Mobile Learning in Developing Countries

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MOBILE LEARNING APPLICATIONS

TEACHING AND LEARNING
Mobile learning can complement other teaching and learning methods or replace them, and can be tailored to fit a course or as an afterthought. It can also be an on-demand and peer-assisted support, such as:
- Practical case, feedback and interactions
- Memorization and guidance
- Supporting students in projects
- Course administration and regulation
- Institutional quality assurance

Some negative aspects of learning include the possibility students may feel:
- Pressure issues to achieve within a short time
- Time to generate technology to manage their movements
- Demands which is not acceptable, rules and to your personal privacy
- Tension about their professional development and/ or professional skills

TRANSMITTING CONTENT
Laptops, tablets, USB's and handhelds. Web pages and computer-assisted learning packages from teacher to student as a guide. M-learning offers a change in content exchanged, but delivered in smaller packages, such as:
- Daily or weekly tools, reminders and calendars
- Multiple-choice quizzes with immediate feedback
- Knowledge sharing in real-time
- Following links to selected websites
- Glossary, vocabulary information
- Concepts or definitions of content

An attention to subjectivity and content potential presented in an article, a medium, or "learning" content, is also crucial. It is content that contains the content with the subject at stake in the same content, and does not guarantee the content will be useful, or in the context used.

Quality assurance is for the new technology and adaptation and the validation needed for the technology supported learning. This process will be implemented for the changes and content of the content, rather than replacing them completely.

SHARED DISCOVERY
Usability studies, seminars, books and handhelds. Web pages and computer-assisted learning packages from teacher to student as a guide. M-learning offers a change in content exchanged, but delivered in smaller packages, such as:
- Daily or weekly tools, reminders and calendars
- Multiple-choice quizzes with immediate feedback
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FURTHER MATERIALS

MOBILE LEARNING IN DEVELOPING COUNTRIES

MOBILE LEARNING IN DEVELOPING COUNTRIES

John Traxler, Learning and Teaching Research Fellow, Centre for Learning and Teaching, University of Wolverhampton, U.K.

Agnes Rubulaca Hulme, Senior Lecturer in Educational Technology, Institute of Educational Technology, The Open University, U.K.

The Knowledge Series is a topical, start-up guide to distance education practice and delivery. New titles are published each year. The previous title, "Distance Education in the Workplace" is available from University of Technology, Sydney. Current titles in the series are available from the Commonwealth of Learning, 1055 West Hastings, Suite 1200, Vancouver, BC, V6E 2E9, CANADA. This publication may be reproduced for non-commercial purposes. Acknowledgement to the Commonwealth of Learning and the web references and links in this publication are accurate at press time.

Worldwide and commissioned by the Commonwealth of Learning (COL), this booklet provides a rapid introduction to mobile learning for new users and those who are already involved in the field. It offers indications of how mobile learning can enrich and complement traditional distance education and training. It also looks at the history of mobile learning and how the field has evolved, and indicates some of the key issues that require attention and discussion.

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M-learning is an “anytime, anywhere” way to learn that enlarges access to education for all

INTRODUCTION

M-learning has developed widely in Europe, the United States and parts of East Asia, currently in English medium, and various environments of Kathy, high-tech and low-tech. As a form of learning, it has been driven by the specific need for more mobile, specific relations between the mobile and student, and at the specific role of learning from the mobile's point of view. M-learning can be defined as the use of mobile devices for educational purposes.

M-learning devices are lightweight and handheld, including:
- Personal Digital Assistants (PDAs), or phone-sized handheld devices.
- Mobile phones, which are pretty much everywhere, and also carry communication devices.
- Other communication devices, which offer a range of mobile devices, to develop familiarity and confidence of use amongst teachers.

MOBILE SYSTEMS AND INFRASTRUCTURE

Handhelds at all mobile phones:
- Are about the same weight as a small personal organizer.
- Have complex screens that meet the needs of various educational institutions.
- Are easy to carry to school and also to carry household.
- Have complex screens that meet the needs of various educational institutions.
- Are easy to carry to school and also to carry household.

IMPLEMENTATION STRATEGIES

Short-term projects that need to be managed over the long run, together with the need to engage various stakeholders and beneficiaries.

USER INTERFACE AND DATA ENTRY

Understanding the user’s needs and the context in which they are using the device is crucial. The user interface should be intuitive and easy to use, with clear and concise instructions. The data entry methods should be user-friendly, allowing for quick and easy input. The device should also have a backup feature to ensure data is not lost.

SOFTWARE PROGRAMS

Handhelds can run various software programs, including education-specific apps, such as calculators, dictionaries, and educational games. Some handhelds also support specialized software, such as music composition software or scientific simulations.

OPERATING SYSTEMS

Some handhelds are designed for specific operating systems, such as Windows, Linux, or MacOS. Others are compatible with a variety of operating systems, allowing for greater flexibility and customization.
M-learning is an "anytime, anywhere" way to learn that enlarges access to education for all

INTRODUCTION

Mobile learning (M-learning) is learning in a mobile, ubiquitous, anytime, anywhere way that can access educational tools and materials regardless of place or time. For education professionals, mobile learning is a way to transform education to be more flexible and accessible than ever before. Affordable handheld devices, digital technologies, and broadband Internet access have paved the way for mobile learning.

In developing countries, mobile technologies can deliver educationally significant information and learning and can help advance education and development goals. Although a learning experience remains limited, it is becoming a reality in education, with wireless and mobile communication devices (PDAs, cell phones, etc.) providing increased access to learning and knowledge.

M-learning is an "anytime, anywhere" way to learn that enlarges access to education for all.

USABILITY AND ACCESSIBILITY

M-learning has developed widely in Europe, the United States and parts of East Asia, commercially using English mediums, and in various emerging markets, such as Nigeria, South Africa and Bangladesh. M-learning, however, is still in the embryonic stages of development, with many stakeholders involved in its design and implementation.

M-learning can be used in a variety of settings, from formal education to informal learning. However, some challenges may arise in providing effective and efficient access to learning, especially for users in low-tech or rural environments. This may include the following factors:

- **Small images and text**: Small images and text may lead to possible inconvenience, especially in low-light conditions.
- **Poorer readability**: Poorer readability than full-colour screens may be experienced in low-light conditions.
- **Screen contents**: Screen contents may be difficult to read, especially in low-light conditions.
- **Inconvenience for users in low-tech or rural environments**: Devices may not have speakerphone or hands-free capability.
- **Voice messaging**: Voice messaging can be difficult on a moving vehicle.
- **Large images and text**: Large images and text may lead to possible inconvenience, especially in low-light conditions.
- **Inconvenience for users in low-tech or rural environments**: Devices may not have speakerphone or hands-free capability.
- **Voice messaging**: Voice messaging can be difficult on a moving vehicle.

MOBILE SYSTEMS AND TECHNOLOGY

Handhelds at m-locations

- **About the size and weight of a small personal item**: Devices are typically about the size and weight of a small personal item.
- **Easy to use and improve learning**: A usable device is satisfying, easy to use and improves learning and teaching.
- **Flexible access to information**: Consider mobile phones, which are cheap and widely available, especially in parts of East Asia, primarily in an English medium, and in environments where Internet access is not always available.
- **Inexperienced or older computer users, and users from diverse cultural backgrounds, may find the following challenges interacting with handhelds and mobile devices**:
  - Small buttons, controls and keyboards
  - Small screens

IMPLEMENTATION STRATEGIES

- **Time to print photos that you want to share with others**: Users can quickly learn to gauge battery life and replace batteries as needed.
- **E-mail and instant messaging**: Educational material developed for one OS will soon be usable on another.
- **Application Protocol (WAP) or wireless fidelity (Wi-Fi)**: These are available in all parts of the world, and can be used in suitably equipped classrooms, buildings and libraries.
- **Library**: Users can quickly learn to gauge battery life and replace batteries as needed.
- **Power supply**: Power supply is a critical issue in m-learning.
- **Back up**, or copying information to another computer or device for safe-keeping:
  - **If neither has been altered, no changes are needed.**
  - **If one version has not been changed since the previous "synch" and both have been altered, the changes need to be transferred to the other.**
  - **If one version has been changed since the previous "synch" and both have been altered, the changes need to be transferred to the other.**
- **Operating System (OS)**: Users can quickly learn to gauge battery life and replace batteries as needed.
- **Library**: Users can quickly learn to gauge battery life and replace batteries as needed.
- **Power supply**: Power supply is a critical issue in m-learning.
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  - **If one version has been changed since the previous "synch" and both have been altered, the changes need to be transferred to the other.**

SYNCHRONISATION AND BACK UP

Synchronisation and "back up" are required to ensure that data is not lost during the transfer process. Users can quickly learn to gauge battery life and replace batteries as needed.

OPERATING SYSTEMS

Software programs

- **Server version**: Users can quickly learn to gauge battery life and replace batteries as needed.

M-learning can complement other teaching and learning methods or replace them.
M-learning can complement other teaching and learning methods or replace them

INTRODUCTION

M-learning (mobile learning) is a growing phenomenon, embraced and supported by many educational institutions and researchers. However, it is not yet clear how it will develop or what its full potential is. Although learning experiences remain limited, it is becoming a reality. This chapter focuses on technology-based tools, such as PDAs and mobile phones, and explains why handheld devices are particularly attractive for educational use.

MOBILE SYSTEMS AND TECHNOLOGY

Handhelds at all levels
- Schools
- Businesses
- Home

Hardware and software for handheld devices: PDAs and mobile phones

Handhelds
- Mobile phones
- PDAs
- Notebooks
- Personal digital assistants (PDAs)

Software
- Educational software
- Tools for creating and managing content
- Collaboration and communication tools

MOBILE LEARNING

M-learning is an "anytime, anywhere" way to learn that enlarges access to education for all learners.

MEASURING EFFECTIVENESS IN HANDHELD USE

There are a number of key factors that affect the success of handheld use.

- Technology
- User interface
- Content
- Learning objectives
- Pedagogical strategies
- Institutional support

SUMMARY

M-learning can enhance education successfully, but only if its implementation is carefully planned and executed. Handhelds are a powerful tool for learning, but their effectiveness depends on a number of factors, including the hardware, software, and pedagogical strategies used.
M-LEARNING APPLICATIONS

TEACHING AND LEARNING
M-learning can complement other teaching and learning methods or replace them, and can adapt to fit some or all of them. It can also be used for non-student and non-educational support, such as:

- Personal care, feedback and reminders.
- Maintenance and guidance.
- Supporting students in the classroom.
- Course administration and management.
- Institutional quality assurance.

Some negative aspects of learning include the possibility students may feel:

- Pressure or anxiety due to mobile environments.
- That location-aware technology monitors their movements.
- That devices which collect data, trusts, and contact is to their privacy.
- Themselves or their professional development and their professional devices do not.

TRANSMITTING CONTENT
Usefulness, features, tasks and familiarity. Web pages and computer-assisted learning packages from teacher to student, as a guide. M-learning offers a range of content transmitted through, delivered in smaller packages, such as:

- Daily or weekly tasks, reminders and comments.
- Multiple choice quizzes with immediate feedback.
- Newsletters and social networking.
- Following links to selected websites.
- Glossary, glossary-related material.
- Conferences and details of events.

An attention to usability and design is important, as users need a known interface or "sensing" the content. Do not develop content that can be embedded in the education with a variety of standards across computer hardware, and can easily be accessed by a wide range of the Internet, and can be tailored to their personal devices.

Quality assurance is for the many projects are emerging because validating devices are for technology supported learning. The processes will be beneficial for establishing some benefits of learning, rather than replacing them completely.

SHARED DISCUSSION
Useful interactions during seminars, discussions and workshops. The use of mobile devices can significantly networked communities, easily provide increased access to technology and in the form of learning. The use of mobile devices can significantly networked communities, easily provide increased access to technology and in the form of learning.

While useful interactions can be "making" a traditional discussion group or studies, an individual or "instant" and employed individuals. Developed to support interaction and discourse among students who are in different places at the same time. Mobile devices can support interaction and discourse among students who are in different places at the same time.

Example of mobile technology to support learners' learning includes:

- Rapid response and feedback.
- Text messages for students to ask teachers for help.
- Voice messages for students to ask teachers for help.
- Email messages for students to ask teachers for help.

MOBILE LEARNING IN DEVELOPING COUNTRIES

With mobile devices and mobile learning applications, students from developing countries can access educational content, such as:

- Information about disease outbreaks and measures to control them.
- Information about disasters and measures to control them.
- Information about how to prevent the spread of diseases.
- Information about how to prevent the spread of diseases.

Further, students with mobile devices can access educational content, such as:

- Information about how to prevent the spread of diseases.
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- Information about how to prevent the spread of diseases.
M-LEARNING APPLICATIONS

TEACHING AND LEARNING
M-learning can complement other teaching and learning methods or replace them, and can be used for in-service training or other methods. It can also be for non-student and pre- and postgraduate support, such as:
- Practical case, feedback and tutorials
- Maintenance and guidance.

- Supporting students in the transition
- Course administration and management.
- Institutional quality assurance.

Some negative aspects of learning include the possibility students may feel:
- Pressure to learn in a hurry
- That their learning style is not being respected
- That their development is being rushed
- That teachers and tutors are not helping them to achieve their goals

These challenges can be met with feedback and contact to support and monitor their progress.

TRAINING AND PROFESSIONAL DEVELOPMENT

A range of content transmittal choices is available, delivered in smaller packages, such as:
- Daily in weekly topics, rules and reminders.
- Weekly collection of conversation threads, groups.
- Following links to selected Web sites.
- Overview summary information.
- Correlations of objectives revisited.

- An alternative to Republic publishing is to use an e-mail device, or "learning anywhere," so developing it can supplement content for new types of learning for the new types of learning.
- The content and context of the course is more visible and interactive than in a print medium.
- Support with personal information management is in a new technological environment.

CASE STUDIES

University of Wolverhampton, U.K.
Uses mobile devices to support staff and disadvantaged students in teaching, learning and administration. It has run an SMS project to help a group of students with high school, revision and developing using SMS messaging.

MOBILE EDUCATION ENHANCEMENT PROJECT (DEEP). www.open.ac.uk/deep

Examples are "My classroom," about an epidemic and how it spreads, and focuses on Hindi-speakers. Popular regional content is converted into applications. Sponsored by ZMQ Software Systems, the project uses mobile phones to support staff and disadvantaged students in teaching, learning and administration. It has run a pilot to help a group of students with high school, revision and developing using SMS messaging.

MOBILE LEARNING APPLICATIONS

FURTHER MATERIALS

BOOKS

- Dutton, G. 2004. Learning Designers—using mobile Technologies in Teaching, Learning and Developing. Alternatives, University of Bath

WEBSITES

- www.adobe.com/products/acrobat
- www.biblioscape.com/bibliopalm.htm
- www.cerience.com
- www.digital-educationenhancementproject.com
- www.handango.com
- www.jiscmail.ac.uk/lists/PDA-EDU.html
- www.palmtop.co.uk
- www.paragon.co.uk/mags/pdaessentials.html
- www.palmtop.net/products/sms/pda/quickoffice.html
- www.topica.com/products/scm/messaging.html
- www.topica.com/products/scm/messaging.html
- www.wolverhampton.ac.uk/learning-and-teaching_AND-Mobile-Learning

MOBILE LEARNING IN DEVELOPING COUNTRIES

E-learning, gaming and edutainment provider. www.mobl.com/software

- American Management Association (AMACOM).
- Commonwealth of Learning (COL) Knowledge Finder: Online ODL resource management software. www.knowledgefinder.org
- Commonwealth of Learning (COL) Knowledge Finder: Online ODL resource management software. www.knowledgefinder.org
- Development Gateway—E-learning: Resources for e-learning development, including m-learning. www.developmentgateway.org/topics.developmentgateway.org/elearning
- Digital Education Enhancement Project (DEEP). www.open.ac.uk/deep
domains.asp For other programme package.

- E-learning: Resources for e-learning development, including m-learning. www.developmentgateway.org/topics.developmentgateway.org/elearning
- Handango: Commercial mobile computing software, including educational applications. www.handango.com

- Manoel, E. 2004. Quality assurance units in many institutions are struggling to develop validating procedures for technology-supported learning. This process will proactively support new forms of learning.

INDEPENDENT STUDY SKILLS AND INFORMATION MANAGEMENT

- Data collection for projects.
- Quick formation amongst educators, students and teachers.
- Bibliographic database is used by educators.
- Course administration and management.
- Tools to help students link together the different elements of course.

WORKPLACE EDUCATION

Examples are "My classroom," about an epidemic and how it spreads, and focuses on Hindi-speakers. Popular regional content is converted into applications. Sponsored by ZMQ Software Systems, the project uses mobile phones to support staff and disadvantaged students in teaching, learning and administration. It has run a pilot to help a group of students with high school, revision and developing using SMS messaging.

- Tools to help students link together the different elements of course.

- That devices which hold appointments, tasks and contacts may de-skills them.

- Continuing access to course and reference material in the workplace.

- Continued access to other students within their online community.

- Continued access to course and reference material in the workplace.

- Tools to help students link together the different elements of course.

- That devices which hold appointments, tasks and contacts may de-skills them.

- Courses can be modelled in the same ways as other methods. It can be less problematic if m-leaning is integrated into other types of learning.

- That devices which hold appointments, tasks and contacts may de-skills them.

- Supporting students across the institution.

- Motivation and guidance.

- Pastoral care, feedback and remediation.

- Course administration and management.

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