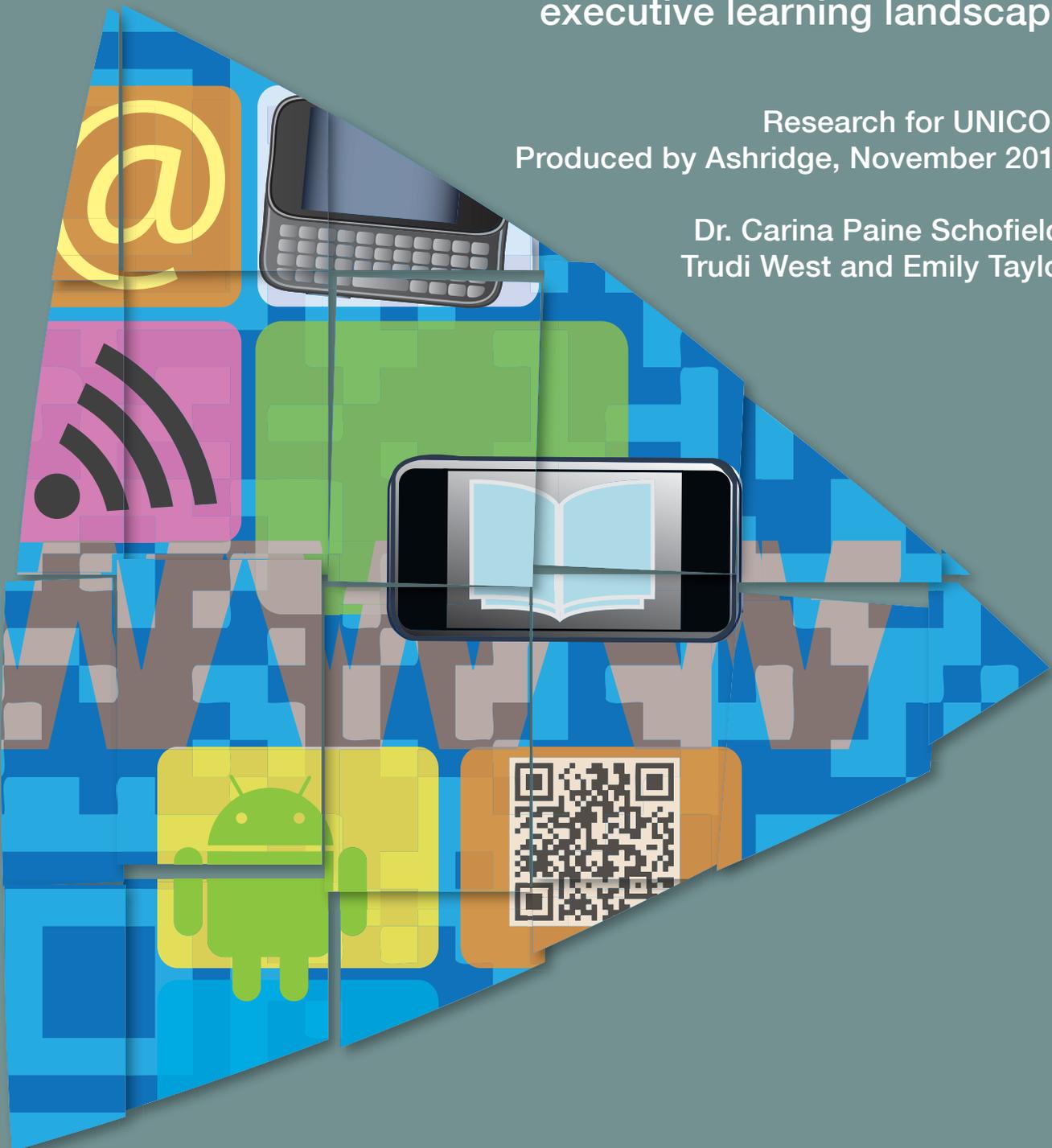


GOING MOBILE IN EXECUTIVE EDUCATION

How mobile technologies are changing the
executive learning landscape

Research for UNICON
Produced by Ashridge, November 2011

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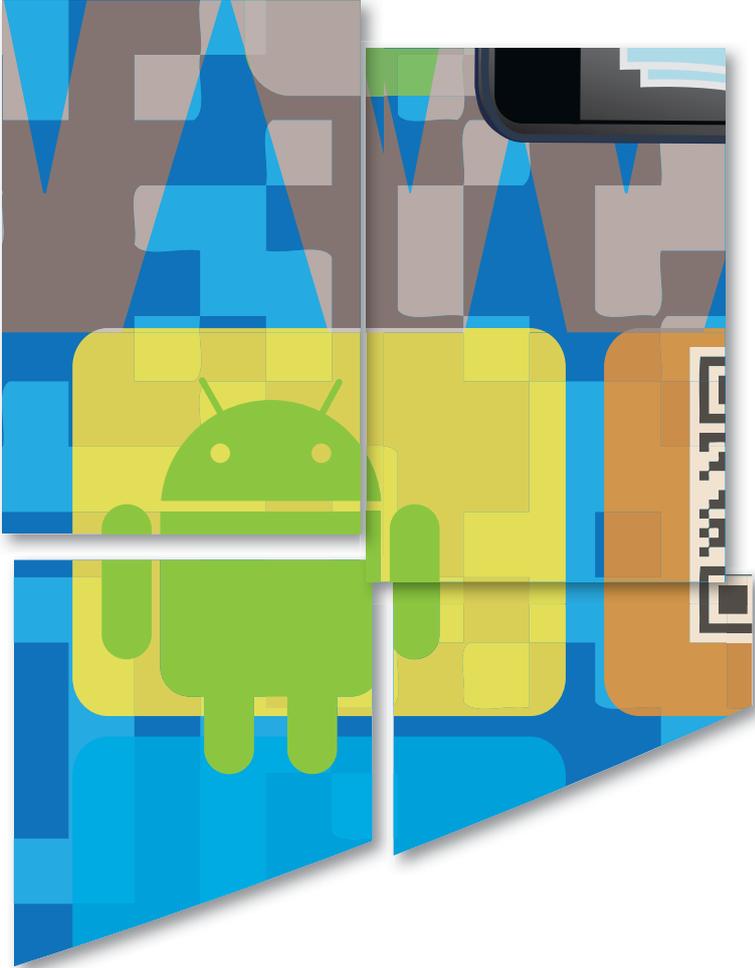
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EXECUTIVE SUMMARY

Introduction

- Executive education has evolved considerably over the last 50 years and the industry is now faced with a series of significant trends that offer the potential to create dramatic new opportunities for effective learning.
- The complexity of the business landscape has increased demands for continuous learning, with executives demanding access to learning opportunities any time, any place and anywhere. Technology offers the opportunity to empower the learner and overcome barriers to learning. Furthermore, it empowers executive education providers to serve up learning in multiple formats to suit individual learning styles.
- Over the past five years advances in the sophistication of mobile technologies have catalysed the way in which mobile learning is being adopted and used in educational contexts and it has evolved into much more than 'e-learning with a phone'.

Research Details

This research project unites the theory and practice of mobile learning in order to address the following question:

“How are mobile technologies changing the executive learning landscape?”

To answer this question the project comprised two complementary parts:

1. Desk research to provide a comprehensive and useable summary of what mobile learning is; and to identify potential examples of mobile learning for the second part of the project;
2. Empirical work to identify and bring together innovative examples of mobile learning in education from around the globe.

Both parts of the project have been synthesised to produce this guide on mobile learning tailored towards executive education providers seeking to develop their expertise and practice in the field.

Mobile Learning Literature

The findings from the mobile learning literature review can be summarised as follows:

What is Mobile Learning?

- The definition of mobile learning is still evolving and so there are multiple definitions in existence. This report defines mobile learning as:

“handheld technologies, together with wireless and mobile phone networks, to facilitate, support, enhance and extend the reach of teaching and learning”¹.

- Early definitions of mobile learning only focused on technology, or on the mobility of the technology. This report is concerned with the perspectives of mobile learning as augmenting formal education, and as learner centred.
- There are also discussions around what mobile technologies include – what is a mobile device is and what it is not? This report focuses on personal, portable technologies – these are what most people think of as mobile devices (e.g. mobile phones, Personal Digital Assistants (PDAs) etc.). They afford communication and information, so while devices themselves may be personal, they allow for information to be easily shared.
- There are many features of mobile devices that are changing learning.

Mobile learning is “highly situated, personal, collaborative and long term; in other words, truly learner-centred learning”².

These include:

- **Portability** - the small size and weight of mobile devices means they can be carried everywhere and help learning occur at anywhere and anytime;
- **Connectivity** - providing learners with connections to other learning such as through other people, devices or networks;
- **Interactivity** – mobile devices are potential tools for enhancing a cooperative learning environment;
- **Context sensitivity** - mobile devices enable learning to take place which can make greater use of a person’s immediate context and surroundings;

¹ Generation Y are also known as the Millennial Generation, Millennials, Generation Next, Net Generation. Although there are no precise dates for when Generation Y starts and ends most definitions usually refer to those born after 1982 (i.e. Generation Y are aged under 30 years at the time of this report).

- **Lifelong** – mobile content consumption is continuous: there is no beginning, middle or end;
- **Individuality** – learning can be customised and based on previous learning experiences.

Why Mobile Learning?

The interest in mobile learning has come from a number of places:

- Advances in technology and high levels of mobile phone penetration have made mobile devices the ideal targets for mobile learning applications;
- As well as these advances in technology reshaping learning, the characteristics and behaviours of Generation Y¹, and the environment they have grown up in mean that Generation Y are driving changes in learning design for all generations;
- It is as important to have behavioural change as well as technological change: social norms are rapidly evolving and for most people the benefits of the mobile phone now outweigh its disadvantages – educators need to tap into the new behaviours and technologies rather than trying to change or resist them.
- Mobile learning offers many benefits for learning:
 - **‘Just enough’ learning** – highly applied, easily digestible learning for increasingly busy executives;
 - **‘Just-in-time’ learning** – convenient, flexible and relevant learning at the exact moment learning is required;
 - **‘Just-for-me’ learning** – learner-driven learning in a suitable format;
 - **Technology** – mobile learning can be cost effective and using a learner’s own mobile device eliminates technological barriers to accessing learning.

Why is Mobile Learning Important for Executive Education?

“Whether we like it or not, whether we are ready for it or not, mobile learning represents the next step in a long tradition of technology-mediated learning. It will feature new strategies, practices, tools, applications, and resources to realize the promise of ubiquitous, pervasive, personal, and connected learning. It responds to the on-demand learning interests of connected citizens in an information-centric world. It also connects formal educational experience....with informal, situated learning experience”³

Although executive education has evolved considerably over the last 50 years, the industry is now faced with a series of significant trends that offer the potential to create dramatic new opportunities for effective learning. Reasons for embracing mobile learning in executive education include the following:

- Participants coming to business schools have their **own mobile devices** and there is a need to provide more flexible opportunities for study that build in some choice in how participants will use technology;
- Participants have **increased expectations** and are depending on technology to help them fit learning into their complex, demanding lives;
- An increasing number of **employers and organisations** are already making use of mobile learning;
- Mobile devices offer an effective way of **increasing participation and engagement**;
- Mobile devices can support **pre and post-programme learning**;
- Busy participants can use their mobile devices to **extend their opportunities to learn**.

How Mobile Devices can be used for Learning

“If training tends to resemble a three course meal, mobile enables constant snacking..... mobile learning allows the learner to create his own food, rather than rely on an L&D functions menu.”¹⁴

- Mobile devices can be used for a range of learning activities, relating different types of learning. For example:



Figure 1: How mobile devices can be used for learning

Organisation/education provider	Example
	Abilene Christian University www.acu.edu/connected Podcasts as scaffolding Blogs to bridge the real world and virtual world Capturing feedback whilst it is still fresh
	The Open University www.open.ac.uk Embedding library resources within programmes Bringing the real world into the classroom
	Ashridge Business School www.ashridge.org.uk Embedding library resources within programmes Bringing the real world into the classroom
	Harvard Business School www.hbs.edu App to access learning on the go
	Seton Hill University www.setonhill.edu Bringing the real world into the classroom
	IMD www.imd.org Bringing the real world into the classroom
	EPIC www.epic.co.uk Cementing knowledge through simulations
	Skill Pill www.skill-pill.com Cementing knowledge through simulations
	University of Cape Town www.uct.ac.za Marketing in context – the mobile treasure hunt

Figure 2: List of case examples provided in report

Case Examples

- What is clear from the desk research and interviews is that the educational potential of mobile devices in the executive education sector remains largely untapped, although this is not the case in the education sector as a whole. Few executive education providers have yet harnessed the true potential of mobile devices for learning and yet it is a device that the majority of senior executives bring with them to the classroom.
- The key case examples included in this report are from a series of semi structured interviews which were conducted with contacts identified during the desk research. They are in no way exhaustive; they represent examples of mobile learning which can be considered for use in executive education.
- Each case example identifies how mobile technologies have been harnessed to support learning, what executive education can learn from the example and provides the next steps and critical success factors.
- Links to video podcasts of the example are provided where available.

Some of the key trends emerging from the case examples are summarised below:

- How mobile learning has been **implemented** varies widely. For example, some institutions have taken an organic approach where resources have been developed to be accessed by mobiles as a way to extend the learning offer already provided. Whereas other institutions have taken a visionary approach to shape student and staff learning;
- **Uses:** Several of the examples utilised the opportunity that mobile devices gave them to have people together in classrooms to extend collaborative learning; for others mobile technology provided opportunities for innovation which engage participants in and out of the classroom
- **Learning:** Mobile devices have allowed individuals to connect to executive education at a time that suits them and in a way that can support current business challenges. Less dependent on the classroom, they can connect in times of reflection. Also, mobile devices are currently being used in a range of different types of learning activities for which there is potential in executive education (for example, behaviourist, constructivist and situated, collaborative, informal and in support).
- **Evaluation:** Many institutions have not evaluated learning beyond initial and ongoing reactions of students. A few hubs of expertise have measured learning, behaviour and results. These institutions have taken an action learning approach that regularly evaluates actions, experience and outcomes in order to improve performance.
- **Technology:** The current focus amongst executive education providers is predominantly technology driven rather than user driven.

Moving Forwards with Mobile Learning

Challenges of mobile learning identified in the desk research and during the interviews are listed below and are addressed in order to provide advice on how to move mobile learning forwards in executive education.

- It is important to consider **how to implement** mobile technology into the learning space. The chances are it is already there in some form already. Therefore, it makes sense to find out in which ways, and to build on this.
- **Getting buy in** from participants, faculty and staff when there may be resistance to change. Learning events for faculty and staff can highlight the benefits of using mobile technology in the learning offer. Successful mobile learning experiments can be celebrated. And adopting a 'freedom to fail' approach allows developers to be more creative and

test things out.

- **Choosing the technology** may seem complex as there are several things to consider. There is no single device any better than another – it is dependent on choice and need. There are also further considerations around the ownership of technology and privacy. Few answers were provided here but the challenges are worth identifying for further policy considerations.
- **Costs** can vary greatly depending on the chosen approach: initial capital expenditure; on-going costs of infrastructure and technical support; costs of designing and implementing new concepts etc. An investigation of a cost model for infrastructure, technology and services that includes the cost of providing IP addresses and bandwidth should be carried out.
- It is important to **know your learner**, to gather background information about student preferences, habits and attitudes towards their phone usage as well as learning. Measures need to be established that can reliably differentiate learners and their preferences.
- **Pedagogy** should be placed first as part of any wider strategy, with technology being used as a supporting factor. However, it could take some time for the industry to settle long enough to provide standards for a template making it difficult to lock onto one choice.
- It is important to think about the format and distribution of **content** which allows it to be accessible to mobile devices users. Content may well be created as well as consumed by users – how might this be managed?
- **Support** from management can inform the initial strategy design whilst support by a promoter of mobile learning can exploit and demonstrate mobile capabilities. Pedagogical support has also been needed for some educators. On a practical level, support services need to be available for the management of equipment and on-line services. Technical support is especially required if the institution is providing devices or installations: support needs to be on-going and must be provided to all.
- **Evaluation** of a mobile strategy can be taken beyond the reactions of participants to include measures of learning, behaviour and participants results to compare these to non-mobile conditions.

Key pieces of advice provided during interviews:

“Start slowly – but start”

“Be experimental – don’t call it an initiative”

“Be prepared for more work – not less”

“Don’t wait for the industry to settle – you’ll be waiting a long time”

“Be open to feedback – from participants, faculty and staff”

“Adopt a ‘freedom to fail’ approach”

Conclusions

- The implications of mobile learning are far-reaching, and its potential effect on all education, including executive education, profound.
- Executive education has a choice on whether to embrace the opportunities mobile learning devices offer or not.
- It is hoped that this report has demonstrated that there is much opportunity for extending mobile learning on executive education programmes and provided some practical examples on how executive education providers may develop their expertise and practice in this exciting field.

“A society which is mobile, which is full of channels for the distribution of a change occurring anywhere, must see to it that its members are educated to personal initiative and adaptability. Otherwise, they will be overwhelmed by the changes in which they are caught and whose significance or connections they do not perceive.” (1916)⁵

Please visit the project website to comment on this report, and to contribute your own example(s) of how mobile technologies are shaping learning: www.ashridge.org.uk/MobileResearch



INTRODUCTION

Background

Trends in executive education: Empowering the learner and the executive education provider

Executive education has evolved considerably over the last 50 years and the industry is now faced with a series of significant trends that offer the potential to create dramatic new opportunities for effective learning.

The complexity of the business landscape has increased demands for continuous learning, with executives demanding access to learning opportunities any time, any place and anywhere. The reliance upon 'just-in-case' learning which typically takes place in the classroom is now increasingly supported by 'just-in-time' learning as busy executives need access to instant knowledge on-demand and in the context of a current business challenge. In an age of information overload, learning must be relevant, timely and served up in manageable chunks⁶.

Technology offers the opportunity to empower the learner and overcome barriers to learning. Furthermore, it empowers executive education providers to serve up learning in multiple formats – audio, visual or text – to suit individual learning styles. Recognition of individual learning styles has led to a blurring of the distinction between formal and informal learning. The 70/20/10 principle of leadership development emphasises both the formal and informal aspects of learning and suggests that 70% of learning at senior levels is derived from experiential learning, 20% through reflective techniques such as coaching and 10% through more formal learning such as executive education development programmes. As the examples in this report show, technology can play a role in supporting both formal and informal approaches to learning.

The opportunity for mobile learning is clear; fulfil these needs and create a new future form of executive education.

STRUCTURE OF THE REPORT

In the report **introduction** the scene is set for the research. This is followed by the **methodological details** of the research and a summary of the **mobile learning literature**. Detailed case examples of **mobile learning in practice** are then introduced before the challenges of mobile learning are addressed in order to provide advice on how to **move mobile learning forwards** in executive education. Finally, the report concludes with some considerations for the future of mobile learning.

The role of mobile in empowering the learner and the executive education provider

Computer-supported mobile learning dates back to the 1980s⁸ but it is over the past five years that advances in the sophistication of mobile technologies have catalysed the way in which mobile learning is being adopted and used in educational contexts and it has evolved into more than ‘e-learning with a phone’.

There are opportunities (exemplified in this report) for technology companies to partner with education providers to help drive their mobile learning strategy, often around specific devices. In other examples, mobile is about educational establishments broadening access to resources through multiple channels and, in turn, multiple devices.

Whether mobile learning is user driven or technology driven is one of the many remaining challenges for executive education providers that need to be addressed in order for mobile learning to become a ubiquitous teaching and learning method within the executive education portfolio. The two need not be mutually exclusive but there are key decisions to be made around whether to empower the individual to use mobile devices already owned by them – in so doing blurring the distinction between working, learning and private time – or whether to empower all individuals equally through the provision of one type of device.

“How are mobile technologies changing the executive learning landscape?”

It is against this complex backdrop of opportunities and challenges that Ashridge Business School has approached this research and has set out to explore the impact that mobile technologies are having – and could have – in shaping the executive education learning landscape.

RESEARCH DETAILS

This was an internationally focused research project which took place between June and November 2011.

The project method comprised two complementary parts:

- 1. Desk research** to search and identify resources about mobile learning;
- 2** Empirical work to identify and bring together innovative **examples of mobile learning** in education from around the globe.

Desk Research

Desk research involved the search, identification, review and synthesis of relevant literature from a number of sources. These sources included academic and practitioner publications; university research centres; leading research organisations; and news stories. In addition, this process also involved a search of websites of existing executive education providers (as defined by the Financial Times Executive Education rankings 2011 and The Economist 2010 full time MBA taking) and other websites (e.g. YouTube).

The purpose of the desk research was twofold: to provide a comprehensive and useable summary of what mobile learning is; and to identify potential examples of mobile learning for the second part of the project.

Examples of Mobile Learning

Examples of mobile learning in use in education from around the globe were identified through a number of methods. A website for the project was created which invited visitors to provide examples of mobile learning. This site included an example of mobile learning in action at Ashridge Business School.

Project Website

[www.ashridge.org.uk/
MobileResearch](http://www.ashridge.org.uk/MobileResearch)

Please visit the project website to comment on this report, and to contribute your own example(s) of how mobile technologies are shaping learning.

An invitation with a link to the website was circulated to all UNICON members. In order to proactively identify potential participants' the website link was also put on relevant social networking sites (e.g. LinkedIn groupsⁱⁱ) and was sent out to personal contacts, as well as contacts identified during the desk research. The website included a link to a very short online survey. After respondents provided their contact details, seven open questions were designed to provide information about specific examples of innovative practice in mobile learning. As part of the survey respondents were also able to upload any relevant files (presentations/images/audio/video).

Online Survey Questions

Tell us how mobile technologies are shaping learning in your organisation

1. Please provide a brief description of your example of innovative practice in mobile learning
2. What prompted the decision to use mobile learning in this situation?
3. How is the mobile element integrated with other forms of learning?
4. What challenges have there been, and how have these been addressed/overcome?
5. What benefits have resulted?
6. What wider impact has this learning had? (e.g. other programmes adopting it, positive results in the workplace, improved student results)
7. Where next? (e.g. what is your next mobile learning project/initiative? Where do you see the field going in relation to executive education?).

Anyone wishing to take part in the project could do so in a number of ways:

- by completing the short online survey on the project website and/or;
- by submitting a case study in multi-media format (e.g. by uploading it to YouTube) and/or;
- by contacting the research team to arrange an interview.

Participants were challenged to come up with a creative way of presenting their case study. For example: in a multimedia format; short podcast or audio recording describing the case example; a video documentary showing the mobile learning in action; a series of interview extracts from learners describing the benefits and limitations of the mobile learning experience; and so on. Traditional written submissions were also accepted instead of or as well as an accompaniment to a virtual format.

ⁱⁱ LinkedIn groups included the following: Consortium for School Networking; e-learning UK; Handheld Learning Group; Leadership for Mobile Learning; Learning Without Frontiers; Mobile Learning Global Consortium; Mobile Learning into the future.

Revisions to the Research Project

As the project developed, silos of research and hubs of expertise in mobile learning research and practice were identified, with a limited amount of work being conducted in relation to executive education. Much of the research and practice is being conducted in schools and the higher education field. Therefore, the project was extended to include these (as well as businesses).

Responses to the online survey were less than expected (with seven detailed responses being submitted). It is unclear whether the poor response rate was simply due a lack of motivation or incentive or whether it indicated a lack of activity in this area, or instances of mobile being seen as a potential competitive edge in business education. Due to the low response rate to the survey, the examples of mobile learning identified during the desk research were explored further. The key case examples included in this report are from a series of semi-structured interviews which were conducted with these contacts.

Interviews

Semi-structured interviews were conducted with six organisations (and ten individuals). A series of questions were designed to gain information about mobile learning at general level focusing on:

- definitions of mobile learning;
- overall challenges and benefits of mobile learning;
- the future of mobile learning;
- lessons learnt/top tips.

The interviews then focused on specific examples of mobile learning, using the online survey questions.

This report includes eight case examples, drawing upon detailed examples from fourteen institutions and organisations globally. These examples are based on the desk research, the survey responses and the interviews. All participating individuals and organisations are listed in Appendix I.

Both parts of the project, the desk research and examples, have been synthesised to produce this guide on mobile learning tailored towards executive education providers seeking to develop their expertise and practice in the field.



MOBILE LEARNING LITERATURE

Definition of 'Mobile Learning'

“It is difficult to define learning so why define mobile learning?”⁹

The definition of mobile learning is still evolving and so there are multiple definitions. Commonly used definitions include the following:

“learning that happens across locations or that takes advantage of learning opportunities offered by portable technologies”¹⁰

“handheld technologies, together with wireless and mobile phone networks, to facilitate, support, enhance and extend the reach of teaching and learning”¹¹

This second definition from the Mobile Learning Network is the definition that we shall assume for the purposes of this report. Or, to put this more simply, mobile learning is learning that is:

“just-in-time, just enough and just-for-me”¹²

The characteristics of mobile learning found throughout the literature, and from our interviews emphasise the importance of words shown in this tag cloud:



What it is important to note is that, however it is defined, mobile learning is sufficiently mature and varied to have clarity about the significant issues¹³.

Perspectives of Mobile Learning

“We could get rid of all the e’s and the m’s and just call it learning”¹⁴

Early definitions of mobile learning only focused on technology, or on the mobility of the technology. Further perspectives of mobile learning have been identified :

1. **Techno-centric**
 - defines mobile learning as learning that takes place with the assistance of mobile devices
 - the emphasis is on the technology, and this definition dominated the early literature in this area.
2. **Relationship to e-learning**
 - mobile learning is viewed as an extension of e-learning or blended learning experiences with e-learning on mobile devices.
3. **Augmenting formal education**
 - see mobile learning as adding something to face-to-face teaching.
4. **Learner-centred**
 - mobile learning is viewed simply as learning, but it is the mobility of the user that is important, not the mobility of the technology.

In this report we are concerned with the perspectives of mobile learning as augmenting formal education, and as learner-centred.

What is a Mobile Device?

There are some discussions around what a mobile device is and what it is not. There are many different types of technology that can be classified as ‘mobile technology’ as they have the portable and movable features and also implicate a ‘personal’ as opposed to ‘shared’ context of use. Broadly speaking, mobile devices include portable devices such as mobile phones, smartphones, handheld computers, games consoles and personal media players. However, some definitions do not include laptop computers, or tablet computers (such as the iPad), and some do.

The range of mobile devices has been classified using two orthogonal dimensions of Personal versus Shared and Portable versus Static, as shown in Figure 3.

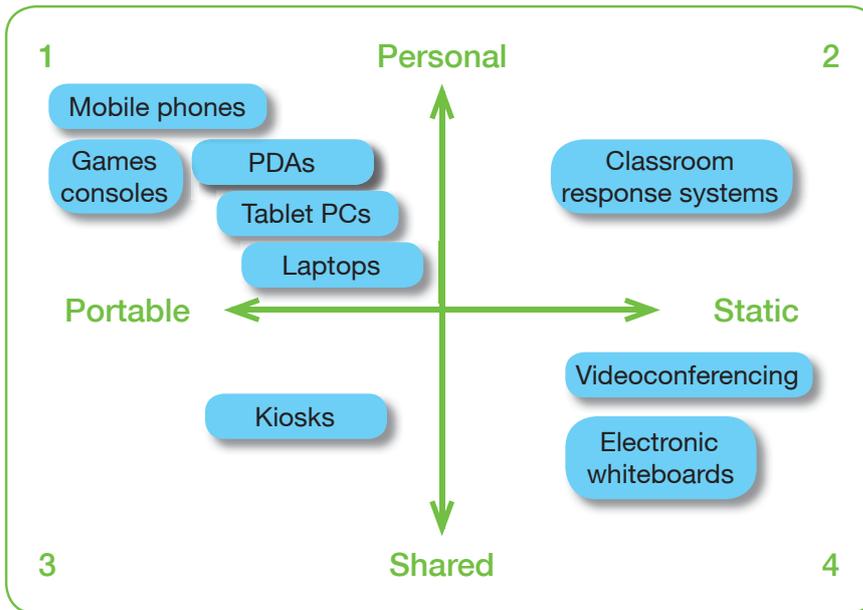


Figure 3: Classification of Mobile Technologies¹⁷

- **Type 1: Portable and Personal** – technologies in quadrant 1 include what most people think of as mobile devices (mobile phones, Personal Digital Assistants (PDAs) etc.). These afford communication and information, so while devices themselves may be personal, they allow for information to be easily shared.
- **Type 2: Static and Personal** – technologies in quadrant 2 are static (i.e. they can only be used in one location), but they still offer personal interactions with learning experiences because of their small size and allocation to one user (e.g. classroom response systems).
- **Type 3: Portable and Shared** – technologies in quadrant 3 can provide learning experiences to users on the move – the users are portable even though the devices themselves are not portable. These technologies are less personal as they are likely to be shared by multiple users (e.g. street kiosks, interactive museum displays).
- **Type 4: Static and Shared** – technologies in quadrant 4 include larger devices (which are therefore less portable) which allow more shareable interactions. These are not generally classified as ‘mobile technologies’¹⁸.

In this report we will primarily consider the personal portable technologies in quadrant 1, and shall focus on hand held devices, mainly mobile phones (of which almost all are ‘smart phones’ⁱⁱⁱ) as during the desk research and interviews these were identified as the device being most commonly used for mobile learning.

ⁱⁱⁱ A smartphone is a high-end mobile phone that combines the functions of a personal digital assistant and a mobile phone. They can also serve as portable media players and camera phones with high-resolution touchscreens, web browsers that can access and properly display standard web pages.

Features of Mobile Devices that are Changing Learning

Mobile learning is *“highly situated, personal, collaborative and long term; in other words, truly learner-centred learning”*¹⁹

The following properties of mobile devices are changing learning for the better:



Portability

The small size and weight of mobile devices means they can be carried everywhere. This easy access enables learning activities to be undertaken outside the traditional learning environment, anywhere and at anytime.



Connectivity

As well as providing learners with access to content, mobile devices also provide them with connections to other learners. For example, a shared network can be created by connecting to other devices or to a common network (see Interactivity below).



Interactivity

Previously mobile learning has been viewed as an isolated activity. However, mobile devices are social devices by nature and as such they are potential tools for enhancing a cooperative learning environment. In this way, mobile learning can be seen as a rich, collaborative and conversational experience²⁰. And a shared, crowd-sourcing model offers opportunity for communal learning.



Context sensitivity

Mobile devices can both gather and respond to real or simulated data unique to the current location, environment and time. This enables learning to take place which can make greater use of a person's immediate context and surroundings and facilitate the application of knowledge, skill development and communication *in situ*. In this way, mobile technologies can facilitate learning both *in* context and learning *across* contexts (both of which apply to executive education).

Learning in context – a learner exploring a physical or social environment with a mobile device that can provide relevant information about the environment and engage learners in activities such as interview, data gathering and information sharing;

Learning across contexts – learning can take place whilst a learner moves between settings. This could be over one day (e.g. when commuting, in the office, at home) or over a lifetime (lifelong learning).

Lifelong

Mobile content consumption is continuous: there is no beginning, middle or end. Learning does not have to be linear, given and received at a fixed time and within a fixed period²¹.



Individuality

'Scaffolding' (i.e. offering appropriate support to facilitate a learner) for difficult activities can be customised for individual learners. As well as being able to customise preferences for how a learner interfaces with materials, there is also the possibility of basing learning on previous learning experiences.



These properties are not mutually exclusive; they overlap each other and are influenced by each other.

Why Mobile Learning?

Where has the interest in mobile learning come from? The following reasons are provided throughout the literature:

1) Technology

Due to the high level of mobile phone penetration, mobile phone devices are ideal targets for mobile learning applications. Mobile technologies and services have become more and more sophisticated which enables feasible mobile learning more than ever before. Smart phones are becoming widely adopted as business tools with many employers distributing them to their workforce to keep them productive whilst they are on the move.

In addition, social media has created democratisation and more open access to knowledge which is increasingly free. This in turn contributed to increasing volumes of co-created content and Open Educational Resources.

Mobile Phone Penetration

Six billion mobile phones worldwide: twice as many as only five years ago²².

By 2020 10 billion mobile connected devices²³.

Real time updates can be viewed on the phonecount website...

phonecount.com



2) Generation Y?

It has been widely described in the literature how the younger generation (Generation Y) have had access to more personally owned technology than any previous generation, and that they naturally know what to do with it. As such, this younger generation have previously been referred to as 'digital natives', in comparison to the older generations of 'digital immigrants'²⁴. Following this, many say that Generation Y pushed modern education towards the mobile trend.

However, more recently the theory of digital natives versus digital immigrants has been replaced by the more nuanced 'digital visitors' versus 'digital residents' metaphor²⁵. This distinction is not based on age (all ages are bringing mobile devices into education): although the portion of the population over 55 is predominantly made up of visitors, there are examples of residents in this section of the demographic. Similarly it is the case that not everyone younger than 30 is a resident²⁶. The visitor/resident distinction brings the experience and expertise of educators back into focus, and is useful when considering which technologies to provide for online learners.

As well as advances in technology reshaping learning, the characteristics and behaviours of Generation Y, and the environment they have grown up in, mean that Generation Y are driving changes in learning design²⁷. New modes of teaching are being driven by increasing trust in the 'wisdom of crowds' and the decline in reliance on the expert ('sage on the stage') which in turn has driven more knowledge delivery out of the classroom.

Whilst the introduction of mobile technology was seen as welcoming and innovative to learners that are digital visitors, the current research found that undergraduates did not see the introduction of mobile technology as innovative but rather what they had come to expect. The notion of using mobiles to network socially, augment reality or learn collaboratively as part of education was like 'describing water to fish' for many undergraduates. It is important to consider these changing needs of undergraduates²⁸ of today, since they may well be executive education participants of tomorrow.

Digital residents versus digital visitors

The 'digital resident' is an individual who lives a percentage of their life online. They often use the web in all aspects of their lives; professionally, for study and for recreation.

The 'digital visitor' is an individual who uses the web as a tool in an organised manner whenever the need arises, for example, they may book a holiday or research a specific subject.

3) Social Norms

Although one of the main barriers to the adoption of mobile learning has been listed as social²⁹, social norms are complex and rapidly evolving. The mobile phone has in the past sometimes been perceived as a source of irritation or intrusion. However, for most people its benefits now outweigh the disadvantages; although there are certainly conflicting views at this time of adjustment and transition³⁰. It is important to have behavioural change as well as technological change – educators need to tap into the new behaviours and technologies rather than trying to change or resist them.

4) Benefits

Finally, mobile learning offers many benefits for learning which are described throughout the literature (e.g.^{31, 32}) and are summarised below:

‘Just enough’ Learning

- Increasingly busy executives have become more and more constrained by time, leading to a change in demand from ‘just-in-case’ learning towards highly applied ‘just-in-time’ learning.
- Mobile devices minimise the amount of information that can be offered to a learner at any given time, avoiding cognitive overload and offering **easily digestible learning**.

‘Just-in-time’ Learning

- Mobile learning is convenient and flexible: it can be accessed anywhere, at any time, at the exact moment learning is required. For example, mobile learning can allow workers to undertake training in a location convenient to them (in the workplace, in the field, commuting, at home and so on) and at a time convenient to them.
- In this way, mobile learning enables training to be ‘situated rather than simulated’ and so it makes learning possible at the point of need. For example, a mobile device can make training more **relevant** by taking place in a work setting where the learning is put into practice.
- By offering easy and timely access to information, mobile devices enables **supported decision making**, and reassurance in judgements through the quick double-checking of a decision. Ultimately, mobile learning can **improve learner confidence**.

‘Just-for-me’ Learning

- The timely access to information (described above) means that learning is **learner driven** at a moment and opportunity to suit them.

- There are many different ways that learning may be accessed via a mobile device, which means that there are opportunities for it to appeal to many **different learning styles** (e.g. text, graphics, video, animation, audio, discussion forms, messaging, searching and so on).
- This range of different ways to access learning allows people to access materials and connect in more convenient ways that are in tune with evolving practices at work and in their lives more generally.
- The always-available nature of mobile learning empowers learners to take the initiative and **plan** their own learning according to personal requirements and **control** the pace at which they learn.
- Learners choosing when, where and how they learn adds real value to the experience of learning, and means it is more likely that more people are **engaged** in learning.
- Using the voice recorder on many mobile devices enables effortless and instantaneous recording of thoughts and opinions, **encouraging reflection**.
- Mobile devices can **facilitate collaboration** through synchronous and asynchronous communication. For example, SMS texting reminders, knowledge sharing forums, ‘ask a question’ forms and the use of telephony are all means to enable and enhance interaction between participants and instructors using mobile devices.

Design/Technology

- Mobile learning developed using a mobile authoring tool allows for a **single design to be delivered across multiple platforms** to many different devices.
- Using a learner’s own mobile device means they are already familiar with the technology, **eliminating technological barriers** to accessing learning.
- Mobile learning can be **cost effective** – it 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.
- The portability of mobile devices makes them readily available for **collecting evidence** in the moment (e.g. via audio, still or video camera).

All of the benefits described have given rise to a new concept of learning known as mobile learning. However, mobile is not simply a qualifying adjective but instead **a whole new approach to learning**³³.

Why is Mobile Learning Important for Executive Education?

“Whether we like it or not, whether we are ready for it or not, mobile learning represents the next step in a long tradition of technology-mediated learning. It will feature new strategies, practices, tools, applications, and resources to realize the promise of ubiquitous, pervasive, personal, and connected learning. It responds to the on-demand learning interests of connected citizens in an information-centric world. It also connects formal educational experience....with informal, situated learning experience”^{33,34}

Although executive education has evolved considerably over the last 50 years, the industry is now faced with a series of significant trends that offer the potential to create dramatic new opportunities for effective learning. During this project a few examples of mobile learning in executive education were identified, whilst numerous examples were identified in schools, in the higher education field and in businesses. As described, powerful mobile technologies are now a normal part of everyday life and while executive education providers do not use them as tools for learning their potential cannot be exploited. In addition to the benefits described previously, there are also a number of further reasons for embracing mobile learning in executive education:

Mobile technologies are already in the classroom

Participants coming to business schools have their own mobile devices and will increasingly expect to use mobile devices as part of their studies. The mobile learner wants to undertake learning activities that could not be done before, as well as wanting to be able to access materials and connect with others in more convenient ways that are in tune with evolving practices at work and in their lives more generally³⁵. There is a need to provide more flexible opportunities for study that build in some choice in how participants will use technology.

Participants have increased use and expectations

As described, ownership of personal technologies is now pervasive and mobile technologies are becoming more embedded, ubiquitous and networked. Learners are increasingly depending on technology to help them fit learning into their complex, demanding lives. This is driven both by Generation Y as well as developments in technology that provide shortcuts in people’s lives.

Employers and organisations are already making use of mobile learning

Mobile learning can be an excellent way to support work based learning and professional updating. An increasing number of employers and organisations recognise this and now make use of mobile communications and mobile delivery for continuous development and training.

The importance of mobility

Mobile learning can be suitable for all ages and stages of education although the mobility issue is more important for those in executive education (not bound by the classroom as much as school students and university learners). Mobile technologies have provided the means and the methods for demonstrating that learning no longer needs to be classroom bounded and so learning is moving more into the learners' environment.

Increasing participation and engagement

Communication by sending brief messages, web links or photos is an effective way of increasing participation and engagement in situations where they might otherwise be reluctant to contribute. Mobile devices also offer a way of keeping in touch with participants, or for participants to maintain contact, interact or collaborate with one another.

Supporting pre- and post-programme learning

Mobile devices can support pre- and post-programme learning; for example, pre-programme podcasts can be used to support classroom delivery and maximise face-to-face teaching time. Pre-programme assessments can be conducted quickly and simply prior to face to face sessions to enable educators to determine learners' level of knowledge and plan their sessions accordingly. In terms of post-programme learning, mobile devices can offer educators and organisations further opportunities to maintain contact, and conduct any follow-up actions. Participants can also use mobile devices to record reflections and observations of learning once they are back in the workplace.

Extending opportunities to learn

People use their mobile phone in situations during 'dead time'. These periods of time might be given over to random surfing or entertainment, but they could also be opportunities for some alternative, learning related ways that keep up their interest in their studies (e.g. 'light-touch' prompted reflection or planning).

Increasing constraints on the time of a busy executive at present are not necessarily matched to demands for increased

reflection and learning. Quite the opposite; many executives are time starved, over worked yet under increasing pressure to make the best decisions in both an increasingly competitive and litigious environment. These behaviours may well drive learning away from short term priorities and yet mobile learning offers a powerful opportunity to introduce learning 'on demand'. It allows the individual to connect to executive education at a time that suits them and in a way that can support current business challenges. The learner is no longer dependent on the classroom – mobile devices allow the learner to connect in those times of reflection – a long train journey, a daily commute – where the mind is alert and open to new insights.

More specific examples and further reasons for turning to mobile learning are provided in the next section.

How Mobile Devices can be used for Learning

“If training tends to resemble a three course meal, mobile enables constant snacking.....mobile learning allows the learner to create his own food, rather than rely on an L&D functions menu”³⁶

Mobile Learning Theory and Practice

A review of the literature³⁷ identifies six types of learning that mobile technologies can relate to. These are summarised in Figure 4:

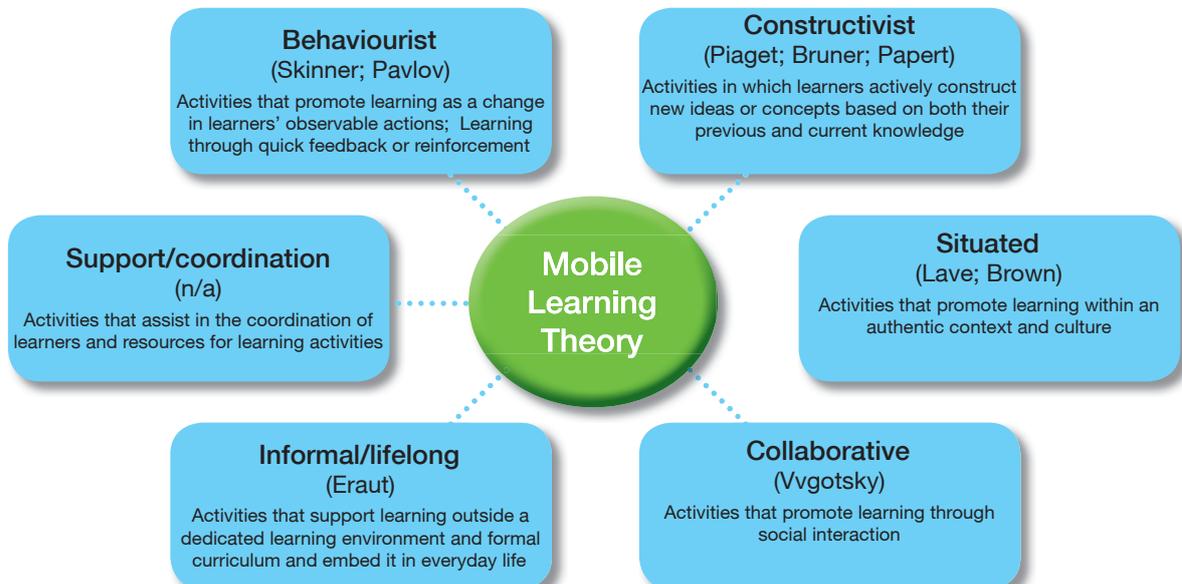


Figure 4: An activity-based categorisation of learning that can apply to mobile technologies³⁸

Mobile devices can be used for a range of learning activities, relating to each of these types of learning. And there is a potential for each of these types of learning in executive education. Some general examples of how mobile learning can be used are described below, with references to more detailed case examples where relevant.

Mobile Learning through.....

.....Context

Smartphone software that links to GPS enables learning that is truly context-specific to a learner's location. This means that learning which entails geographical know-how can be accessed in the field, so that learning can happen in the course of activity. For example: participants may be asked to take photographs in various locations and situations throughout their working day and make notes to share online; specially equipped locations (e.g. museums and art galleries) can offer additional information about exhibits and displays based on a visitors location within them.

Another example is within the context of work itself. There, participants are able to access learning in context and specific to their needs. This enables them to choose the right and relevant time and place – perhaps the participant is the best person to decide that.

.....Recording Information

Mobile devices provide numerous ways to input information – through touch, stylus and voice. This allows learners to build up a series of personal notes, observations, collections of evidence and reflections of progress. These can be use to prompt future recall, build a portfolio, or for assisting comprehension and reflection.

.....Audio

Mobile learning can take place through listening to audio. Podcasts can be downloaded of relevant lectures, interviews, or overviews of the latest research. For example, participants may download an audio (or video) podcast of a session prior to attending a session. The time in the classroom can then spent discussing the key points from the session in more detail.

.....Images

Mobile learning can make use of illustrations, photos, animations and/or videos (through viewing and recording). This is useful on several levels. An image is able to capture information without the need for lengthy description. This



For a more detailed example see case example: "Capturing feedback whilst it is still fresh".



For a more detailed example see case example: "Embedding library resources within programmes".



For a more detailed example see case example: "Blogs to bridge the real world and virtual worlds".

can serve as an *aide memoire* for the individual or as a way to share ideas or information with others in collaboration or evaluation. Images can also be used as supporting evidence for a portfolio. Using imagery also appeals to learners with a visual learning preference.

Mobile learning can also take place through using decision trees, which enable visual representations along with inter-connectedness, and mind mapping to help organise thoughts and ideas.

.....Collaboration

Mobile learners can communicate with other learners and experts through calling, sending messages and using online communities to create and discuss subject matter.

.....Games/Simulations

Learners may also play educational mobile games, gaming simulations and other interactive applications. Participatory or immersive experiences can add a layer of motivation to learning, engaging users, and can bring scenarios to classroom educators could not otherwise.

.....Searching

Mobile learning can take place through information gathering and research via search engines; accessing websites to look up information instantly, 'just-in-time'. In this way learning can be intentional (through specific projects) as well as accidental (through acquiring information through various sources).

.....Reading

Mobile learning can simply be through reading. Learners can easily carry around study materials in order to be able to revisit them (if need to for revision or practice). Again, learning can be intentional or accidental.

.....Assessment

Assessment through answering multiple choice questions can enable both learners and educators to test knowledge and skills. For example, educators can conduct pre-assessments prior to face-to-face sessions to enable them to determine learners' level of knowledge and plan their sessions accordingly.



For a more detailed example see case examples: "Blogs to bridge the real world and virtual worlds" and "Marketing in context – the mobile treasure hunt".



For a more detailed example see case examples: "Cementing knowledge through simulations".



For a more detailed example see case example: "Marketing in context – the mobile treasure hunt".



For a more detailed example see case example: "Embedding library resources within programmes".

Learners can identify areas in which they require more training. In terms of post-programme assessment, mobile devices can provide further opportunities – for example, to prompt follow up actions.

.....Polling

Polling can be used in several ways. One example is for evaluation. Students can be sent a link to a polling website (e.g. Poll Daddy or Survey Monkey) or as a unique URL imbedded onto a website which participants can then access from their mobiles phones. This can be as a supplement or alternative to completing the process on paper. Polling can also be used to ask participants to respond to questions (true/false; Likert; multiple choice, word cloud) which can take place inside or outside of the classroom.

.....Support and Coordination

Mobile devices help organise personal learning schedules, keep track of deadlines, set reminders, monitor attendance and progress. Learners can use mobile devices for storage, to access messages and content, to stay informed about course context, and to review and manage learning activities they engage in during a day.

.....Apps

Apps have many strands for learning. Apps provide access to information for consumption. There is also opportunity for learning through the creation of apps. On a much simpler level, apps can provide participants with a ‘digital backpack’ which enables them access to tools that they may have physically carried before. The availability of apps for smartphones lets the backpack be anything needed at that moment – just-in-time. The apps available are plenty and include scientific calculators, periodic tables, dictionaries and foreign language lessons.



For a more detailed example see case example: ‘App to access learning on the go’.

Apps

The term ‘app’ is an abbreviation for application. It is a piece of software that runs on the Internet, on a computer, on a phone, or on another electronic device. The term is now widely used for mobile applications in smartphones and tablets. Mobile apps can be downloaded (free or for a cost) from websites and then run on mobile devices. There is an app for almost anything (e.g. keeping up to date with the news and weather; following the business market; paying bills; booking holidays; keeping fit; playing games....and the list goes on).

CASE EXAMPLES

Introduction

What is clear from the desk research and interviews is that the educational potential of mobile devices in the executive education sector remains largely untapped, although this is not the case in the education sector as a whole. Few executive education providers have harnessed the true potential of mobile devices for learning and yet ironically it is a device that the majority of senior executives bring with them to the classroom.

At present, the focus for the majority of those who are exploring this seems to be techno-centric – on technology and devices rather than learning design. There are examples (see case example ‘Bringing the real world into the classroom’) of executive education providers supplying devices as part of the programme, but the real potential lies in focusing on the needs of the user and designing the learning experience accordingly.

By drawing upon examples from the private sector and the education sector more generally, our research has identified a few key hubs of mobile learning activity that go beyond the techno-centric to offer a truly mobile learning experience where the individual is empowered to learn in a whole new way.

Below we summarise some of the key trends emerging from these case studies, before examining specific examples in more detail.

IMPLEMENTATION:

FROM...

Organic

TO...

Visionary

How mobile learning has been implemented varies widely. For example, some institutions have taken an organic approach whereby resources have been developed to be accessed by mobiles as a way to extend the learning offer already provided by distance learning (e.g. at The Open University (OU)). Similarly, other education providers have implemented applications for



information services that reflect the changing needs of students. These information service apps include campus information, lecture timetables and library resources. Other institutions have taken an experimental and visionary strategic approach to shape student and staff learning. For example, Abilene Christian University (ACU) did just this in preparation for the 'digital natives' generation and took five years to reach full saturation. Their top down, management driven experimental approach has since been enhanced by a bottom up, student driven creativity which in turn has developed ideas, challenged assumptions and made advances in ways that had not been conceived as part the initial vision. Every student and staff member have been given iPod Touches and iPhones to consume, create, collaborate and share learning. Recently, ACU have been experimenting with sponsored iPads to create a truly paperless micro-economics course. Early results suggest that the iPad increased engagement and frequency of access compared to student using a laptop to access BlackBoard, a course management platform³⁹.

USES:



From the desk research it was found that a number of institutions provide resources in a format that is accessible to mobile devices. This blanket approach meets expectations for information management. Whilst this is convenient for students, it is unclear whether this actually shifts students' learning directly; students come to expect a certain level of search function based on their experience outside their time in education. That said convenience can shift behaviour, and so learning. For example, HBS participants spent less time on the computers in their room and more time with other participants when an app made these resources available to mobile learners. The other end of the scale sees Cape Town University and the innovative example of a learning offer that is idiosyncratic to that particular course. As an educator, the developer had a moment of insight that synthesised different elements to create something that brought together context, learning and technology in a game which motivated people to learn collaboratively. They also had fun.

Several examples utilise the opportunity of having people together in classrooms to extend collaborative learning. The Flipped Classroom concept⁴⁰ contends that important lessons are presented to students through podcasts before the lecture time and then the lecture time is used for exploring ideas, collaboration and exploration in groups. It is suggested that content and information is often readily available through many sources (experts, internet and books) but it is the process of sharing and exploring together in socially structured ways that provide the best platform for learning. Indeed, it was suggested that students were able to find time to read articles and listen to

podcasts outside the classroom, but finding time for interesting conversations or group work was increasingly difficult. Freeing up this time was seen as critical; mobile technology allowed that to happen. The classroom should be about high energy collaboration and not sitting around looking at a screen⁴¹.

LEARNING:



“A blended approach to enabling learning with mobile technologies is necessary as successful and engaging activities draw on a number of different theories and practices”⁴²

Although mobile learning can be a discrete activity, throughout all of the case examples mobile learning was seen as a supplement to traditional classroom based learning. The definition of mobile learning provided at the start of this report describes mobile learning in this supporting role, as:

“facilitating, supporting, enhancing and extending the reach of teaching and learning”⁴³

In this way, mobile learning can be **blended** with other forms of learning. It can connect a formal educational experience (e.g. attending a programme) with an informal, situated learning experience (e.g. receiving performance support while on the job or taking advantage of moments for learning at a convenient time, and in a convenient location).

EVALUATION:



Evaluation of mobile learning has been difficult to conduct and so is often left out. This is likely to be because traditional learning is measured in traditional ways which is unlike learning that is introduced with mobile technology. What is the learning impact of an on-line mobile learning resource? Is it possible to measure like-for-like learning in the context of a treasure hunt versus the lecture room? From the case examples, for some it was enough to accept that the convenience that comes from mobile resources made the move worthwhile (OU). At the other end of the scale, ACU have taken an action learning approach by regularly evaluating actions, experience and outcomes in order to improve performance. They measured students’ attitudes and engagement as learning by proxy. Further, ACU compared the like-for-like learning of a podcast group’s results with those from a lecture group (see case example “Podcasts as scaffolding” for more details).

TECHNOLOGY:

FROM...

Technology
driving learning

TO...

Technology
supporting
learning

The current focus amongst executive education providers is predominantly technology driven rather than user driven. Those business schools in Europe and the US who are supplying devices such as smartphones and iPads to executives are possibly driven by the functionality of the technology rather than having a clear strategy for use. There are examples where the driver is one of reducing the amount of paper in the classroom or being seen to be innovative, rather than revolutionising the learning design. To harness the true potential of mobile learning requires an appreciation of the kinds of learning experiences that are currently hampered by the four walls of the classroom and moving beyond the real world to the virtual world in the quest for solutions.

Case Examples

The case examples outlined below are in no way exhaustive; they represent examples of mobile learning which can be considered for use in executive education.

Organisation/education provider	Example
 Abilene Christian University www.acu.edu/connected	Podcasts as scaffolding Blogs to bridge the real world and virtual world Capturing feedback whilst it is still fresh
 The Open University www.open.ac.uk	Embedding library resources within programmes Bringing the real world into the classroom
 ASHRIDGE business school www.ashridge.org.uk	Embedding library resources within programmes Bringing the real world into the classroom
 HARVARD BUSINESS SCHOOL www.hbs.edu	App to access learning on the go
 Seton Hill UNIVERSITY www.setonhill.edu	Bringing the real world into the classroom
 IMD www.imd.org	Bringing the real world into the classroom
 Epic www.epic.co.uk	Cementing knowledge through simulations
 skill-pill www.skill-pill.com	Cementing knowledge through simulations
 UNIVERSITY OF CAPE TOWN www.uct.ac.za	Marketing in context – the mobile treasure hunt

Figure 5: List of case examples provided in report

Hub of expertise in the education sector: Abilene Christian University

In 2007, Abilene Christian University (ACU) began experimenting with mobile technologies in the classroom with a view to better equipping its graduates for a rapidly changing workplace and careers that would call upon technologies not yet developed. ACU attributes its success in launching mobile learning to a vision that is universally shared by faculty, technologists, administrators and students across the university and believes this ‘comprehensiveness of focus’ sets it apart from initiatives taking place at other institutions. Rather than running one standalone mobile project, ACU has integrated mobile technologies into all aspects of campus life. This report selects a few particularly pertinent examples to look at in greater depth, but the breadth of activity going on suggests that ACU is a hub of mobile activity.

Case example: Podcasts as scaffolding

Mobile learning – Cynthia Powell

Cynthia Powell, instructor of chemistry at ACU, describes her research into the effectiveness of podcasts on mobile devices to support learning.

How mobile technologies have been harnessed to support learning

Pre-programme podcasts have been used to support classroom delivery in subjects such as chemistry to maximise face-to-face teaching time for conducting experiments. Enquiry based experiments require students to independently access information through their mobile devices to plan and support their experiment. Podcasts enable students to come to the classroom having accessed this information and planned ahead. Analysis carried out by ACU suggests that students accessing this ‘scaffolding’ require less re-direction and interaction in the classroom. On average, students were found to be accessing podcasts 2.8 times; this reinforces the learning and assists with committing it to the long-term memory. In a classroom situation, a student might typically ask for clarification once but with a podcast they can review it as many times as they feel necessary, and of course go back to it as required.

What could executive education learn from this?

As a number of executive education providers place more and more learning resources on publicly available sites such as iTunesU and Facebook (see for example Massachusetts Institute of Technology (MIT) and London School of Business and Finance), the value of executive education becomes even more focused upon the coaching and discussion that takes place in the classroom. Therefore, in an increasingly

View podcast: Mobile Learning
– Cynthia Powell



<http://www.acu.edu/technology/mobilelearning/video/year-one.html>

competitive market place, executive education providers should be seeking to differentiate in the way that both resources and valuable contact time are used. Provision of pre-programme podcasts is one way to ensure that all participants come to the classroom with a firm foundation of background information and context. Contact time can in turn focus on value added activities such as the application of knowledge through role play, scenarios and experiential learning. It is through such application that knowledge is committed to the long-term memory. Further podcasts may even be used as follow up on return to the workplace.

Next steps and critical success factors

- Consider what elements of the programme could lend themselves to delivery via podcast
- Are there key models and theories which a participant may wish to revisit for further clarification which it would be useful to set out in the podcast?
- Consider how best to embed podcasts in the programme as a 'compulsory companion' rather than an optional extra.

Case example: Blogs to bridge the real world and virtual worlds

Mobilising the Classroom

Stephen Baldrige from ACU talks about how he is using mobile devices to mobilise his students - to get them out of the classroom so they can experience the concepts he has taught them. Students are posting their pictures, video, podcasts, and comments on a blog as a means of facilitating group discussion in the field. It is a way to have a class without having to be in class.

How mobile technologies have been harnessed to support learning

In 2009, ACU had a total of 291 course blogs, maintained by 180 faculty and used by over 3,000 students. This number has been steadily growing since.

Large scale blogs connect students on a campus-wide level, whilst course-specific blogs engage on a smaller scale. Discussions and themes emerging from both are distilled further through classroom debate. Used in this way, blogs are bridging the real and virtual worlds by bringing relevant debates into the classroom and, in turn, the classroom into the real world. This 'bridging' has been developed further by encouraging students to go off campus and capture experiences in pictures, videos and podcasts which can be posted back to the blog. In subjects such as social work, this practice encourages students to experience what they are learning about in class and bring it

View podcast: Mobilising the Classroom



<http://www.acu.edu/technology/mobilelearning/video/year-three.html>

back into the classroom to share with colleagues.

What could executive education learn from this?

Used in this way blogs can encourage continuous learning. Executive education often draws together a diverse group of people from multiple industries and the make-up of a cohort can be a key part of the programme experience. In a traditional classroom environment, individuals are encouraged to draw upon their experiences and to demonstrate how a particular theory or model might be applicable to their industry. This sharing of experiences is valuable but may be hard for other participants to appreciate if it is an industry that is alien to them. Capturing experiences through pictures, video or podcasts could help to enrich this experience. Furthermore it gives individuals returning to the workplace an opportunity to continue to engage with programme participants by capturing scenarios as and when they occur.

Next steps and critical success factors

- Consider which elements of the programme could be brought to life through critical experiences
- Blogs are only as valuable as the content on them, and need to be kept fresh. How would you encourage ownership of blogs amongst faculty and programme participants?
- Integrate assessment into the blogging process where possible; without an incentive to take part, participation may be limited
- On programmes of shorter duration consider how to ensure post-programme commitment so that the blog remains vibrant. Should the blog remain vibrant?

Case example: Capturing feedback whilst it is still fresh

Personalising assessment

An important step in the process of learning is the opportunity to reflect upon both the obstacle and opportunities for growth. ACU's Greg Straughn discusses how freshmen are using their mobile devices to capture audio reflections during the semester.

How mobile technologies have been harnessed to support learning

ACU have used mobile devices to drive student evaluation of the classroom experience. By encouraging students to create a 2-3 minute podcast immediately after the lecture, faculty benefit from instant feedback whilst it is fresh and before that individual has been influenced by the views of colleagues around them. Verbal feedback enhances written feedback as it conveys the tone and emotions of the student.

View podcast: Personalising Assessment



<http://www.acu.edu/technology/mobilelearning/video/year-three.html>

What could executive education learn from this?

Securing post-programme feedback from all participants is an uphill struggle for many business schools. So called 'happy sheets' are invariably incomplete, narrow in focus and capture the feedback of the individual at one given point – usually as they leave the end of the programme and their mind is already on transport logistics, saying goodbye to fellow participants or returning to work the following day. This approach could empower participants to feedback in a way that suits their personal learning style and at critical points throughout the programme. Furthermore, perhaps capturing their voices pre- and post-programme once the individual has returned to the workplace and is beginning to apply and experience some of what has been learnt. Sharing these critical experiences could help shape and enrich the programme for future participants.

Next steps and critical success factors

- Typically executive education programmes have a tight programme schedule and feedback forms take from this time. This method captures the immediate feedback of participants. Alternatively, reminders can be built in which capture evaluations after reflection
- Verbal feedback is harder to provide anonymously. It is important to reinforce the need for openness and honesty or the feedback may be of limited value.

Case example: App to access learning on the go

How mobile technologies have been harnessed to support learning

Harvard Business School (HBS) created an app for participants and faculty of executive education programmes. Initially just for the Advanced Management Programme, the app has been extended for use by other programmes and allows access to library resources, audio and video case studies as well as course schedules, announcements and maps. The app is available on a web based browser and so is available for all smart phones (e.g. iPhone, Blackberry and Android). In this way, participants are able to access content that suits their learning style. HBS found that participants were more connected to their teams which brought a greater sense of community. This is thought to be because participants were able to access information on the go and not have to retreat to the computers in their rooms, giving more time for collaboration. There was also a lot less reliance on course administrators to provide scheduling information which allowed them to concentrate on issues that were more meaningful. Faculty were able to identify and interact with participants more readily. A SharePoint environment has also helped to streamline content.

What could executive education learn from this?

Participants still want to read and explore new concepts, case studies and learning. However, the way people search for this information is changing. Providing search facilities that reflect the experience and expectations of participants outside of executive education delivers a service that is streamlined for users. Whilst this may be novel to some users (digital visitors), these cases are reducing each year.

Next steps and critical success factors

- Having resources available in different formats brings content to life. This is not only true for those with differing learning styles but also for those who have English as a second language. This is an important consideration for executive education
- Participants bring various devices with them – sometimes more than one. Which device is used for learning – personal or business? Who owns the learning?

Hubs of activity in the education sector: Embedding library resources within programmes

Background – who is doing this?

The Open University (OU) is a world-leading distance-learning institution and has more than 240,000 students currently studying various undergraduate and postgraduate courses. Since 2005 a growing number of students have been accessing the university's websites on web-enabled mobile devices. In 2007, the OU developed the first mobile version of the library website; this has since been redesigned to enable use on touchscreen devices such as iPhone and Android.

Ashridge Business School is a leading international business school providing executive education and management development through customised and open enrolment executive education and qualification programmes. The online learning resources of Virtual Ashridge support face-to-face activity whilst also providing the backbone of learning and development for many corporate subscribers.

How mobile technologies have been harnessed to support learning

The OU has established a mobile library, and, through careful monitoring of how and why students are accessing this facility, they have enhanced the service so that it can be accessed effectively from the most popular devices. Analysis of usage

statistics suggests that the site is most frequently used for day-to-day functions such as opening hours, contacting library staff (via live person webchat), library events and help and support. In addition a range of mobile friendly databases (e-Journals) are also available.

Ashridge Business School was one of the first executive education providers to establish an online learning resource giving programme participants access to a wealth of supporting resources which have been tailored to the needs of the programme. Virtual Ashridge offers on-demand learning with resources served up in text, audio and video format and categorised according to the time the individual has available to learn.

What could executive education learn from this?

With growing demand for executive education programmes to be delivered globally, not necessarily on campus, the concept of the mobile library and on-demand resources enables programme participants to access the same quality of resources from wherever they are in the world. Even when a programme is run on campus, a mobile library is available on demand and can flex around a tight programme schedule.

The ways in which OU students and Ashridge participants are using these resources suggest that using mobile in this way is all about providing ease of access to information and embedding additional resources in the programme. Allowing information-rich, time-poor executives a route to resources which is in keeping with their ways of searching for information can only enhance executive education provision.

Next steps and critical success factors

- Design for the majority of devices, not the minority
- Design for the most popular services and resources, not necessarily all
- Enable users to customise and personalise – one size does not fit all learners' needs.

Hubs of activity in the education sector: Bringing the real world into the classroom

Background – who is doing this?

Many institutions who responded to our call for examples including: Harvard Business School (HBS); IMD; Ashridge Business School and; Seton Hill University have provided students/executive education participants with mobile learning devices for use in the classroom and to support their wider

studies. Most schools entering this space have opted to provide and support particular device(s), for example, iPad or iPod Touch, whilst others are tapping into the mobile devices owned personally by the participants.

How mobile technologies have been harnessed to support learning

HBS launched a pilot delivering an application to 160+ senior executive education participants via an iPod Touch in March 2009. Findings of the pilot suggested that participants were using the device for an average of 47 minutes per day, with the most frequent uses being to check programme emails, alerts and the programme schedule. A mobile device was seen as preferable to accessing information and resources via HBS bedroom computers. HBS case studies were available in audio version via the device and these were seen as complementary – rather than replace the paper based copies they simply appealed to multiple learning styles. Faculty cited faster response times to participant queries and a more personal service as the benefits of using the devices. The pilot was subsequently rolled out to further programmes.

Ashridge Business School introduced iPads for full-time MBA students in January 2010. All information, lecture notes and case studies are accessible to students to access via the iPad. MBA students are able to back up programme resources with research in the moment. Mobility, sustainability and innovation were the key drivers behind this initiative.

Seton Hill University has made a commitment to mobile learning by providing all full-time students with a MacBook Pro laptop and iPad. A professional development programme ensures that faculty receive assistance to help them maximise these new technologies in the classroom whilst students are now empowered to create podcasts, record and analyse lab data on their mobile device and to access apps and electronic texts.

At IMD, an initial pilot on the use of iPads has led to a decision to standardise on iPad delivery of programme materials across a wide range of courses. The iPad has been carefully integrated with classroom activities such that reading materials, cases and slide decks are released at the appropriate time. Participants are able to work together to search and explore web based content and as such, bring the real world into the classroom.

What could executive education learn from this?

In effect, universities and business schools introducing new technologies to the classroom are engaging in a constant

piece of action research. Participants are taking part in a live experiment leading to continuous insights into individual learning preferences and styles. These insights can be rolled out across all executive education programmes, especially as more and more senior executives now have their own mobile devices.

One area which executive education will need to observe is that of distraction in the classroom. At an executive education level this is likely to be ease of access to emails whilst the programme is taking place. Executive education participants often value the time away from the office and especially the opportunity to reflect on what they are learning, and the very benefits that mobile technologies offer could also be detrimental to the learning experience. Whilst one might expect this to be an issue in the undergraduate classroom, ironically it might almost be more real in the executive education arena.

Next steps and critical success factors

- It is not just about putting existing materials in an electronic form, the real opportunity is changing the nature of how you learn and teach
- A decision needs to be made as to whether additional devices are provided or the individual is encouraged to use those they already own – does this have an influence on levels of distraction?
- Content distribution requires consideration of device (in order to define appropriate format of content) and distribution (wireless/synchronised).

Hubs of activity in the private sector: Cementing knowledge through simulations

Background – who is doing this?

- E-learning company, EPIC, has moved into mobile technologies to broaden the learning platforms available to individuals and organisations. Working with a range of partners, EPIC has opened up new approaches to learning for students and professionals.
- Skill Pill has a library of animated learning objects and has teamed up with learning provider Pearson to develop a mobile MBA app offered in conjunction with a physical book⁴⁵. The blend of book, mobile and app to access MBA content provides a great choice to a range of learners.

How mobile technologies have been harnessed to support learning

EPIC has developed a range of mobile applications to support learners and cement knowledge. In partnership with Collins

Education they have produced a series of Maths revision apps each containing 3-5 hours of interactive revision content which helps GCSE maths students to apply what they have learnt through a series of practice questions and assessments. To appeal to different learning styles, they have also worked in partnership with the British Army on 'Operation Numerika' an interactive game-based approach to ensure all Army recruits have an agreed entry level of numeracy through a series of contextually relevant scenarios.

Working with NHS South Central, EPIC has produced an app for use by doctors, nurses and other clinical staff administering medicines. Through animated characters who play the role of patient/health professional the simulation takes the user through a range of scenarios such as drug compatibility and drug calculations common in the Health Service.

EPIC has also developed The First Aider app for St Andrew's Ambulance, which is a first aid charity based in Scotland. Using principles of instructional design, EPIC created information for emergency first aid treatments in practice. Intended to negate the need for sound in noisy environments, the app design was inspired by 'silent movies'.

Bringing the real world into the classroom

Skill Pill has teamed up with learning-provider Pearson to develop the content of a mobile MBA in the form of a book supported by an app. It covers over 100 key skills identified as critical aspects of an MBA. The app offers a wealth of resources without the financial and time commitments of a traditional MBA. Examples and real life simulations help the learner to put theory into practice, in the same way that face-to-face debates in a classroom context can.

What could executive education learn from this?

Experiential learning, role playing and scenarios have long been a key part of the executive education programme. With some pressure to reduce the length of executive education programmes to limit time out of the office and stretch budgets further, online scenarios and simulations could provide a useful supporting tool to face-to-face time. The key aim is to embed the classroom learning through application and testing yourself in a given situation. Achieving this through a mobile app offers the opportunity to revisit the scenario and continue to apply the knowledge long after the lifetime of the programme.

Next steps and critical success factors:

- Think of scenarios which are hard to replicate in the classroom: how might these be achieved online?

View podcast: The first aider - silent movie



<http://www.firstaid.org.uk/images/silent-video-2.jpg>

View podcast: Skill pill - About the mobile MBA



http://www.youtube.com/watch?v=uYKj2zB_7g

- Consider how longevity of use might be ensured – for example how would you encourage someone to return to the scenario and test their competency multiple times?

Case example: Marketing in context – the mobile treasure hunt

How mobile technologies have been harnessed to support learning

The Graduate School of Business at the University of Cape Town has developed an innovative idea for a marketing course. Dave Duarte and colleagues developed a mobile treasure hunt (marketing in context) that takes students around the streets of Cape Town to bring to life marketing messages in context. This is done using mobile phones and up to ten systems that incorporate learning on many levels. For example, the team have developed scanning codes, websites, answer phone messages, opportunities to leave feedback and evaluation, creation of photos and videos for collaboration. Each element provides a clue to students which lead them to the next clue. The conceptualisation and planning involved is critical, time consuming and can be expensive but it is argued to provide a rich platform for learning in context which is both memorable and fun. The course encourages participants to notice more and direct attention to look at things differently. This concept was developed from a traditional treasure hunt and in this way, it can be seen that technology is scaffolding the process and not driving it.

What could executive education learn from this?

Executive education providers are tasked with developing courses that are differentiated from other providers whilst maintaining the right balance of content, context and interaction. By developing a learning offer such as the one above, providers are able to meet all of these requirements. This is particularly useful if the location is of particular interest. Also, it provides an opportunity for students to collaborate with a group of peers in a process that engages curiosity and physically energises students away from their screens and offices and out into the field.

Next steps and critical success factors

- How might existing content be delivered in new contexts?
- Consider experimental approaches utilising existing systems
- Whilst adding value to the learning experience, be prepared for more work, not less; time for planning and conceptualisation takes longer than expected and can be expensive.

View podcast: [Cherryflava/UCT Graduate School of Business Nomadic marketing experiential marketing tour](http://www.youtube.com/watch?v=udF_BPueTJo)



http://www.youtube.com/watch?v=udF_BPueTJo

MOVING FORWARDS WITH MOBILE LEARNING

There may seem many challenges to mobile learning; it is hoped that this report will provide some food for thought for moving forwards. Although not a list of recommendations, what follows is some advice on how others have addressed the main challenges in order to move forwards with mobile learning (based on the desk research and case example interviews).

Implementation

It is important to consider how to introduce mobile technology into the learning space. The chances are it is already there in some form already. Therefore, it makes sense to find out in which ways. Asking participants how they are using their phone is a critical first step as it enables developers to understand what the starting point is and gives them scope to enrich and scaffold an existing experience or develop completely new ones.

A first change might be to make current and future learning resources mobile-friendly. This opens the scope for all learners to access content if required. This also serves to future-proof resources for following generations of students (See OU). Another step might be to provide an information service app to all students which bridges the gap between life on and off campus, giving students search tools and information that resemble those available more generally. This is especially useful if resources are made available in various formats such as written, audio and even video where possible (see HBS).

A larger step approach like that taken by ACU can take some time to implement. It took ACU five years to reach saturation of iPhone/iPod Touch use on campus. This top down approach provides drive to changes which together with the creativity and experimentation of students and faculty can produce a learner centric environment where technology scaffolds learning throughout.

Getting Buy In

One of the initial challenges has been getting participants, faculty and staff to buy in to a different approach. There may be resistance to change because existing teaching methods are tried, tested and accepted. There may also be a general mistrust of the technology. Individuals (faculty and participants) could be reluctant if they are unfamiliar with the technology or fearful of the potential addition to their workload, especially if extra training is required. We see that changing technology has the potential to modify the role of the educator from deliverers of knowledge to facilitators of learning and resources – this may bring additional pressure. Finally, it could be argued that new technology introduced to the classroom might give tech-savvy students an advantage over non-technical students. This might create feelings of isolation or being out of the loop for the non-technical.

These issues have been overcome in different ways. ACU and OU provided learning events for faculty and staff to highlight the benefits of using mobile technology in the learning offer. They provided real life examples of small ways to lighten the load and so provide benefit to the user. This provides the first hook – like a gateway drug^{iv}. For example, ACU faculty were shown how to use an app designed to streamline and expand on registration details, initially saving time but then increasing recognition of names and faces in a class (using a flash card method). At a higher level, ACU have made a point of celebrating successful mobile learning experiments within the university and have found that this recognition has encouraged other members to be more experimental in their own approach. Adopting a ‘freedom to fail’ approach allows developers to be more creative and test things out.

Choosing Technology

Choosing the technology may seem complex as there are several things to consider. There is no single device any better than another – it is dependent on choice and need. Phones are good for audio files and capturing data whereas a tablet, like the iPad, is better for consuming information. The first consideration is whether to provide a device at the outset or ask participants to use their own devices. There are advantages and disadvantages to both. By providing a device to students, developers are able to install native apps^v specific to the needs of the user. They are also able to provide resources in a way that is controlled by the institution. The downside is that it is less likely for this device to become as integrated into the lifestyle of the students as they may already have their phone of choice. It becomes another device to carry and may well be left at home and not available at moments of intellectual inquiry. Ideally, the learning device is the one that is

^{iv} Gateway drug: n. A habit-forming substance whose use may lead to the abuse of drugs that are more addictive.

^v A native application (native app) is an application program that has been developed for use on a particular platform or device.

with them anytime and anywhere. For example, ACU found that social connectivity explained why the iPhone outperformed the iPod Touch on every measure taken. Not only were students able to connect with other students and faculty, the very fact it was also their phone meant that they almost always had it with them when others might have left their iPod Touch at home. ACU continue to use iPhones as the device of choice, with iPod Touch available for those that do not want to sign up to a call plan contract.

HBS began their mobile journey by giving participants an iPod Touch installed with a native app. They have now developed a web browser app available to all smart phones connecting to the internet. It does mean that participants are able to use the device they have chosen and that they are comfortable with; they no longer have to familiarise themselves with a foreign operating system. It also means they are more likely to carry their own device with them at all times, even off campus. Similarly, University of Cape Town (UCT) Business School were initially sponsored by Nokia to provide phones for the treasure hunt, but now ask participants to bring their own device, with participants sharing smart phones when not everyone has their own device.

There is a further consideration around technology and ownership. Who owns the learning and on which device does it belong? This is a question for participants with a business phone and a personal phone which may well be different operating systems. Who owns the learning resources? Is it the individual or the corporation paying for the individual to attend the course? There are also issues around privacy as well as personal time versus work time. Whilst there are no answers provided here, it is perhaps worth mentioning for further policy considerations.

Costs

Costs can vary greatly depending on the chosen approach. If providing students with devices, there is considerable initial capital expenditure as well as ongoing cost of infrastructure and technical support. Further consideration should be given to design costs where third party developers might be brought in to build products such as apps. An investigation of a cost model for infrastructure, technology and services that includes the cost of providing IP addresses and bandwidth should be carried out.

Whilst institutions may consider mobile learning as a cost saving measure, pedagogy has to remain a priority and as such, can incur costs. Designing and implementing new concepts can be costly in terms of time (see UCT). However,

the combination of appropriately planned medium to long term strategies together with students bringing their own devices could well save money in the long run. Institutions making use of their existing facilities and services should be able to keep costs down. It is worth remembering that some of the more ad hoc ideas which scaffold learning can cost very little and only need imagination and experimentation.

Knowing your Mobile Learner

It is important to know the requirements of those involved in a new mobile learning offer. This includes faculty, content creators, other staff and the learners themselves. Meeting these requirements should influence levels of engagement and buy-in.

It is also important to gather background information about student preferences, habits and attitudes towards their phone usage as well as learning. For example, what devices do they own and when do they use them? When do they access the internet and what, if any, are the distinctions between home and work devices? In this way it should be possible to identify how, when and where the learning experience can be enhanced by mobility.

The visitor-resident distinction may be useful when considering which technologies to provide for mobile learners. For example if your learners are mainly visitors, they are less likely to take advantage of any feed based system for aggregated information you may put in place. They may also need extra encouragement to blog or comment as part of a course. The resident will expect to have the opportunity to offer opinions on topics and to socialise around a programme of study. Beyond those using mobile applications to learn from or to teach with, account needs to be taken of those users creating mobile content. In fact they are likely to find ways of doing this even if they are not 'officially' provided. It is important to stress that visitor-resident categorisation cannot be assumed; measures that reliably distinguish learners and their preferences, as well as identifying where learners fall on the visitor-resident scale need to be established.

Pedagogy First

“Whatever the technology or mode of delivery, learning should be the key objective, and pedagogy rather than technology should drive the decision making”⁴⁷

“The effective implementation of mobile learning requires a clear pedagogical approach, identification of specific learning needs/goals and educators to be directly involved in decisions on planning and curriculum use”¹⁴⁸

There is a fundamental tension between pedagogic and economic best practice making strategy in this area difficult. Technology is changing rapidly and the fast pace does not make it easy to lock onto one choice; it cannot be expected that industry will settle long enough to provide standards as a template. Therefore, pedagogy should be placed first as part of any wider strategy. Strong pedagogy is better able to cope with fast changes in technology. An experimental approach can then discover what technology is on offer at any one time. Users (teachers and students alike) are best able to explore and share what these might be.

Content

It is important to think about content and what is suitable for transmission to mobile devices. Indeed, the case studies provide many examples of content being made available for mobile users. These can be apps, podcasts, web pages, codes, learning resources and messaging – this list is in no way exhaustive. And this is not a one-way transmission; it is feasible that learners will create content for collaboration, evaluation, evidencing or just because it is fun. As mentioned previously, residents will likely expect the opportunity to share and will find ways of doing this even if they are not ‘officially’ provided. Therefore there needs to be a choice whether to provide a forum for a collaboration of content created by participants.

Educators and developers can assist participants by making content more readily available and in formats that are easily accessible from mobile devices. How can the quality of the instructional content be improved, enhanced, or downgraded by transferring to a mobile-compatible format? Can the content be read on a mobile phone screen? It is advised to test assumptions regarding these factors: ACU initially assumed that students would not want to read a document on their iPhones because the screens were small. ACU were then surprised to be told that many of the students considered the screen size perfectly adequate for reading as they were used to screens that were much smaller. However, for other users, this might not be acceptable as they might not want to use a mobile device as a new high-tech package for the same old long and chunky content.

Support

As some of the case studies have demonstrated, support for learners and staff alike can come in different ways. One of the themes to emerge from the case studies was that each venture was supported by management who informed the initial strategy design and were 'on-board'. Without this support and direction, mobile learning may well be a solitary unsupported effort. This in itself is not a bad thing, but top down support creates a paradigm shift which captures the full potential of mobile learning. Further support includes a promoter of mobile learning who can demonstrate the capabilities of a system and can exploit the whole range of capabilities that mobile devices offer. There also needs to be pedagogical support for educators. This may involve introducing and developing new and innovative methods or could simply involve revisiting traditional methods and looking at how to improve them.

On a practical level, support services need to be available for the management of equipment and on-line services. Technical support is especially required if the institution is providing devices or installations; this is to deal with equipment failures and on-going system improvements. Support needs to be on-going and must be provided to all – both staff and students. They must have sufficient time to familiarise themselves with new devices or installations. This is especially true for those who may be reluctant or unsure of unfamiliar technology.

To Evaluate or Not?

One of the issues is that traditional learning evaluation is often based on traditional learning offers. Mobile technology breaks with tradition and disrupts what has been established before⁴⁹. Indeed, as a new concept it might be difficult to know what to measure. But as this report has demonstrated, measures of reactions, learning, behaviour and outcomes related to mobile uses are possible. Stakeholders may be keen to see evidence of the effectiveness of learning that comes from using mobile devices; a well-designed evaluation could provide substantiation to support the business case for further implementation.

At ACU, comparisons between a lecture and podcast conditions showed that students maintain mastery across lab reports, quizzes and grades when viewing podcasts before class as opposed to attending lectures. ACU has also measured and shown increased levels of communication and student engagement since using mobile devices, which suggests that whilst learning *per se* has not changed, there are gains to be made⁵⁰.

Advice to move forwards with mobile learning (taken from interviews)

“Start slowly – but start”

“Be experimental – don’t call it an initiative”

“Be prepared for more work – not less”

“Don’t wait for the industry to settle – you’ll be waiting a long time”

“Be open to feedback – from participants, faculty and staff”

“Adopt a ‘freedom to fail’ approach”

Next Steps

If it has not happened already, the next step for those interested in implementing a learning strategy is to consider making content and information available in formats easily accessible on participants’ mobile devices. Having a mobile learning resource available in this way allows learners to access information that is reliable and convenient. They will be looking for information on their mobiles anyway so perhaps better to have resources that are endorsed by the education provider. This is considered a limited first step; there are more steps to be taken that can and will enhance the experience of mobile learners and education providers alike. These will vary depending on the levels of support, innovation and experimentation and can be phased in gradually.





CONCLUSIONS

The implications of mobile learning are far-reaching, and its potential effect on all education, including executive education, profound. As mobile learning capabilities continue to expand new forms of learning will continue to evolve and the next few years will see a period of rapid growth for mobile learning, with evolutionary rather than revolutionary changes.

Executive education has a choice of whether or not to embrace the opportunities that mobile learning devices offer. It is hoped that this report has demonstrated that there is much opportunity for extending learning on executive education programmes, and has provided some practical examples on how executive education providers may develop their expertise and practice in this exciting field.

“A society which is mobile, which is full of channels for the distribution of a change occurring anywhere, must see to it that its members are educated to personal initiative and adaptability. Otherwise, they will be overwhelmed by the changes in which they are caught and whose significance or connections they do not perceive.” (1916)⁵¹

Please visit the project website to comment on this report, and to contribute your own example(s) of how mobile technologies are shaping learning: www.ashridge.org.uk/MobileResearch





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APPENDIX I

Interview and Survey Participants

Marcus Boyes, Head of Mobile Learning, EPIC, UK

Dave Duarte, Digital Business Educator, University of Cape Town, South Africa

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