European projects conducted between 2000 and 2007. The titles of these projects are "From e-Learning to m-Learning, Mobile learning – the next generation of learning, and Incorporating mobile learning into mainstream education." Rekkedal and Dye's paper reports on the use of specific mobile technologies in distance education and the benefits of using these technologies. It provides feedback received from students and tutors on the use of mobile technology in education and lists specific recommendations for educators to follow when implementing mobile learning. This paper is helpful for distance educators who would like to use mobile technology in open and distance education.

As technology evolves, it is important to keep up with the changes to benefit learning. The paper by Jason Caudill examines different mobile technologies and how these technologies can be used in mobile learning to benefit learners. One of the challenges for educators and researchers is to come up with an acceptable definition of mobile learning that everyone can use to guide research in mobile learning and the development and implementation of mobile learning. Caudill's paper explores the definition of mobile learning and clarifies the difference between e-Learning and m-Learning. One of the unique features of mobile learning is the mobility of learners. This paper examines the use of wireless technology to enhance mobility in mobile learning.

As educational organizations increasingly use distance education to reach out to students and deliver instruction to students, it is important to use technology to connect to students to make sure students complete their courses and program of studies. In their paper, Bharat Inder Fozdar and Lalita Kumar report on how the use of mobile technology can help in student retention in open and distance learning. Also, the use of mobile technology allows educational organizations to reach more learners and to connect to learners who already have the mobile technology.

An increasing trend in mobile learning is the use of instant messaging to connect to students and to promote collaboration. James Kadirire's paper explores the use of instant messaging in mobile learning. He claims that the use of instant messaging in mobile learning gives students a sense of online community. In his paper, Kadirire describes a prototype instant messaging system that can be used in education to allow learners to form a community of learning when taking distance education courses. He claims that use of instant messaging as a support tool is practical since it is affordable and students and educators will use this feature because of the low cost.

Kristine Peters reports on a comparative study that looks at the use of mobile technology in commerce and learning. She examines the latest mobile technology for learning and how mobile learning can meet the needs of the new generation of students. Peters suggests that "m-Learning lends itself to new methods of delivery . . . that are highly suited to the 'just enough, just in time, and just for me' demands of 21st Century learners." The 'just enough, just in time, and just for me' is applicable to the workplace where workers need the right information at the right time and customized based on the worker characteristics.

One of the major benefits of the use of mobile technology is the education of learners on the move. R. A. Aderinoye, K. O. Ojokheta, and A. A. Olojede discuss how mobile learning can be used in nomadic education programs. The current school system in Nigeria is not viable to reach all learners in different locations. They explore how the use of existing infrastructure and mobile technology can help to educate Nigeria's nomadic population. This paper is a good example of how mobile technology can be used to educate people on the move.

Yuhsun Edward Shih and Dennis Mills present an innovative model for mobile learning and examine the challenges of using mobile technology in education. They claim that mobile communication technologies are rapidly evolving to include local area wireless connections using Wi-Fi, Third Generation (3G) mobile communications, and Worldwide Interoperability for Microwave Access (WiMAX), and related mobile computing devices such as smart phones, pocket PCs, tablet PCs, and various Personal Data Assistant (PDA) handheld devices. The paper describes a model to facilitate mobile learning design and to achieve better mobile learning outcomes.

One of the major issues for educators in remote locations and developing countries is access to the Internet. In the research notes section of this special issue on mobile learning, researchers look at accessibility of the Internet in Asia. Jon Baggaley and Batchuluun Batpurev compare the browser loading times of webpages created using common Web development techniques and report on the results obtained. They make recommendations on techniques for accessing the Internet. In a second study related to Internet access, Jon Baggaley, Batchuluun Batpurev, and Jim Klaas compare the loading times of webpages with the complexity of the Internet routes linking the Web users and the Web servers hosting them. They make suggestions on how to use existing infrastructure to improve online delivery and distance education.

In summary, this special issue on mobile learning addresses some of the issues and challenges of mobile learning, and provides suggestions and recommendations for mobile learning and for research on mobile learning. It sets the stage for further work to make mobile learning more accepted and effective in the education system. Different sectors of society such as business, government, and entertainment are using mobile technology to provide services and to interact with their clients. These sectors understand the mobility of their clients and are changing their systems to meet their clients' needs. Education is behind the other sectors in the use of mobile technology to deliver learning materials and interact with students. To accelerate the use of

mobile technology in education, researchers and educators need to work with manufacturers of mobile devices to develop mobile devices for use in the education sector. This is critical since most of the available mobile technology was developed for use in business and other sectors.

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