Mobile Learning: New Challenges with Small Screen

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Abstract:
Education and training is the process by which students learn in various ways. Mobile learning, or "M-Learning", offers modern ways to support learning process through mobile devices, such as handheld and tablet computers, MP3 players, smart phones and mobile phones. This article focuses on the concept of mobile learning for teaching learning purposes. The impact of mobile or smartphone in our life is immense. The paper is to describe the meaning, value, benefits, challenges and progress to support teaching and learning. Mobile learning is the ability to obtain or provide educational content on personal pocket devices such as PDAs, smartphones and mobile phones. Educational content refers to digital lea this proximity to the device, at all times, and creates a huge opportunity to make learning material available to the learner anywhere, anytime. The mobile user experience is different from the desktop computer experience and the face-to-face experience, however mobile learning can be used to support both as well as standing alone.

Keywords: Education, Mobile, Learning, Mobile Learning, E-Learning.

INTRODUCTION

Modern age of communication offers modern ways to support learning through variety of devices. Mobile/ Smartphone are one of the most familiar devices worldwide. Advancement of smartphone devices being used in Education is rising. The use of mobile devices is here to stay and we can progressively accommodate this new platform to enhance our teaching and learning process.

The term Mobile learning stands for mobile learning, which refers to learning with the aid of handheld technology like mobile phones, laptops and any other similar portable devices which are handy. It has different meanings for different communities. It is related to e-learning, Edutech and distance education. Mobile learning is fast gaining pace as a popular medium of imparting knowledge amongst the new-age learners of today. Most of us carry a high-end mobile device be it a Smartphone or a tablet. This proximity to the device, at all times, creates a huge opportunity to make learning material available to the learner anywhere, anytime. The mobile user experience is different from the desktop computer experience and the face-to-face experience, however mobile learning can be used to support both as well as standing alone. This type of learning is called as Mobile learning/ M-learning.

In other way we can say that, mobile learning is way of learning when learner is not at a fixed, predetermined location, or learner takes advantage of the learning opportunities by mobile technologies. Learner can learn in various locations and anywhere at any time. Learning with portable technologies is not limited to hand handheld laptop, notebooks, mobile phones and tablets. It focuses on the mobility of the learner, interacting with portable technologies. There is also a new direction in M-Learning that

gives the teacher to more mobility and includes creation of on the spot and in the field learning material that predominately uses smartphone.

Mobile learning is considered to be the ability to use mobile devices to support teaching and learning. It is the 'mobile' aspect of mobile learning that makes it stand apart from other types of learning, specifically designing learning experiences that exploit the opportunities that 'mobility' can offer us. Using mobile tools for creating learning aides and materials becomes an important part of learning. Using mobile devices uniquely offers us newfound mobility, and functionality opportunities that are not possible with desktop computers. These opportunities should at a minimum intrigue us and will hopefully lead to many new and exciting uses of mobile devices that we are able to take advantage of.

It is convenient and accessible from virtually anywhere in the forms of E-learning, is also individual and collaborative. Sharing information is almost instantaneous among everyone using the same content, which leads to the reception of instant feedback. This is because mobile devices have features and functionality for supporting learners. For example, podcasts of lectures can be made available for downloading. Learners are to expect to engage with these learning resources whilst away from the traditional learning spaces. Many mobile phone devices are able to view and/or download digital media such as audio and video. Once again this provides us with an opportunity for teaching activity including contextualized fieldwork opportunities. For example, listening to audio based activities that incorporate the listener's location is already being used in multiple discs supporting the mobile user.

M-learning allows multimedia boards to be set up, so that learners can participate in class projects via mobile devices, which the learners can then add comments by text, picture, movies, etc. The multimedia board is used as an m-portal, allowing students to create and edit their own web page. This can then be viewed via their mobile phones. This means that learning becomes more interesting, which also allows the students to learn about different resources than the standard PC, which builds new skills and techniques for students.

Mobile learning is the ability to obtain or provide educational content on personal pocket devices such as PDAs, smartphones and mobile phones. Educational content refers to digital learning assets which includes any form of content or media made available on a personal device.

EDUCATION; CURRENT AND FUTURE
The massive changes in society and development of technology have an important effect on education. These changes affect all areas of education and this education continues, and is everywhere, at all times, using new technology. Mobile devices bring big opportunities to learners, to learn at all times, with no boundaries for education. There is now little doubt that the World Wide Web is the most successful educational tool to have appeared in a long time. It combines and integrates text, audio and video with interaction amongst participants. It can be used on a global scale and is platform independent. While largely an asynchronous medium, it can be used also for synchronous events. It is not surprising, therefore, that trainers, lecturers, distance education providers and teaching institutions at all levels are increasingly using the Web as a medium for delivery.

VALUE OF MOBILE LEARNING
M-Learning programs and techniques have made the following value statements in favor of M-Learning.
- It is important to bring new technology into the classroom.
- Devices used are more lightweight than books and PCs.
- Mobile learning can be used to diversify the types of learning activities students partake in (or a blended learning approach).

- Mobile learning supports the learning process rather than being integral to it.
- Mobile learning can be a useful add-on tool for students with special needs. However, for SMS and MMS this might be dependent on the students 'specific disabilities or difficulties involved.
- Mobile learning can be used as a hook to re-engage disaffected youth.

E-LEARNING VS M-LEARNING

In E-learning, there is a specific intent to learn something in fact the selection of E-learning is generally based on a desire to acquire a specific set of knowledge or skills. For E-learning we generally add some phrases like tethered (connected to something) as well as learning that is offered in a formal and structured manner. For M-learning, the first major difference is that it is untethered. It also is defined by learning that is more informal and opportunistic. M-learning is more private, situational and unstructured In E-learning; the process of learning is enabled by the use of software and Internet tools. In M-learning; the process of learning is enabled by the use of mobile devices such as smart phones, PDAs and iPods Common and Different Features of M-Learning and E-learning when we try to find the common features between E-learning and M-learning, we can say that there are common features in both the learning process and the teaching process. First of all, M-learning and E-learning are student centered teaching/learning process. Both of them use technological devices for the teaching/learning process such as PDA, wireless laptop, notebook.

DIFFERENTIATING E-LEARNING FROM MOBILE LEARNING

Characteristics	M – learning	E-learning
Place	o lecture in classroom or internet labs	o learning anywhere, anytime
Pedagogical Change	o More text- and graphics based instructions o lecture in classroom or in internet labs	o More voice, graphics and animation based instructions o learning occurring in the field or while mobile
Instructor to Student	o Time-delayed (students need to check e-mails or web o sites passive communication o Asynchronous	o Instant delivery of e-mail or SMS o Instant communication o Synchronous
Communication	o Scheduled	o Spontaneous
Student to Student Communication	o Face-to-Face o Audio- teleconference common o e-mail-to-e-mail o private location o travel time to reach to internet site o dedicated time for group meetings o poor communication due to group consciousness	o Face-to-Face o Audio- and video-teleconference possible o 27/4 instantaneous messaging o no geographic boundaries o no travel time with wireless internet connectivity o Flexible timings on 24/7 basis o Rich communication due to one-to-one communication, reduced inhibitions
Feed back to student	o 1-to-1 basis possible o Mass/standardized instruction o Benchmark-based grading o Simulations & lab-based experiments o Paper based	o 1-to-1 basis possible o Customized instruction o Performance & improvement-based grading o Real-life cases and on the site experiments

		o Less paper, less printing, lower cost
Assignments & Tests	o In-class or on computer o Dedicated time o Restricted amount of time o Standard test o Usually delayed feedback o Fixed-length tests	o Any location o 24/7 Instantaneous o Any amount of time possible o Individualized tests o Instant feedback possible o Flexible-length/number of questions
Presentations, Exams & Assignments	o Theoretical and text based o Observe and monitoring in lab o Class-based presentations o Usually use of one language o Mostly individualized, component based group work o Paper-based assignment delivery o Hand-delivery of assignments at a particular place and time o Instructor's time used to deliver lectures	o Practical oriented exams direct on site, hands on based o Observe in the field and monitoring from remote location o 1-to-1 presentations with much richer communication o Automatic translation for delivery of o instructions in many languages (possible) o Simultaneous collaborative group work o Electronic-based assignment delivery o E-delivery of assignments at any place and time o Instructor's time used to offer individualized instructions and help

ADVANTAGES OF M-LEARNING

➢ **Convenience and flexibility**: mobile learning can be accessed anywhere, at any time: at the exact moment learning is required.

➢ **Relevance**: mobile learning enables training to be 'situated rather than simulated' and so it makes learning possible at the point of need.

➢ **Learner control**: the always-available nature of mobile learning empowers learners to take the initiative and direct their own learning activities.

➢ **Good use of 'dead time'**: mobile learning can happen during 'dead time', while travelling or waiting for a meeting to start.

➢ **Fits many different learning styles**: reading (text and graphics), video, animation, working through decision trees, listening to podcasts, contributing to discussions (forums or SMS), researching on the internet, choosing the correct answer (text or photograph), rating skills on a diagnostic are all means for offering learning on mobile devices.

➢ **Improves social learning** (i.e. communicating with peers and experts): SMS texting reminders, knowledge sharing forums, 'ask a question' forms and the use of telephony are all means to enable interaction between peers and tutors using mobile devices.

➢ **Encourages reflection**: the voice recorder on many mobile devices enables effortless and instantaneous recording of thoughts and opinions.

➢ **Easy evidence collection**: the portability of mobile devices makes them readily available for collecting portfolio evidence via audio, still or video camera.

- **Supported decision making**: mobile devices offer timely access to information, which enables the quick double-checking of a decision, and so better professional judgements.
- **Speedier remediation**: mobile learning enables forgotten or mistakenly remembered information to be speedily accessed and redressed.
- **Improved learner confidence**: A short nugget of learning offered on mobile devices, accessed prior to meetings or beginning tasks, improves learners' confidence in their skills.
- **Easily digestible learning**: the small screen minimizes the amount of information that can be offered to a learner at any given time, and so avoids cognitive overload.
- **Heightened engagement**: quick-fire knowledge or mobile assessments/quizzes, in between other kinds of training activities, keeps learning fresh and at the forefront of learners' minds, making success more likely.
- **Better planning for face-to-face sessions**: quick pre-assessments via mobile devices, prior to face-to-face sessions, enable trainers to determine learners' level of knowledge and plan their sessions accordingly.
- **Great for induction**: induction on mobile devices enables learning to be contextualized to the exact spot in a workplace it makes reference to.
- **Elimination of technological barriers**: the use of a learner's own mobile device means they are already familiar with the technology, eliminating technological barriers to accessing learning.
- **Designed once; delivered across multiple platforms**: mobile learning developed using a mobile authoring tool allows for a single design to be delivered across platforms to many different devices.
- **Easily track able via Wi-Fi**: mobile learning can be designed with an offline capability that enables tracking data to be saved if connectivity is lost, and then synchronized when a wireless connection is available again.
- **Cost-effective build**: mobile learning is cheaper than booking the resources required for face-to-face training or supplying laptops and other computing devices for e-learning. And it can be easily pushed out to learners' personal devices.
- **A means to recoup money**: upload two versions of mobile learning apps to app stores – one that requires a password for those who should have free access to the learning and another paid-for version to recoup costs.
- **Direct interaction with learning**: with most mobile devices the use of touch screens and other more direct input devices removes a layer of interactivity, meaning the learner literally is interacting with the learning.
- **Big data tracking**: with the integrated connection of mobiles devices to the web, it opens up the possibility of tracking everything the user does, how they use the training, what questions they got right and even their behaviors.
- **Context sensitive learning**: with GPS and the use of QR codes learning can become specific to a location or a real life QR code marker. But it's not just location; it could be from your login to the LMS, your device setting or even your contacts list.
- **The power of personalization**: by getting the user to do the training on their own personal device they are more likely to engage with the learning. They are also more likely to do the training in their own time, rather than at work.
- **Portable**: Mobile devices are small and lightweight, and can be easily carried by anyone. Inside, outside, to the library, anywhere.
- **Low Cost**: As compared to PCs, mobile devices are less expensive. (Note: PCs can usually accomplish many more tasks, such as spreadsheets, that are difficult to perform on a mobile device.)
- **Energy Efficient**: Mobile devices require less power to run than PCs.
- **Connected**: Most mobile devices come with Bluetooth or Wi-Fi as part of their standard configuration.

- **Rugged**: All mobile devices come with a solid state disk drive, rather than moving disk drive, and can handle accidental drops and misuse.
- **Personal**: No other technology creates such a unique, 1-to-1 feeling with the user than a mobile device. As a result, many teachers have seen greater student engagement with mobile devices for learning.
- **Delightful**: You can touch the screen; manipulate objects, pinch and zoom. You can hold a device in all different directions and even shake it. You can use it on a desk, play with it on the floor, in bed, on the couch or in the car.
- **Special Needs**: Apps can handle special needs in a variety of manners: language, audio, video, colors.
- **Increased mobility:** Learning is not restricted to fixed locations any more. Mobile devices allow learners to access learning content and learning interactions anywhere, such as factories, museums, hospitals, shopping malls, cafes and outdoor areas.
- **Time-saving**: People can now study when they are commuting and traveling.
- **Environmental-friendly**: It is amazing to find out how much information a mobile device can carry despite its light weight. Less printing is required.
- **Interactive**: Mobile technology enables students to closely link with their peers, teachers, distant partners, and even interest groups worldwide.
- **Able to learn at their own pace**: so for example if the student had difficulties in reading, with the aid of e-learning the student is able to participate with the discussion and learning activities at their own speed. This can also be said for those students who are fast learners, who do not wish to sit through basic levels of learning, e-learning allows the student to bypass certain levels whenever they need to.
- **Working in group:** Electronic messaging allows groups of students from small to big numbers to participate and work together. This allows shared conversations within the group that can be thoughtful and not rushed.
- **Outdoors notes:** The devices are handy to take notes on while conducting classes outdoors or even on a field trip, the aid of m-learning allows more functionality which can be derived in forms of either typed or voice recording. This is also very functional for students, as books are far heavier to carry around while taking part in an activity.
- **Compact size notes**: PDA's can be used for holding several notes (e-books) which are far lighter than carrying text books from class to class.
- **Up to date:** Easy to update and edit the learning material at any time from during, to the end of the class, also learning material is mostly colorful and more stimulating which makes the student want to go back/preview and practice more and more.

On-line training: it can be provided for learner teachers using e-learning or m-learning, reducing the costs for learning material, i.e. books etc. This will also save money for travel expenses to the training location, and booking a location for the test to take place in.

CHALLENGES
- Technical challenges
- Connectivity and battery life
- Screen size and key size
- Meeting required bandwidth for nonstop/fast streaming
- Number of file/asset formats supported by a specific device
- Content security or copyright issue from authoring group
- Multiple standards, multiple screen sizes, multiple operating systems
- Reworking existing E-Learning materials for mobile platforms

➢ Limited memory
➢ Risk of sudden hanging

SOCIAL AND EDUCATIONAL CHALLENGES
➢ Accessibility and cost barriers for end users
➢ How to assess learning outside the classroom
➢ How to support learning across many contexts
➢ Content's security or pirating issues
➢ Frequent changes in device models/technologies/functionality etc.
➢ Developing an appropriate theory of learning for the mobile age
➢ Conceptual differences between E- and M-learning
➢ Design of technology to support a lifetime of learning
➢ Tracking of results and proper use of this information
➢ No restriction on learning timetable
➢ Personal and private information and content
➢ No demographic boundary
➢ Disruption of students' personal and academic lives
➢ Access to and use of the technology in developing countries
➢ Risk of distraction

BESIDES THESE CHALLENGES, SOME ARE-
- The biggest challenge in mobile learning is the limited viewing space available. This restricts the inclusion of exhaustive text or documents. Also, the viewing space changes for every learner, as every one of them may not carry the same make or model of the mobile device.
- Another major concern is the lack of a common development platform which renders content across all mobile devices; be it Android, Blackberry or iPhone. Also, mobile devices have lesser processing capabilities than desktops or laptops. Therefore, heavy video files or media rich simulations might not render properly or be compatible to the screen size of the device.
- The biggest measure for the success of any learning course is to garner if it was able to capture the attention of the learner and retain it. For mobile devices, this is a difficult task. The primary use of a mobile device is that it enables the user to make or receive calls as well as send or receive text messages. This can be seen as a deterrent to achievement of the overall learning objectives, especially when distractions like this cannot be avoided.
- Any change in the multimedia being used for the learning, may mean that the content needs to be updated regularly. This can be a timely and expensive job.
- A minimum of a broadband connection would be needed to be able to fully take advantage of the multimedia and graphics available. This can also relate to the fact that some users may not have an internet connection at all.
- There is a lack of one-to-one tuition which is there in the classroom,
- Teacher As well as students needing to have access to a computer, they also need to have knowledge of the computer environment.
- There may also be extra costs related to upkeep of the hardware and software and a lot of reliance will be put on the computer to work properly, be fast enough for the software/multimedia, and have the correct software in the first place.
- Any package created for the use of e-learning, needs to have a vast amount of investigation into its' contents to ensure that it is suitable and will teach the correct information. Without these investigation/checks, then the students' won't be getting the most out of the package and important information may be missed.

- Students will be experiencing less face to face discussion with each other and teachers; this could lead to under-developed social skills.

SUGGESTION FOR IMPROVEMENT

So, while some of these challenges cannot be overcome in a day, designers can work around them. Here are some ways how –

o Mobile learning content needs to be concise and 'bite-sized'.

o When designing courses, codes should be written so that the content can automatically adjust as per the dimension of the learners' mobile device.

o In a bid to make mobile courses more interesting and appealing for learners, images or graphs can be used to convey as much as words would.

o Audio can also be extensively used to support text. To lessen text, only an introduction or gist can be presented through words while the rest can be presented through audio, to which the learner can listen to and learn.

o Simple animations (like external SWFs) or Page change animations can also cut through the visual monotony in a course and increase its visual appeal for the learner – even within the constricted space.

o Most mobile devices provide access to the Internet. This provides an opportunity to include streaming media in mobile courses, instead of embedded audio or video files which are bound to make the course heavy. Live or recorded sessions can be made part of a course, using streaming technology, and can liven up a mobile course to make it more interesting for the learner.

CONCLUSION:

Before M-learning, E-learning gave many advantages for learners while they were living faraway from school. In this study we try to explain the basic definitions of M-learning and E-learning and try to find answers for is M-learning derived from E-learning and if it is derived, does M-learning support E-learning, or is M-learning in opposition to E-learning? Is M-learning supporting E-learning, or are they in opposition? Mobile Learning has growing visibility and significance, and it affects the traditional methods of teaching and learning. M-learning technologies eliminate geographic boundaries and provide a collaborative learning environment between foreign groups. Furthermore, advances in handheld devices have facilitated the use of multimedia in mobile applications, which allows mobile learners to have access to a wide variety of richly diversified learning resources. Advantages and Disadvantages of M-Learning has many advantages. The main advantage arising from mobile learning characteristics is that the study can be done by anyone, in any place, at any time when the user willing to learn. M-learning has a focus on sharing information. All learners, through the interactive system, can interact with each other and they can share knowledge and experience anytime and at any place.

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