

The road to mobile learning

“Just in time, just for me” is the ideal that many learners seek. Can delivering teaching and learning by means of Pocket PCs or PDAs and mobile phones deliver this ideal? Caryl Oliver gives a personal account of her journey towards making this a reality for students at William Angliss Institute (WAI) in Melbourne.

Introduction

In April 2004 I received an email that advised me I had won a Flexible Learning Leader Scholarship. I was just delighted that someone would actually pay me to learn more about my chosen area of mobile learning! With the support of my Institute and the amazing group that comprised the Flexible Learning Network I was about to embark upon a wonderful journey and a rich personal learning experience.

Mobile Learning had attracted my attention for two reasons:

- I had been concerned at the low acceptance of online delivery and had seen some material about teaching by means of PDAs and mobile phones. In the context of my work it resonated with me as having potential value for our students.
- I have had a long-standing interest in new technology and its possibilities. I love discovering new ‘toys’ but am equally quick to discard them if they are not the right tool for the job in hand.

Flexible Learning Leader (FLL)

Funded by ANTA through the Flexible Learning Network over a period of 5 years, some 200 educators from the public and private sectors have been given scholarships to study various aspects of flexibility in teaching and learning.

This has spawned a vibrant community of people who have continued to learn and who are incredibly willing to share their knowledge and their research long after their FLL year is over.

www.flexiblelearning.net.au

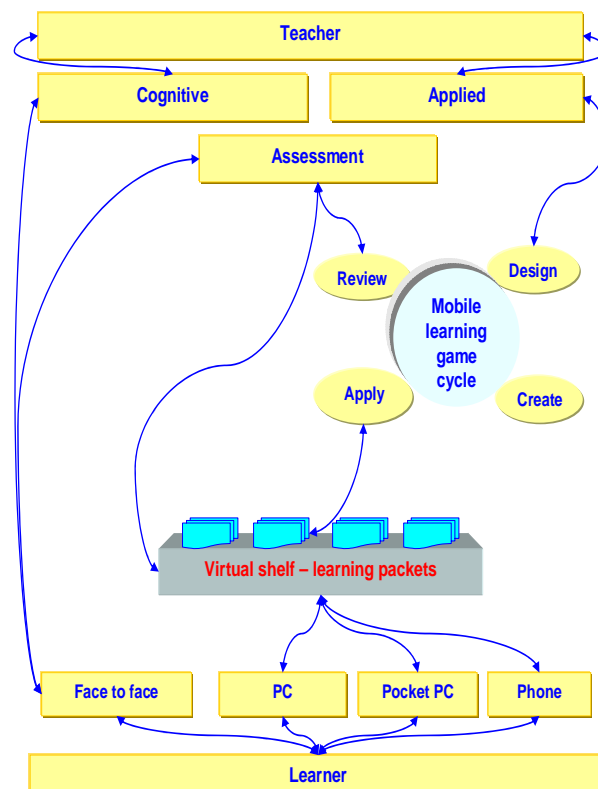
So what better opportunity to combine my work with my passion to influence change?

I spent most of 2004 being a sponge! I trawled the Internet until my favourites list became almost unmanageable. I attended conferences in Australia and Europe and I unashamedly picked the brains of everyone I met. I actively participated in a great many online discussions and forums. As the volume of material grew and as my knowledge increased, I gradually started to work out what I did *not* need to pursue in order to focus more on what was going to take me forward.

While I needed to keep up to date on the evolution of mobile and computer technology, it became clear that the means by which the ideas from a teacher’s head got translated into a game on a mobile unit was the real challenge. I felt that I learnt more about pedagogy than technology during this time.

Vocational training, with its stronger emphasis on hands on activity and doing, opens the door to offering learning activities that are game based. A drag and drop computer game for setting a table means that students may present for the first time in the training restaurant with an understanding of what is required; this means that contact time between teacher and student can be spent on the more reflective areas of learning.

With this in mind I formulated the model shown below where elements of teaching and learning can be turned into learning games and then made available on a virtual shelf for students to access when and by whatever means suits them.



This diagram illustrates the ability for mobile learning delivery to take on the more mechanical teaching functions thereby allowing learners to undertake elements of their learning in their own time and in small, manageable bites. The time then spent with a teacher may be more usefully used to explore more complex ideas and direct the knowledge acquired by students by means of the technology.

The challenges that this model represents for an Institute are many and significant. In December 2004 the Victorian government granted WAI significant funding to undertake a mobile learning pilot project enabling us to start to explore the hardware, software and wetware¹ issues and embark upon mobile learning delivery.

Even though we are still very early in the process, the following is the story so far....

¹ Wetware = brain power

William Angliss Institute Context

WAI is a 64 year old vocational training college that is the Specialist Centre for Tourism, Hospitality and the Culinary Arts; all industries that are predominantly 24 hours a day, 7 days a week operations. Our students, both on campus and in the workplace often work anti-social hours and seek to fold their learning around those hours - hence the attractiveness of delivering teaching and learning in formats that do not rely on having teachers and classrooms on hand.

The industries that we serve all have a high dependence on computer technology so delivery by means of all forms of technology is appropriate preparation for the technological flexibility with which our graduates will have to operate once in the workforce.

Changing pedagogy

Historically, teaching has been a process whereby the teacher imparts knowledge to the students who subsequently prove what they have learnt by repeating the knowledge back to the teacher.

Growth of Knowledge

In the 1920s World Knowledge was doubling approximately every 30 years.

By 2010 World Knowledge will be doubling every 11 hours!

- University of Durban

The more current approach, student centred learning, recognises the phenomenal growth in knowledge and sheer impossibility for teachers to genuinely expect to know more than the students at all times. Teachers are now one part of the facilitation process for students to acquire knowledge. While teachers have

always encouraged students to undertake their own research, the ease of access to the volume of information has changed the issue to one of management. The real value that the teacher now brings is greater life experience and guidance. The Internet is largely responsible for this growth in knowledge but it also provides some very good tools to help students and teachers manage learning.

Blog and community sites have become a rich source of opinion on a range of topics as well as a forum for students to share their work. Instead of preparing an assignment that only the teacher will see, work may now be uploaded to a community forum for everyone to see - the results are higher levels of literacy and improved presentation. Learners tend to read the postings on a forum site where they would not have read each others' written assignments; such collaboration is demonstrative of student centred learning.

Students wanting access to their learning when it suits them, availability of technology that permits that access and teachers wishing to provide flexibility in delivery are some of the drivers that make mobile learning a viable and practical element in the teaching and learning process.

Introducing the hardware

Teachers were going to be exposed, for the first time, to some new technology and be asked to think differently about how they go about teaching. My first priority was to distribute a dozen or so XDAs to selected teachers in a range of departments. At the end of December 2004 I gave them the units in their boxes and offered absolutely no instructions. The idea was to give each person the challenge of opening the box and working out how get their new 'toy' operational for themselves.

Many teachers came back with basic questions about specific functions but, generally, the level of intuitive engagement was extraordinarily high! It became clear that where many people are somewhat diffident when it comes to dealing with new computer software or hardware, there was no such diffidence in the enthusiastic uptake of the XDAs!



XDA

The XDA IIs is the most advanced Pocket PC Mobile Phone combination that includes camera and voice recording as well as all the expected phone functions. It also has a memory card that allows for 512mg of data. This unit offers significantly greater functionality than any other in the market place and so was seen by teachers as a prize rather than a burden. Given the rapid nature of technology change it was decided to aim as near to the leading edge as possible as the starting point.

By the time teachers gathered again after the holidays we were immediately presented with some interesting ways in which teachers were starting to use their Pocket PCs. As anticipated, the more computer literate found a whole range of games and functions that they were able to download; this was fine as anything that ensured familiarity was seen as a positive. Others had already worked out some business solutions and one or two had started to see the educational opportunities.

First Experiments

The first teacher to use the XDA as tool managed to convert all the records of his apprentices from the student management system into an Excel file and then download it to his unit. When he went out to the workplace to visit the students he had all their history and records to refer to when in discussion, and could add notes to update those records.

Another teacher used the camera function to take photos of students' work and record a commentary from himself or the student to be saved and used for assessment. In a food preparation environment this provides a rich source of images and feedback on what the students are actually doing in the workplace.

We produced our first rudimentary learning games through the enthusiasm of our Coffee Academy who designed four learning activities that we produced as games where the task is to select the elements to make a latte, cappuccino, etc...

Our failed experiment came when we tried to undertake some transactional games using Bluetooth. One person took the role of a traveller, others were assorted airlines, hotels and travel agents. The traveller would submit a request, the supplier a quote. Once an itinerary had been completed then the purchases were made and transactions turned into accounting records. All of this being done using the XDAs and transferring information to one another using the Bluetooth communication link. It seemed like a great idea at the time but Bluetooth simply could not cope with having numerous units trying to talk to each other at the same time!

The first student group to use the units was a class of Eco-Tourism students who worked in pairs using an XDA to gather information while on a field trip. They took photos and videos as well voice recordings on the XDAs, and brought all the data back to produce movies which became their assessment. The enthusiasm of those students was fantastic; not just because they had shiny toys to play with, but because they knew they were breaking new ground and wanted to prove that it was something that could work.

This activity also provided the first challenge to the IT department as they had to make Movie Maker and Photo Story software available on the student network. Then they had to ensure that Media Player 10 was available throughout the whole network so that we could view their work on computer as well as on the XDAs.

Stop playing – start working

Having laid this groundwork, and with some 75 XDAs now in the Institute, we have turned our minds to the real work of applying the technology to teaching and learning. About 30 teachers now have XDAs for their own personal use on the proviso that they actively look at elements of their work that they can turn into mobile learning opportunities. A small number have gone to support areas such as IT and multi-media so they can be called upon for infrastructure support, with the remainder in class sets for student usage.

Connectivity

Connectivity is the most significant challenge as we are mindful that, while we can distribute material outwards with relative ease, students cannot be reasonably expected to pay substantial costs to upload assignments or stay online for large downloads. With this in mind we have turned to wireless for on-campus connectivity and the Internet for our virtual server.

It is now possible for anyone with one of our XDAs to access the Internet anywhere on the campus. We have established a dedicated server for the mobile learning project and have now proven the concept through wireless. This means that we can prepare a test and load it onto the server; students then gather in any classroom and the teacher brings a class set of Pocket PCs (may not be XDAs in this instance) that are distributed to the students. They connect to the server by means of the units, undertake the test and return the units at the conclusion. All the activity is saved directly on the server and the teacher has immediate access in order to assess the work.

This means that we have a mobile computer room for the purposes of accessing the server for tests or learning activities at about one tenth of the cost of a normal static computer facility. This is not to say that this option replaces fully functional computers but it does provide a service and facility much needed by WAI.

Learning Games

As mentioned earlier our first tilt at learning games were for our Coffee Academy and, while still fairly rudimentary, they have provided the much-needed demonstration that we can actually deliver a genuine learning outcome. A number of students have returned from 'playing' these games with an improved understanding that they can apply directly to their practical work.

There are not many of us in Australia that are developing learning games in this way so the collaborative circle is still small – I hope that it will grow as we increasingly demonstrate the potential of mobile learning as well as lowering the barriers.

I have consistently used some learning games provided to me by CTAD in Cambridge to demonstrate the scope of what can be done with some simple flash files and remain grateful for these as the launching pad for much of our current work.

PowerPoint presentations convert extremely well to Pocket PC format but they are designed to punctuate a presentation rather than stand alone. To improve effectiveness we will be recording the face and voice of the teacher to be embedded with PowerPoint to make it a complete lesson. This is one step further than what is currently possible in PowerPoint 2003.

With this in mind one teacher has now combined the presentation on Australian Destinations with a learning game where the names of towns and landmarks can be dragged onto the appropriate map. In learning format the game will not allow mistakes, so if you drag Sydney onto where Cairns should be it springs away for you to try again. When the game is in assessment mode this feature will not apply so you can put the names where you like and they will stay for the teacher to assess.

We have also developed a simple crossword game that changes each time it is opened to test knowledge on specific subjects, as well as a true/false game. In this game a statement is presented, if the answer is correct it moves to the next statement, if incorrect it provides an explanation.

All of these learning activities, while seemingly disconnected at the moment, are illustrative of what can be done in a range of ways as well as providing examples to share with other teachers to encourage their creativity!

Gradually gaps will become smaller and a culture of considering learning games as a part of the lesson planning process can start to grow.

Making it easy for the teachers

Each new semester teachers are exposed to changes in curriculum, different subjects to deliver and/or new ways of delivering teaching and learning. When faced with changes in technology they are frequently expected to both learn the new systems and change the way in which they prepare in order to accommodate these changes.

It is my intention, with the introduction of mobile learning as part of the delivery mix, to minimise the impact of change. We are in the process of developing a series of 'Wizards' or templates that guide the teacher intuitively through the process of creating learning activities with instant results.

For example, if a teacher wants to produce a multiple choice game for students the construction is the same for a great many subjects. The wizard will allow the teacher to import images and text from their own files according to prompts. Once the teacher has completed the process they have an immediate preview of what they have created so they can check and edit. Once they are satisfied, it can be immediately posted to the virtual shelf for distribution. The technology in the background will carry out the formatting changes for the different download options.

This software is in development now and should be ready for testing during the second half of 2005.

Preparing courses for multi-platform delivery

Interestingly, the deeper I delve into mobile learning the more it becomes about teaching and learning and less about technology. The challenge is about making all elements of delivery available in as many formats as possible so there is real learner choice and flexibility.

From my original model I have delved a little deeper into the structure of delivery and am now breaking it down further and further into manageable bites.

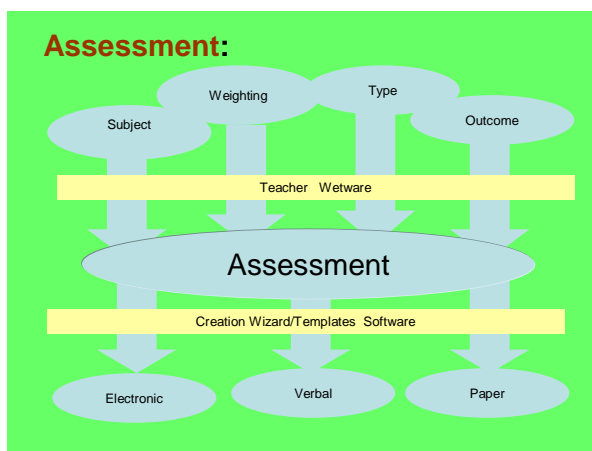
The first stage is to break down all study into three key aspects:

- Underpinning knowledge
- Learning activity
- Assessment

Underpinning knowledge is the largest and least containable aspect while assessment is the smallest and most manageable. Learning activities sit in the middle. A single assessment, test or exam will incorporate a relatively small number of learning activities fed by underpinning knowledge from a very large range of sources.

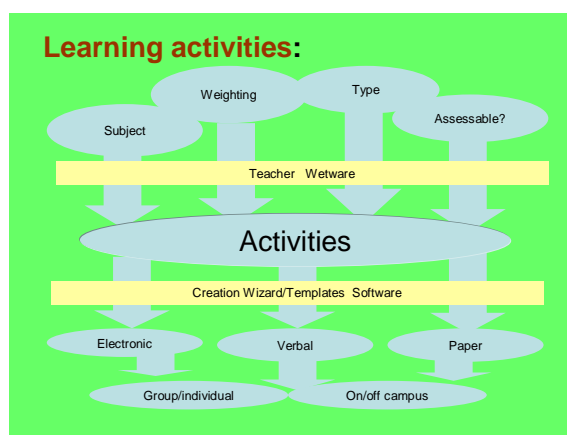
The course we have chosen to develop first as a multi platform delivery course is the Diploma of Event Management. Currently the course in greatest demand.

We are starting at the assessment point and working subject by subject. Subject X has 4 units, two of which have two assessments and two of which have one assessment.



It remains entirely up to the teacher to decide what the assessment should be but we do ask the question “how many ways can it be undertaken?”. The technology only takes up the task once the teacher has made these decisions. While the assessment in its current form may be adequate now, we will challenge teachers to think more flexibly in order to assess more flexibly.

Behind each assessment are three or four elements of learning. These elements already take many forms and some lead directly to the assessment while others are more indirect.



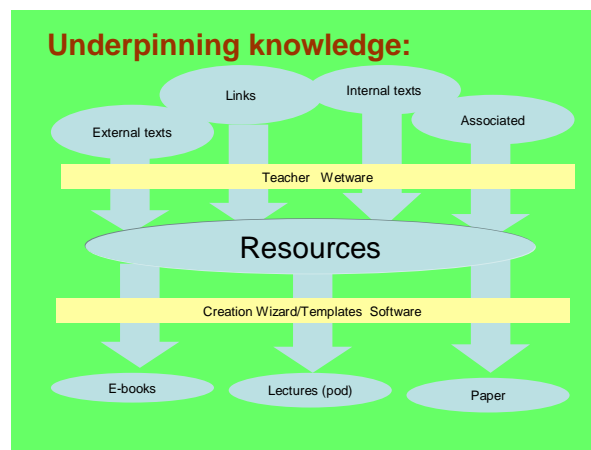
As with assessment it remains up to the teacher to decide on the learning activity but we do ask the question “how many ways can it be delivered?”. This is the level of learning games where the student can repeat them often and make mistakes.

In both the above areas, the object is not to remove the current delivery options but to augment them with further options. In order to make both the learning and the

assessment transferable from one form of delivery to another, the basic way in which they are set up may require some alteration.

The single focus amidst these changes will be to ensure that students are competent to do the tasks in hand, not just competent at playing the games!

Underpinning knowledge for all these elements can be delivered in a variety of formats from printed texts through teacher-created resources to the Internet. E-books represent the most desirable way of producing resources as they can be easily stored and saved on mobile devices, referred to regularly, bookmarked, annotated and saved, as well as being less expensive.



The WAI Library is also exploring the options of having resources in electronic format available for hire or purchase.

The plan for this project is now almost complete and as you read this we are unpacking the course to identify individual elements and map delivery options. The work then begins in actually building the elements from the teacher's perspective, and producing the materials in all possible formats.

We hope to be doing some serious testing with students towards the end of the year and have it as a true delivery option in 2006.

Where to next?

We are still at a very early stage in a process that, if we are to succeed, must be undertaken at a measured pace. Despite that, there is a real sense of excitement and this is driving our enthusiasm.

Each time we make a breakthrough we celebrate. When IT proved that the tests by wireless on Pocket PCs worked I was elated. Each new game that is developed is circulated for everyone to play with and hopefully further inspire.

Technology will continue to renew every 90 days but we now have the framework within which to manage those changes and, more importantly, we can now look at

each technological change with more informed questions as to whether it enhances our ability to deliver teaching and learning or whether it is change for change sake. To have clearly defined subject breakdowns available for delivery on multiple platforms such as this makes learning in complete courses or in smaller 'skills-sets' a reality for anyone, anywhere.

There is still a great deal to learn, there is still an enormous amount of work ahead but I hope that more and more educators are infected with my enthusiasm; not just for mobile learning but for the whole idea of embracing every means possible to deliver learning to students. If this concept is proven and adopted more broadly by educators then the ideal of "just in time, just for me" can become a reality.

Caryl Oliver is Manager of Travel & Tourism at William Angliss Institute in Melbourne. She also manages the Mobile Learning Pilot Project for the Institute. Prior to joining WAI Caryl ran her own tourism business for 18 years. In the past she was a champion fencer and represented Australia at her sport, now she enjoys less ferocious pastimes like swimming, reading and cooking.