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[**MOBILE LEARNING-A lesson down a phone line...**]

In the recent times, there is an exponential increase in the use of mobile devices; especially their use in education and training. The technology has literally brought learning to your finger tips. This document discusses this new and emerging era of Mobile Learning. Further, it delves deeper into the finer aspects of MLearning Design, elaborating on three core areas - usability, technicality, and functionality, which could come in handy while considering the variety of devices available today.

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Mobile Learning – It's here!

More and more people across the Globe are bringing mobile devices into their everyday lives, connecting them to the global network in its myriad forms. This network with its nodes; the small devices we all carry around in our pockets, has reached a critical mass. A veritable third of humanity now carries a mobile communication device with some amount of computing power and sophisticated input and output features – that's over four billion people! By the end of 2012, it is predicted that these smaller screens would outsell desktops and notebooks. **As we step into the New Year, technology would have a profound effect on Education.**

Organizations are waking up to the fact that these Global networks are the marketplace for almost everything... and are already adding immense value to the products and services portfolio that they offer. One area that could be hugely leveraged is **Learning and Performance**. Digital Convergence has really blossomed, and mobile learning would be one area where the future of the collaborative workplace lies. The younger generation would enter the workplace, which would be perpetually connected, communicative, transparent, engaging, giving them the best possible learning experience.

As the information available to us increases, the general pace of our digital lifestyles accelerates, the ability to navigate, access, validate, learn, and share information would be the KEY skill in an increasingly complex and information dense environment. Education through mobile devices, therefore, could be a transformative force for good. A radical change is expected in the way we learn... **Mobile Learning is here, now, and it is for real... in the years to come.** If organizations want their trainings to be effective and engaging, and want these trainings to generate larger revenues, their **Time for Adoption is now!!**



Defining the Challenge:

Mobile Learning would never replace a teacher, and the classrooms; however, considering the number of wide-spread audience, it is one of the precious few alternatives. We can define Mobile Learning in two different ways:

- A medium to meet the learning needs
- A content delivery platform

Although, these two ways are interlinked, it is important that we look at them separately, to understand how the mobile technology could actually benefit learning.

Let's look at the five elements (from Dr. Conrad Gottfredson) of learning needs:

- Learning for the first time
- Wanting to learn more
- Trying to remember
- Things change quickly
- Something goes wrong

If we look at these learning needs from Mobile Learning point of view, it fits the last three elements the best. In theory; however, we could use these elements for our needs.

Trying to remember– Mobile devices could work very well as learning aids. The ability of the device to search and access content helps in remembering, making it an excellent learning aid. Few years ago, such quick access to information was not possible, thus mobile technology fits the niche for such learning situations perfectly.

Things change quickly– The modern workplace is changing very quickly. And, if employees want to be successful, they have to keep their knowledge and skills in line with that change. This requires learning that is seamless and continuous. ELearning, WBT's play their role, but these learning aids are bound to the desk, while the change in the learning need now is not confined to the desktop (or laptop). This means, any content associated with such change has to be made available through mobile devices, regardless of the learner's location and time of day.

Something goes wrong– This perhaps, is the most demanding of all learning needs. If something goes wrong, learners are under pressure to come up with answers, to fix things and restore



normalcy quickly. Learning at that time is about accessing the information about the problem, finding the solution to it; and troubleshoot while implementing the solution. Mobile Learning once again fits such situations perfectly, by allowing learners to access information through smaller devices carried on the person, irrespective of location and time.

In other words, Mobile Learning reduces the limitation of learning location with the mobility of portable devices. Mobile Learning; therefore, is the acquisition or modification of any knowledge and skill using mobile technology, **anywhere, anytime....**

Looking into the Future

It is very clear what the future holds for us in terms of Learning Technologies; it is plausible that most of the learning content would be mobile. However, we are not quite there, not just yet. In present time, it is important that we build the mobile learning into the blend, and not replace the existing ones with them. If you step back in time, and look at the trainings, you would realize that the advent of a new delivery mechanism hasn't fundamentally altered the existing delivery and deployment models.

What happens is that the new delivery medium gets co-opted and is seamlessly integrated with the existing delivery mechanism. We cannot, therefore, expect mobile learning technologies to ever replace instructor led training, or computer based trainings completely. Over time, as the technology and portability matures, **Mobile Learning would become a substantial part of the training blend.**



The Need

Considering our present training delivery mechanism, and the type of training request we get, it is only appropriate that we adopt Mobile Learning only for specific learning situations. How to determine if Mobile Learning is appropriate for a specific learning need and audience, is a question that we need to ask ourselves.

So, what are the key considerations that drive this decision to go mobile?

- **Are we in a position to use mobile capabilities to enhance learning?**

The key phrase here is 'to enhance learning'. Check if the capabilities offered by mobile technology could actually enhance the learning experience for your audience. If you are not convinced, and your answer at this point is 'no', you must consider other options.

- **Which mobile capabilities would interest our audience?**

Having determined that you could use mobile capabilities to enhance learning, the next logical step is to ask which of those capabilities would actually interest learners. Would it be the ability to access content regardless of location, the ability to use GPS, or to use a specific application? It's important that the learners/would-be learners have an interest in that capability, or any learning associated with the use of that capability just won't happen.

- **Do we have the bandwidth; seamless connectivity that would better enable learning interaction?**

Porting interactive content on mobile devices would need ubiquitous connectivity, so that it gives the desired effect, would enhance the learning interactions. Engagement amongst peers would be meaningful in such cases. If our answer to this question is 'yes', then Mobile Learning has great potential in meeting our training needs.

- **What services would help learners to be more productive?**

Mobile devices, with their built-in applications, allow the learners to access a variety of services. We, therefore, have to be careful when we determine, which amongst the many options is most suitable for learners, so that it makes a better learning experience for them. We must make a list of such services, determine how they could be used by learners; check if they would use it to access an LMS or other Intranet (or Internet) site, or if they want to use it to call their mentors? or would they use the mobile device to post blogs or comment in forums?

- **The content we already have, are we able to port it easily across these mobile devices?**

Moot point – Having existing learning materials, which could lend themselves to conversion into a mobile format, may give us a distinct advantage in adopting Mobile Learning. All you need to do is get started with a simple conversion. When looking for such content, remember to look beyond your regular training department; learning and development teams, and consult with acknowledged subject matter experts, look up the established users and leaders. It is important to understand and realize that the content you need doesn't solely exist in learning and training silos.

- **What kind of channel would be used for distribution? Do we need to track actions or activities?**

At this point, we have perhaps decided what mobile technology would be an appropriate distribution channel, have identified the services, capabilities and content that would be required for learning. The next big question is, how do we track the learners, how would the learning activities or content be administered? Time... to think about selecting the most suited and effective knowledge management systems. And, determine how it would track these mobile based activities.

- **Do you want your Mobile Learning to be integrated with other corporate systems?**

As with determining tracking of learning activities, one also needs to consider the need for integration or data exchange with established corporate management information systems, or human resource information systems. This would allow you to deploy your educational content across a widespread audience. However, the cost for such integration varies widely, and you need to sort out integration issues before piloting mobile learning.

- **Do we have the user support? Who would handle customer queries?**

When we think of implementing a new education delivery mechanism; especially across a widespread audience, we need to decide who would handle the user support, and how we would deal with issues that emerge while piloting our Mobile Learning initiative. Be advised that there would be a definite need for support, as with any technology initiative, users would have questions, and they need to be answered.

The Design Considerations

There really is very little difference between designing Mobile Learning from other forms of learning. The guidelines that apply for bringing in the interactivity in your content, for effective learning design, are not much different, except for the **change in context**. There are five major elements; pointers, which we could consider when we decide to implement some form of Mobile Learning, even though it is the smallest component in a blended solution. All these points are self-evident...

Keep it short and simple:

This is a rule, which applies to all types of learning content, also applies for content for smaller screens. This rule is more significant in light of the nature of mobile devices, and the situations in which they would be used. There is a possibility of frequent interruptions, and the attention span of the learner to the device, would be shorter.

In case of e-Learning module, there is a possibility of complex navigation and interaction, which could be best avoided if you want to port similar content to a mobile device. Mobile devices greatly differ in screen size and input types from a conventional personal computers. It is, therefore, ideal that you do not design any mobile learning intervention, which runs beyond five to ten minutes.

Use low information density:



In case you want to convert your existing e-learning modules to Mobile Learning, you have to be careful about the duration (or length) of your content. It is important that you do not duplicate the length and information density of e-learning modules. The technology could possibly deliver the content, but considering the situations and devices with which the content is accessed, use of content density is not practical. The content that is most suited for Mobile Learning must have low information density.

Create multimedia easy content:

As we do in case of e-learning, careful use of media elements is absolutely necessary in Mobile Learning. When you are working on the design, you have to be careful in identifying situations where you would use media, splash animations, and graphics. Do NOT use such

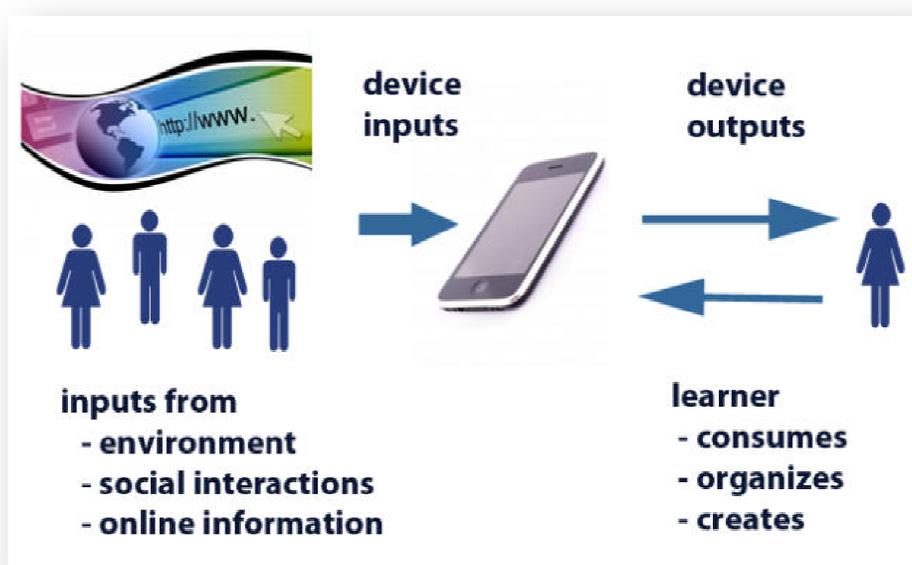
techniques when it is purely for aesthetics and unnecessary interaction. Moreover, most of the times, there is a cost element associated with developing and accessing such content, as there could be cost involved for downloads and bandwidth. However, due consideration also needs to be given to the fact that some mobile devices like the iPod could be used offline. You could easily connect them to a computer system, and files copied onto them, avoiding download and bandwidth costs. Increasing number of devices would have this feature going forward, and eventually perhaps all would support some form of tethering.

Include Elements of Collaboration:

Mobile devices have unparalleled adoption levels. This is mainly because of their ability to provide synchronous communication, making them the most **In Demand** social tool. When they are used as part of a blended learning, they could be used to facilitate interaction between humans, other hardware devices, software applications... almost with anything, anytime, anywhere!**If done properly, there is a tremendous learning value in these human interactions.**

Provide Apps, and not just content:

Mobile devices **do render content**; however, they are immensely useful tools. With their increasing abilities in terms of computational power, ability to display, combined with their **personal and intimate nature**, opens up a world of possibilities. The newer ability to write applications for specific hardware also provides lots of possibilities. Geo-location based tools, social networking tools, access to search and information databases, customized calculators, newsreaders, games, and simulations – the options are unlimited. If we are considering Mobile Learning, this is one aspect of the technology that must be taken into account.



The Framework

Consider the framework for the evaluation. It would be useful when considering the variety of devices available in the market and the billions of users; it could create a simple and effective feature/price comparison.

Usability

Usability perspective relates to the ease of understanding, remembering, and learning to use the device and the tools associated with it. Devices should be easy to carry and have an easy to use interface for their functions.

User Interface		<ol style="list-style-type: none">1. Appropriate display layout2. Simple to understand and easy to use - menus, toolbars, buttons, status messages, etc.3. Multilingual support4. Ability to personalize/customize device5. Disabled access friendliness
Presentation & Media		<ol style="list-style-type: none">1. Ease of reading, writing, or providing other input to the device2. Varied media support (text, graphics, images, audio, video)3. Fidelity of multimedia reproduction (consider reduction in render quality of media due to device limitations)
Navigation		<ol style="list-style-type: none">1. Simple information organization and structure<ol style="list-style-type: none">a. File systemb. Toolsc. Shortcuts2. Home and Help links on every screen3. Search capabilities4. Consistency in user interface and interactions
Physical Dimensions		<ol style="list-style-type: none">1. Size2. Weight3. Design attributes

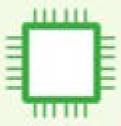
Functionality

Functional perspective relates to the number of features, functions, and tools of the devices. Both synchronous and asynchronous modes of communication should be supported. The ability to access, retrieve, process, and display varied types of information is important.

Communication		<ol style="list-style-type: none">1. Phone2. E-mail3. Web access4. Asynchronous text messaging	<ol style="list-style-type: none">5. Synchronous instant messaging6. Multimedia messaging7. TV8. Internet data download/upload access
Information & Knowledge Tools		<ol style="list-style-type: none">1. Recorders2. Office applications3. Calculator4. Drawing tools	<ol style="list-style-type: none">5. Media Player and Gallery6. Voice to Text and Text to Voice features7. File sharing8. Dictionaries and Translators
Organization & Mgmt Tools		<ol style="list-style-type: none">1. Calendars and clocks2. Database access tools3. Agenda tools, organizers, alerts, reminders, etc.	
Recreation & Entertainment Options		<ol style="list-style-type: none">1. Accessing varied media including music and film2. Playing games3. Using multimedia tools	

Technicality

Technical perspective relates to the performance, compatibility, connectivity, security, and reliability aspects of the mobile device. It's computational power, memory capacity, and ability to view and run a variety of applications and file formats is important. Also important is its support for variety of protocols, platforms, and Operating Systems. Bandwidth and connectivity limitations must also be examined. As we move to Cloud Computing, security could be a growing concern.

Performance		<ol style="list-style-type: none">1. Processing power2. RAM and speed of RAM3. Expansion storage options and limits4. Communication technologies (Telephony, GPRS, IrDA, WiFi, 3G, HSPDA, Bluetooth, etc...)
Sensory Systems	 RDA  GPS  WiFi	<ol style="list-style-type: none">1. Display2. Keyboard and Buttons3. Cameras, Microphones, Recorders4. GPS navigation5. Special purpose - RFID readers, bar code scanners, augmented reality scanners, smart card functionality, cashless transaction technology
Compatibility		<ol style="list-style-type: none">1. Open Source vs. Closed Source - Hardware, Operating System and Applications (...vs. iPhone, WinMo, Android, Symbian, etc.)2. Specific focus on Browser Applications3. Multimedia format support
Security		<ol style="list-style-type: none">1. Security Certificates2. Encryption and Cryptography support3. Antivirus, anti spam, online protection4. Password/passkey functionality5. Screen/Keypad locking feature6. Biometric identification features
Reliability		<ol style="list-style-type: none">1. Battery life2. Hardware and software crash handling and recovery3. Online updates to firmware, OS, applications4. Technical support and documentations

Conclusions

Deploying interactive content on mobile devices has some huge advantages. However, it has a downside too...

Advantages:

1. Ability to access educational content, including audio and video, from anywhere, anytime!
2. Ability to collaborate; with instructors, industry experts, making the learning more effective.
3. Omnipresence of cell phones and mobile devices.
4. Their affordability, portability, and multimedia friendly features make them an excellent learning aid.
5. Ability to put training where the job is, or where the audience is.

Disadvantages:

1. Offers a fragmented learning experience
2. While accessing learning content or activities on the move, one encounters distractions
3. Despite the collaboration, learners may not be able to evaluate learning experience
4. Issues with the physical size of the screen
5. Absence of common HW/SW platform



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