Introduction

Mobile learning through the use of wireless mobile technology allows anyone to access information and learning materials from anywhere and at anytime. As a result, learners have control of when they want to learn and from which location they want to learn. Also, all humans have the right to access learning materials and information to improve their quality of life regardless of where they live, their status, and their culture. Mobile learning, through the use of mobile technology, will allow citizens of the world to access learning materials and information from anywhere and at anytime. Learners will not have to wait for a certain time to learn or go to a certain place to learn. With mobile learning, learners will be empowered since they can learn whenever and wherever they want. Also, learners do not have to learn what is prescribed to them. They can use the wireless mobile technology for formal and informal learning where they can access additional and personalized learning materials from the Internet or from the host organization. Workers on the job can use the mobile technology to access training materials and information when they need it for just-in-time training. Just-in-time learning encourages high level learning since learners access and apply the information right away rather than learn the information and then apply the information at a later time. Educators and trainers are empowered since they can use the mobile technology to communicate with learners from anywhere and at anytime. At the same time, educators and trainers can access learning resources from anytime and anywhere to plan and deliver their lessons.

This book is timely since there is significant growth in the use of mobile technology by people around the world, especially in developing countries. As the citizens of the world use mobile technology to complete everyday tasks and to socialize with friends and colleagues, they will demand access to learning materials using mobile technology. Also, other sectors of society such as business, are allowing citizens around the world to use mobile technology to complete everyday transactions. Hence, education and training have no other choice but to deliver learning materials on mobile devices. The research studies and projects in this book show how mobile learning can transform the delivery of education and training.

Rather than acquiring another technology to receive learning materials, people throughout the world will want to access learning materials on their existing mobile devices. As a result, educators and trainers must design learning materials for delivery on different types of mobile devices. The design of learning materials for mobile devices must follow good learning theories and proper instructional design for the learning to be effective. The twenty-first century learner and worker will benefit from well designed learning materials so that they can learn from anywhere and at anytime using mobile technology. The nomadic learner and worker who travel frequently from place to place will similarly use mobile technology to access information and learning materials from anywhere and at anytime.

A major benefit of using wireless mobile technology is to reach people who live in remote locations where there are no schools, teachers, or libraries. Mobile technology can be used to deliver instruction and information to these remote regions without having people leave their geographic areas. This will benefit communities in such places since students and workers will not have to leave their families and jobs to go to a different location to learn or to access information. At the same time, business owners, agriculture workers, and other working sectors can access information to increase productivity and improve the quality of their products. People living in remote communities will be able to access health information to improve their health hence, enhancing quality of life. Finally, because remote access using wireless mobile technology reduces the need for travel, its use can reduce humanity's carbon footprint on earth to help maintain a cleaner environment.

The first book on the use of mobile technology in education and training was published four years ago. In the last four years, mobile devices have become more sophisticated and easy to use. At the same time, there have been many applications of mobile technology in education and training. This book contains current research initiatives and applications in mobile learning. Recently, there have been many conceptual papers on mobile learning and initiatives to use mobile technology for learning and training. Also, there were many conferences on mobile learning for educators and researchers to present their projects and research findings. For example, the First International Conference on M-libraries was held recently to explore the use of mobile technology in libraries to disseminate information and learning materials to anyone, anywhere, and at anytime. This conference was attended by delegates from twenty-six different countries. Also, the Sixth International Mobile Learning Conference was held recently with people from twenty-one countries attending. Papers on the use of mobile technology in teaching and learning were presented at this conference.

Intended audience for this book

This book can be used by anyone who is interested in mobile learning in education and training. Faculty can use this book as a textbook in a course on "mobile learning" or "emerging technology in learning." Faculty, researchers, teachers, instructors, and trainers can use this book to learn about mobile learning and how to design learning materials for delivery on mobile technology. They can also use this book to become informed on current research and initiatives on mobile learning to learn best practices on mobile learning from other educators, trainers, and researchers. At the same time, business and government can use this book to gain knowledge on how-to design information and learning materials for delivery on mobile devices.

Book organization

This book consists of three parts. Part One deals with advances in mobile learning and sets the stage for the other parts of the book. This first part presents the current status of mobile learning, explores what mobile learning is, and presents a model that can be used to guide the development and implementation of mobile learning. The first part also provides theoretical information on mobile learning, discusses the definition of mobile learning, and outlines some of the challenges faced when designing and implementing mobile learning. Part Two includes chapters that present the latest research on mobile learning so that readers can learn from current findings to guide the development of mobile learning materials and better implement future mobile learning initiatives. Part Three covers various examples of how mobile learning is used in different subjects and places around the world. As a result, readers will discover how to successfully design and implement mobile learning regardless of where they live. The chapters in the last part of the book also identify lessons learned which will be helpful for future implementation of mobile learning in educational and training settings.

Part One: Advances in mobile learning

The first part of the book consists of two chapters. That by John Traxler provides information on the current state of mobile learning and where it is going. It also identifies challenges organizations face when implementing mobile learning and what must be done to make mobile learning successful. For those who are new to mobile learning, it is important to know about the challenges of implementing it so that they can plan for success. It is important to know the development of the field, its current state, and potential challenges for the future. This chapter provides good background information for the chapters that follow.

The chapter by Marguerite Koole presents a theoretical model for developing and implementing mobile learning: the Framework for the Rational Analysis of Mobile Education (FRAME). It is a comprehensive model that covers different aspects of mobile learning including the learner and device usability. The model explains the pedagogical issues of information overload, knowledge navigation, and collaborative learning in mobile learning. Koole makes a significant contribution by introducing the convergence of mobile technologies, human learning capacities, and social interaction in mobile learning. FRAME will help educators and trainers to develop mobile learning materials and to use effective teaching and learning strategies for mobile education. It will also help guide the development of mobile devices for mobile learning.

Part Two: Research in mobile learning

The second part of the book consists of four chapters. Torstein Rekkedal and Aleksander Dye's chapter presents experiences from three European Union (EU)-supported Leonardo da Vinci projects on mobile learning. In the studies reported, researchers tested the use of many features on the mobile device including video, chat, and synthetic speech. This chapter makes an important contribution as it discusses research conducted on the use of multimedia for mobile learning.

The chapter by Richard F. Kenny, Caroline Park, Jocelyne M. C. Van Neste-Kenny, Pamela A. Burton, and Jan Meiers reports on research studies concerning the use of mobile technology in nursing. Use of mobile technology in the health care field is growing at a fast rate because of the nature of the work health care workers perform. They are on the move most of the time and need to access information for just-in-time application. Hence, the use of mobile technology to work from anywhere and access information at any time is important for this group. The research reported in this chapter will be helpful to anyone planning to develop mobile learning for workers on the move.

The chapter by Gill Clough, Ann Jones, Patrick McAndrew, and Eileen Scanlon discusses the use of mobile devices in informal learning and reports on research that was conducted on the use of mobile devices to deliver informal learning. Allowing people to use mobile technology for informal learning will empower them to access information anytime and from anywhere to improve their quality of life. Most of what people learn in their lives is learned informally. As the Internet continues to grow, there will be more informal learning. This chapter will benefit those who are interested in using mobile technology for informal learning.

The chapter by Kristine Peters looks at the use of mobile learning in business and how the use of mobile technology results in flexible learning. Since most employees in businesses have mobile technology that they use for work related tasks, they can use the same technology to access learning materials for application on the job. In this study, information on use of mobile devices was collected through interviews with manufacturers of mobile devices and education providers. As more businesses start using mobile technology for learning, they will need to know about the best practices when implementing mobile learning, and this chapter provides valuable information in this regard.

Part Three: Applications of mobile learning

The third part of the book presents different applications of mobile learning and consists of seven chapters. The chapter by Agnes Kukulska-Hulme and John Pettit examines learners' use of mobile devices and reports on learners' experience using four different types of mobile devices. The practices reported in this chapter provide valuable information to those who are interested in designing mobile learning materials. One of the challenges in mobile learning is how to design good instruction for delivery on mobile devices. This chapter addresses the design of learning materials based on learners' experience using mobile devices.

The chapter by Claire Bradley, Richard Haynes, John Cook, Tom Boyle, and Carl Smith describes how to design learning objects for use on mobile devices. The use of learning objects in mobile learning is essential since the learning objects can be stored in repositories for access at anytime and from anywhere. Also, learning objects can be re-used many times. Developers of learning materials should seriously think about developing learning materials in the form of learning objects for storage in electronic repositories for flexibility in delivery. This chapter provides valuable information on how to design learning materials using learning objects for delivery on mobile devices.

The chapter by Michelle Pieri and Davide Diamantini presents a project where mobile learning is used in a blended delivery format for training in the workplace. In some cases, training is delivered using mobile learning along with other delivery methods in a blended format. Pieri and Diamantini report on the blended approach and describes a mobile learning application to train managers to improve their knowledge and skills. The authors also compared the effectiveness of mobile learning and e-learning to train managers. As workplace training moves towards using different delivery methods, trainers will need to know which delivery methods to use. This

chapter addresses how a blended approach that includes mobile learning can be used in workplace training.

The chapter by Merryl Ford and Teemu Leinonen examines the use of mobile learning in both formal and informal learning. The authors describe implementations that are being carried out around the world and provide suggestions for implementing mobile learning in different parts of the globe. This is a good case study on how mobile learning can be implemented internationally.

The chapter by Jon Gregson and Dolf Jordaan describes the experience of implementing mobile learning in developing countries and the challenges one could face during the implementation. The authors also cover how to design learning materials for delivery on mobile devices for distribution to such countries. Those who will receive the most benefits from mobile learning are individuals who live in developing countries and in remote locations since they can access learning materials from anywhere and at anytime. This chapter will help those involved in international education and training to implement mobile learning in a variety of contexts.

The chapter by Laura Naismith and M. Paul Smith describes how to design for learner-centred experience when touring museums. They also reported on learners' feedback when touring museums with the help of mobile technology. This chapter illustrates how mobile technology can be used in contexts outside the classroom for learning.

The chapter by Jocelyn Wishart describes the use of mobile technology for teacher training to get teachers involved in the use of technology in education. The chapter describes the activities teachers prefer to complete with the mobile devices and why the technology was not fully utilized. This case study will be important to those who would like to involve teachers in mobile learning.

In conclusion, this timely book will benefit learners, educators, and trainers by encouraging flexibility in the learning process, and thereby improve learning. The information presented in this book will help citizens of the world to use mobile technology to access information and learning materials while also improving their ability to communicate with each other.

Mohamed Ally, Ph.D.