the wings of learning

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MOBIlearn is a worldwide European-led research and development project exploring context-sensitive approaches to informal, problem-based and workplace learning by using mobile technologies. The MOBIlearn project

consortium involves 24 partners from Europe, Israel, Switzerland, USA and Australia. Their competencies are integrated and extended by a Special Interest Group which includes more than 250 of the World's leading organisations, active in Information Technology.

Evaluating a Mobile Learning Environment for Pedagogical Soundness

One of the key aims of the MOBIlearn project is to evaluate the pedagogic effectiveness of the learning environment. as well as the usability of the technology. According to Josie Taylor of the IET UserLab at The Open University, in the United Kingdom - tried and tested methods for pedagogic evaluation of specific applications of technology for learning are available but there are no existing comprehensive frameworks for broader formative evaluation in the mobile environment. This is largely due to its novelty as relatively few teachers and learners have experience of working in this way. So the project is simultaneously introducing new ways of engaging in learning with new artefacts as well as evaluating technical and pedagogic effectiveness.

However, this requires careful consideration so as not to skew the evaluation data gathered from users, who may find themselves fascinated by the new devices in a way which they may find interesting, and even fun, but which produce no lasting valuable impact on their work practices. They may simply then avoid using the technology 'in anger' once the evaluation study is complete.

Therefore, the project is developing a thorough understanding of : -
The learning opportunities presented by the new mobile technology
Its (potential) impact on the way people perform learning tasks
Its (potential) impact on human social processes and interactions
How these in turn are changed or modified by the technology

"learning takes place through activities and often within a social context"

Pedagogy in the mobile environment

Developments in pedagogy have moved away from the transmissive mode of teaching learning towards constructivist or socio-cognitive models that place the active learner at the heart of activities. Learning is considered to take place in a social context with the forming and re-forming of concepts not only taking place at an individual level, but also during collaborative group work and sharing knowledge with peers. So learning is perceived as being as much about communication as it is about content.

In fact some more radical pedagogical approaches, facilitated by mobile computing, would go a step further, and suggest that no content is a useful starting point for learning – a group of learners may decide themselves what they are going to learn, and how they are going

to learn it, bringing their own material to bear on whatever way they feel appropriate. According to Josie Taylor, the MOBIlearn project embraces this view of learning, with its emphasis on rapid communication and access to resources.

In this context - although usability is an important issue for evaluators to consider - Taylor believes that "it will not suffice for us to say that because the usability requirements have been satisfied, the MOBIlearn project has been successful from the pedagogic perspective". Pedagogical evaluation demands to understand not only whether or not a learner has succeeded in learning, but why that should be so. Understanding the reasons for success or failure depends upon deep knowledge of the appropriate relationship of tasks to the technology in question. – This area of knowledge spans both the pedagogic/educational and the technical fields.

In addition, Taylor considers that in adopting the human-centred view, it is philosophically unacceptable to disregard learners' existing tasks and their structures, and impose tasks upon them to what designers or teachers thought were "beneficial" – i.e. possibly favouring the capabilities of the technology rather than the users. She considers that "the active learner is at the heart of the enterprise, so we need to observe and analyse the effect of technology on learner actions, activities, intentions and goals as they engage in learning. Sometimes they will change, for good reason. Sometimes they will not".

Understanding activities

Addressing this issue, the project has adopted the socio-cognitive engineering method for system design originally developed by a team led by Mike Sharples, from the University of Birmingham, UK involving a two-stage process. The first stage involves "activity analysis" which sets constraints on the system design and analyses how people work and interact with their current tools and technologies. The second stage involves the design of new technology integrated into the user's/learner's environment and activity structures.

One such technique for engaging in activity analysis is a so-called "Future Technology Workshop" - developed by Giasemi Vavoula at Birmingham University - where participants are encouraged to consider the range of, and benefits of, their existing activities before being supported in thinking about how those activities could be more effective when supported by new technologies and services. This allows participants to approach the concept of a new activity structure in a way that has their goals at the forefront of the discussion, rather than have their aims and objectives subsumed beneath the glamour and glitz of new technology for its own sake.

In addition to this method, the project has also adopted an "activity theoretic perspective" that aims to inform analysis of the environment in which the activities are taking place, other potential collaborators in the activity, and the ways in which organisational requirements can impinge on those activities.

Through this enriched view of users and their current and future activities, in which learning is viewed as a distributed activity, the project aims to better understand the range of actions and opportunities which are on offer to mobile learners, and seek ways of extending this range to support what learners want to do – even if they themselves do not yet know what that is. This broadening of the scope of the 'learning system' enables a much deeper understanding of users' needs, and the constraints that govern their behaviour.

Therefore, Taylor considers that from the evaluator's point of view, the task is to evaluate the effectiveness with which learners are able to achieve their goals, and complete learning activities, irrespective of the specific devices that might have been used in doing so. Indeed, the same or similar activities could be instantiated in a variety of different ways depending on availability of technical support like access to wireless LAN and user preferences. This therefore results in evaluating the validity of the tasks themselves as vehicles for learning.

Conclusion

The evaluation framework for the MOBIlearn project is driven both top-down and bottom-up. The theoretical perspectives of Activity Theory and constructivism, here represented by the

m-learning Scenarios

The MOBilearn Project has now agreed upon four scenarios that it will develop, test and evaluate both from usability and also from a pedagogical perspective.

One scenario addresses the learning needs of members of an organisation's First Aid team. Although they have regular skills updating classes and assessment, in between times, they have little or no opportunity to practise their skills if no first-aid emergencies arise. They therefore often forget what they know due to lack of opportunity to embed their skills. The scenario utilises a mobile device that can receive and transmit text, photos, video and audio. The phone or PDA connects via the wireless local area network to the team leader's office. Various exercises including simulated location-based accidents are given to the first aiders to help them keep the skills up to scratch.

The second scenario involves the campus orientation of new students who have just arrived at university. Traditionally the orientation day is organised by experienced students, but this year

socio-cognitive method, allow the project to analyse learners in their appropriate contexts and to understand the nature of their learning tasks, and how they go about them. The Future Technology Workshops provide the project with much useful data on the views of potential mobile learners and what they see as crucial elements in their learning activities.

At the same time, usability studies are, of course, essential. As the MOBIlearn system is being developed, standard usability testing is being performed on component software and devices, in parallel with higher-level evaluations of pedagogic benefit. A key issue for the project in the future will be to ensure that the two levels can meet intelligently in the middle with a mutually informing discourse. Taylor believes that the task-centred approach will facilitate this marriage.

This article is based on a paper written by Josie Taylor can be found at http://www.mobilearn.org/results/results.htm or she can be contacted via email j.taylor@open.ac.uk
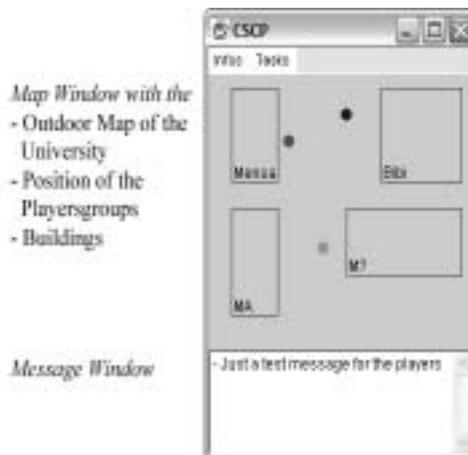
A PDA prototype for an orientation exercise

it is being electronically supplemented with handheld devices. The orientation rally is a fun event meant to get to know the university. It leads all participants through several tasks that lead them to various spots. Each student is asked to fill in an online-form with their personal profile - nationality, gender, age, personal interests, hobbies and favourite food. This helps each student identify other students with similar interests and enables them to find activities that are of interest to them.

The third scenario involves art history university students taking part in a course on the European art history of 1400-1500. One activity involves them visiting an art museum to learn more about the works of Sandro Botticelli. They first check whether the local museum has material relating to this topic using their mobile devices. They download times of opening, and a route map to get there. The mobile devices have a route finding facility, so when they take a wrong turn on the way, it helps correct their route.

Upon arrival their mobile devices automatically connect them to the museum network using their universal login details. Using their mobile devices they can access information for each of the artefacts displayed, with an accompanying commentary. They spend some time at one Botticelli painting, annotating the image with notes and sketches on their mobile devices.

The fourth scenario involves a finance manager who is taking an Executive MBA course whilst attending an on-campus three-day module. He uses his PhonePDA to annotate the powerpoint presentation of the slides and to link the relevant parts of them to his notes on the case study that he has been given. Using his PDA he is also able to take control of a video that is being shown to the class and rewind to a particular point for discussion with his fellow students.

"various exercises including simulated location-based accidents are given to the first aiders to help them keep the skills up to scratch - with the aid of a mobile device"

"using their mobile devices they can access information for each of the museum artefacts displayed, with an accompanying commentary"
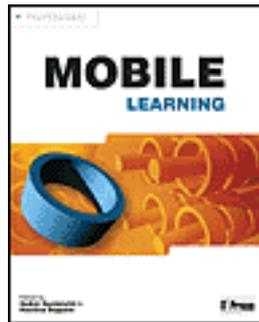
A recently published book "Mobile learning" aims to carefully analyse and provide a theoretical background of the way people are increasingly using mobile technology and how it may be used for educational purposes. The international cast of authors comes from a variety of disciplines each of them adding a specified view on mobility issues. The book includes reports of pilot projects which come from different educational branches. The theory of mobility is discussed based mostly on education, computer science and social sciences. The book is edited by Heikki Kynäslahti & Pauliina Seppälä and published by IT Press, Finland. Further details available at http://www.itpress.fi/vanhat/doc/kirjat/mobile_learning.html

"Future Mobile Handsets 2003" is claimed to be the definitive industry guide to technology trends and strategic issues surrounding the mobile handsets market. It was published in July 2003 by the ARC Group but it is not cheap at 4480 Euro. Click the picture above for further details.

Towards a model for m-learning in Africa

Dr Tom H Brown, Deputy Director of the Telematic Learning and Education Innovation, University of Pretoria, South Africa has recently written an article on how he sees developments in m-learning emerging in Afica. More information email Tom at: tbrown@postino.up.ac.za or go to: - http://www.up.ac.za/telematic/article.pdf

Handscape project

The CIMI consortium has recently announced that the Handscape Project has been been successful in receiving additional funding renewed for its 3rd Year until September 2004. CIMI is a US-based consortium of cultural heritage institutions and organisations aiming to work together to bring rich cultural information to the widest possible audience The project is supported by a grant from Intel Corporation's Intel Research Council. The Handscape project is focusing on understanding the value of on-line mobile for enriching the visitor's experience of a museum. It is aiming to investigate how visitors can be affected before, during and after the museum visit and the resulting impact on the design of such services.

They have the hypothesis that mobile technologies present an opportunity to radically evolve the way museums relate and communicate with visitors and that new applications and services designed for these devices can, through using the information resources of the museum, positively impact on the visitor experience.

Further information can be found at http://www.cimi.org/handscape/Handscape_renewal_200306.html

Mobile Learning links

Some useful links on mobile learning have been prepared by Jari Laru, University Oulu, Finland Go to http://cc.oulu.fi/~jlaru/mlearning.

Mobile Projects at the BBC

The UK public service broadcaster now has a Mobile Department within the Business Development & Emerging Platforms Group at BBCi - its interactive division. Although as yet they don't appear to be involved with any mobile learning projects - it's probably only a matter of time so it is worth keeping an eye on their web site at http://www.bbc.co.uk/mobile

Broadband Wireless Access in the last mile

This new report from SRI Consulting Business Intelligence highlights the potential business opportunities for delivering broadband Internet access to fixed sites where there is large opportunity to provide services to millions of homes and businesses for which wireline solutions aren't available.
Further information from http://www.sric-bi.com/DF/summaries/BrdbndWireless0603.shtml