Going Mobile with Distance Learners

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ABSTRACT

This paper will outline the aims and outcomes of a mobile learning project, focussed on enhancing the learning experience of postgraduate distance learners based in developing countries. The project, funded through a University of London Centre for Distance Education 'teaching and research' award, focuses mainly on the experience of selected groups of students in the Southern African Development Community (SADC) context.

The broad aims of the project were to explore how distance learning content and delivery could be enhanced to improve access and communication with tutors, and also pilot new approaches to the content design, and the design of learning activities.

The project phases included literature review; developing an understanding of the context; and then working with a group of students in the SADC region and other developing countries, to test out materials and mobile learning approaches designed for two distance learning course modules: 'Rural Development' and 'Information and Communication Technologies for Development'.

The paper will present this project as a case study, examining the steps taken and reflecting on key points that should be considered when developing mobile learning approaches that can enhance distance learning in rapidly changing contexts where technology access may be subject to constraints. The project is looking to the future, and seeking to identify relevant trends, and enable programmes to invest and prepare in tested approaches, with a view to supplementing and enhancing paper and e-learning based models of distance education.

The involvement of students is a central feature of this study. At the outset a baseline survey was undertaken and feedback from students has been invited throughout the process. An exciting prospect noted is the scope for mobile learning to support learning anytime and anywhere, and in ways which encourage students to be involved in creating and sharing their own learning resources.

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BACKGROUND

In August 2007, the School of Oriental and African Studies (SOAS) launched its new Centre for Development, Environment and Policy (CeDEP), and the former Wye Distance Learning Programme (DLP) that had been part of Imperial College London since 2000, was transferred to SOAS and became integrated into CeDEP.   CeDEP offers postgraduate distance learning courses through the University of London and has over two thousand students located in more than one hundred different countries.   The programme includes MSc courses in thematic areas including 'Agricultural Economics', 'Environment and Biodiversity', 'Sustainability and Development' and 'Public Policy and Management'. Many of the students are based in Africa and developing countries.

During the last decade, the approaches used within the distance learning courses for tutoring and courseware production, have been enhanced to encompass a blend of printed, electronic and where possible face-to-face methods. This has enabled the programme to innovate with distance learning pedagogy and encourage constructivist approaches situated in the learner context that support collaborative and interactive learning activities.

E-Learning tools and approaches, that make use of e-mail, Online Learning Environments (OLEs) and courseware CD-Roms have been developed, and the access barriers faced by students have always been an important consideration. As e-learning approaches have been introduced, there has been a concern that students based in developing countries where internet and email access is more constrained are the least likely to fully benefit.   This move towards use of e-learning, has brought considerable enhancements, but equally it has created a level of disconnect with some of our learners.

The Mobile Distance Learner in the Southern African Development Community (SADC) Region

The distance learning students in the SADC region are typically employed full time. They study when at work, when at home and during the lengthy periods when they are working in the field.   They represent a group who are very mobile and switch between urban and rural contexts where access to technologies and ICT infrastructures varies greatly. This presents challenges for the students as learners and for the distance learning programme itself in adapting its provision and pedagogical innovations to support them.   Electricity, access to computers, portability of learning materials, proximity of internet cafes and points where email can be accessed, communication with tutors and fellow students, and ability to carry out learning activities and assignments all pose difficulties that need to be addressed.   Over the last five years in particular the emergence of mobile phones and growth of the cellular infrastructure in the SADC region, has provided the scope for considering new portable, personal, and powerful communication and learning support tools.
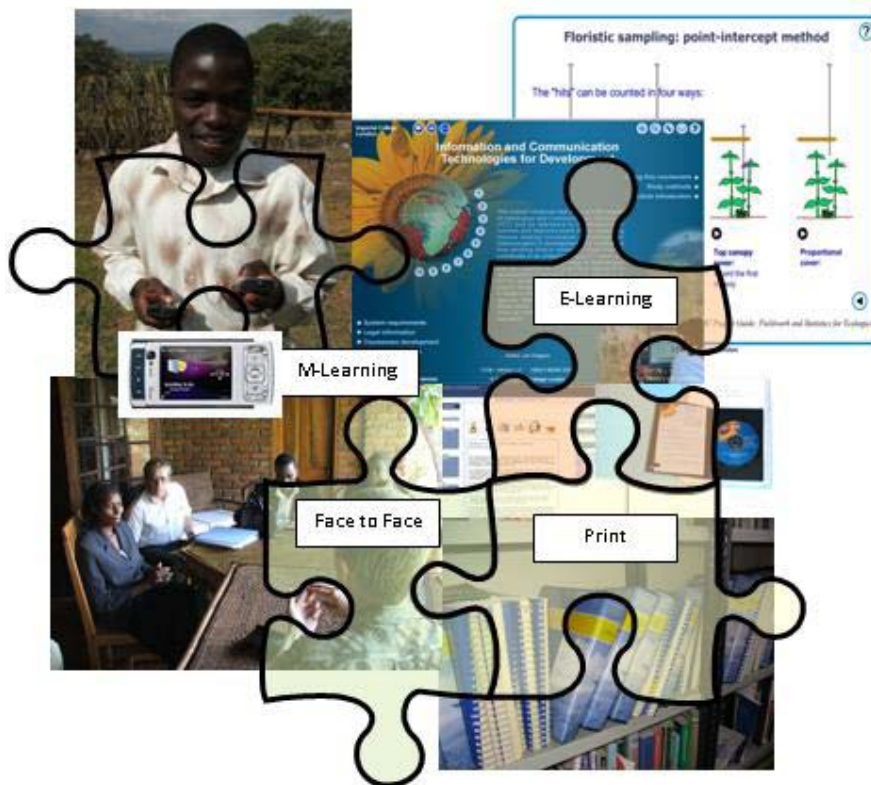
THE PROJECT:

DEVELOPING AN EDUCATIONAL MODEL FOR DELIVERY AND SUPPORT OF POSTGRADUATE DISTANCE LEARNING IN SOUTHERN AFRICA THAT INCORPORATES M-LEARNING

In 2005, the authors embarked upon a two year project (recently extended to a third year), funded by the Centre of Distance Education of University of London, exploring how m-learning can enhance distance learning approaches. The project is being implemented in close collaboration with University of Pretoria Department of Educational Innovation who have an established reputation in m-learning, and in particular in innovating with the use of SMS messaging for logistical support and instructional design of simple quizzes.

The Baseline

At the outset of the project a short survey was designed and sent to all SADC based students in order to clarify the student profile. The response to this survey indicated that the students considered themselves ICT literate and had good access to PCs (normally through their workplace) and good email access. Internet access was typically possible via Cybercafés and through the workplace, but it was noted that many students spent a few months each year away from their place of work. Steps were taken to address the problem of supporting students in this situation, and in-country tutorials and regional workshops were organised. These were partially successful, though in some countries attendance was disappointing. By 2005, the potential value to the students of being able to make use of mobile technology to support their studies particularly when they were travelling was now explored as an alternative.

The Context

In February 2006, a visit was made to Malawi and Tanzania where meetings took place with students and cell phone network service providers. Existing projects and relevant literature was reviewed, and this all suggested that the rapid diffusion of mobile phones and the evident investment in GPRS and 3G services could lead to some interesting new options for support and instructional design. Four students became involved in the process of assessing different mobile technologies which led to the purchase of Nokia N70 phones for the students to test.

At this stage we remained primarily interested in feasibility, and the students rapidly proved to us that they could use the still and video camera and recording features of the phone. Little support was needed, and files were transferred back and forth with the students, through a transfer and synchronisation process using PCs and email communication. This intermediate step is not considered part of a long term solution, but is necessary until such time as the GPRS/3G services become more widespread and the transfer of data is less costly.

Choice of Technology

The N70 has a rich set of applications and features that the four students testing it thought would support a range of approaches that had the potential to support their learning. In reality the N70 is a small handheld computer, camera, sound recorder, music player, radio, which also has voice and text communication features. It also has the screen and keyboard limitations associated with most mobile phones! Since 2006 many phones with similar or more powerful specifications have been marketed, and use of the N70 is considered indicative of what could be done with similar 2.5/3G specification models.

Instructional Design

Technology affects access and pedagogy, and depending on its affordances can offer new approaches, solutions to problems, and can also introduce new challenges. Chronologically m-learning has come after other e-learning applications. Rightly or wrongly in this project m-learning has been perceived as an 'add-on' that can enhance access and also potentially lead to pedagogical improvements and innovation in the following three main areas related to instructional design:

- providing alternative or replacement of content, where a concept could be most helpfully explained through audio-visual media rather than text
- improving support from tutors, through text messaging, and also through multimedia versions of the text based e-digests
- redesign of activities, so that the essay based Tutor Marked Assignment (TMA) model is turned into a series of tasks that can utilise the mobile device to capture and share audio visual material, and interact with the tutor and fellow students before submitting a small portfolio with a written component

Authors and tutors from two course modules – 'Rural Development' and 'ICT for Development' – now became involved, and started to look at the potential for addressing these three areas. The nature of the subject matter suggested different approaches for the two modules.

The 'Rural Development' module had an inherent narrative, and the author decided to record audio versions of some of the units. He also developed 'quick quizzes' designed to test and reinforce basic facts and that could make use of convenient 'learning moments' when a student wanted to spend a brief time using the mobile device to support their study. Videos were identified and converted for watching on the mobile device.

By contrast the 'ICT for Development' module had more interactive and technical content, and the instructional designer decided to focus on video and audio interviews, with the author and other

specialists. Short case study videos were also sourced and converted for display on the mobile device. Most significantly, alternative versions of the essay based TMAs were designed, that encouraged students to use the device to interview and capture data and share this with their tutor and fellow students. Students become more directly involved in creating resources that supported their study.

Course Pilot

In 2007, ten students from each of the two course modules were supplied with N70 handsets, together with the materials that had been developed, which were stored on an external 1 GB 'mini SD' card. Ten students were based in the SADC region, and ten more widely in a range of developing countries. The phones were supplied to the students at this stage for two main reasons:

- We wanted to assess the educational content, and not focus on a diverse set of mobile devices with different specifications
- We wanted to learn lessons that would inform programme design for the future, and therefore needed to be doing the pilot testing on equipment that was likely to be in more common use in 2009.

LESSONS LEARNED

The Changing Context

In May 2007, a follow up visit was made to Malawi, to meet the four students who had become core team members and providing ongoing insights, feedback and ideas. The advanced use they were making of the N70 was evident, with some using the office viewer software and scheduling applications, and also finding the camera and audio capture functionality useful in their work and study. Four important trends were noted:

- Mobile phone coverage was rapidly extending to rural areas
- Cost of the handsets and external storage cards was reducing significantly, and in some countries the cost of the N70 was approximately half the price compared to one year earlier
- The functionality and usability of new models of handset was increasing rapidly
- Student skills in the use of mobile technologies were developing

During this visit, we also met students who had received the new learning materials. There was obvious enthusiasm for the move towards more multimedia content, and the portability of the handset was seen as very useful. Students commented that the phone would be the 'last thing they would leave behind when going on field visits'. It was clearly a personal device, and having a phone which was more like a tiny computer that could support their study was certainly something that was making a significant difference for them.

All the students who were issued with the new course materials and N70 handsets had been asked to send in short videos and audios commenting on their experience, and many commented on the value of seeing and hearing their tutor, and felt that this made their study experience more personal and increased their commitment and the likelihood of them submitting assignments. Tutors also found the materials submitted by students of interest and value in supporting more personal communication.

Pilot Evaluation

A fuller evaluation of the project took place at the end of the study year in October 2007, and whilst the feedback from the surveys for both course modules was encouraging, particularly in relation to the additional audio and video content supplied to the students, the following points were noted:

- Activities should be kept simple, bearing in mind both the limitations of the equipment, and the time required for doing activities and often working full time whilst studying

- There were some technical difficulties in recording sound files, and in transferring large files between the students and the programme

The design of the learning environment for supporting students who use mobile technologies has to be carefully considered, but the changes in the context (in terms of growth of infrastructure and reduction in costs) are all positive, and in the next few years this should make a significant difference in the way larger multi media files can be shared. This in turn will make it more practical for students to be involved in the creation of educational resources.

TOWARDS A NEW M-LEARNING ENVIRONMENT
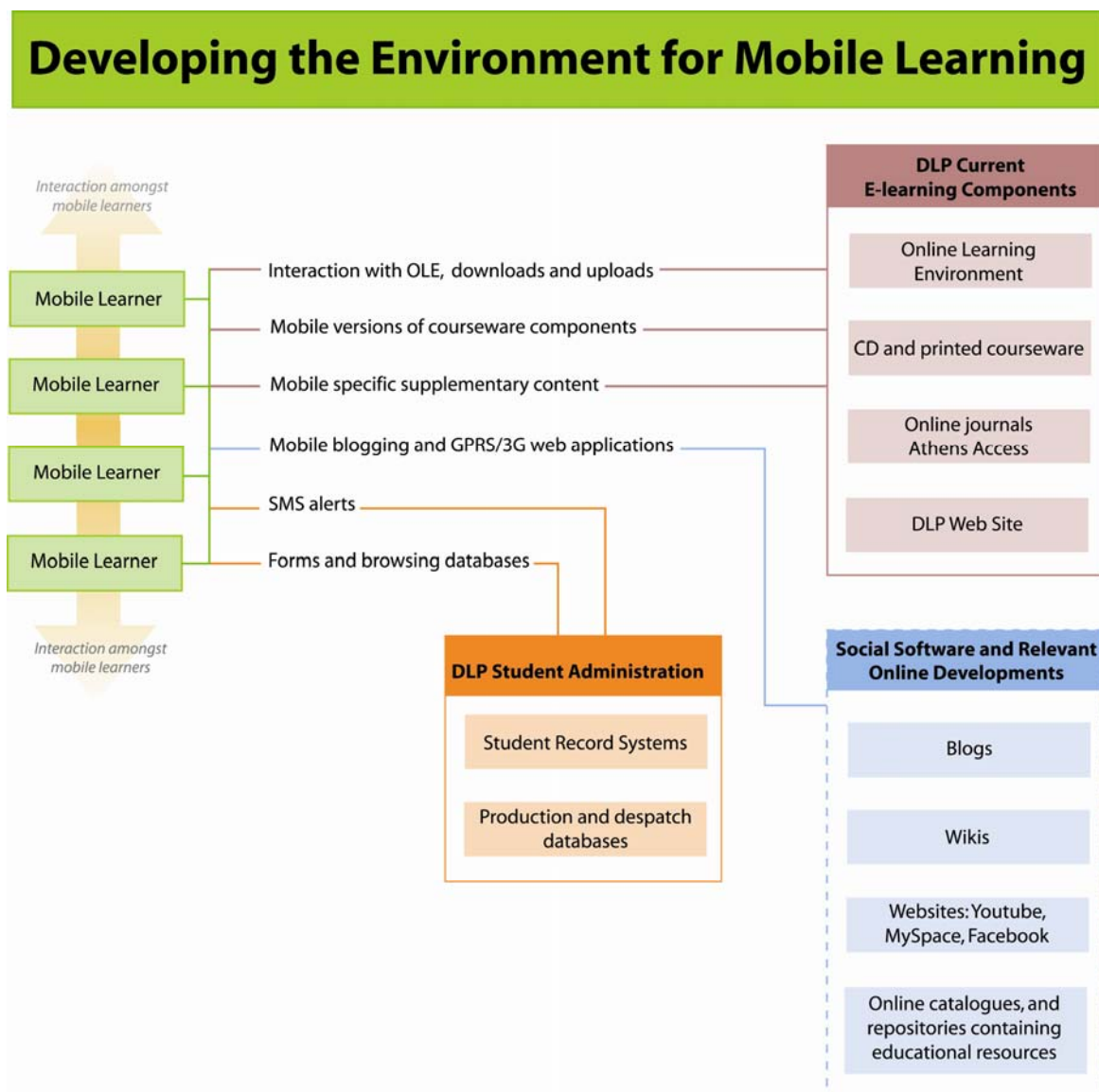
Mobile technologies encourage students to be able to study in new ways when they travel and move between technologically diverse locations. Laptop computers provide an example of this, and transform work and study, particularly when wireless connectivity supports connection to the Internet. Mobile phones take this a stage further, and particularly for students based in developing countries where Internet diffusion is limited, this can make a major difference.

Wherever students are located, they can increasingly communicate and engage with content sharing. This trend is only likely to continue, whether a student is based in a developed or developing country. This leads to the question of what kind of learning environment would best respond to the demands of the mobile learner, and what pedagogical approaches would suit this anytime / anywhere model. This is quite a different question from the initial focus of the current project, which looks at m-learning as an enhancement to existing approaches, rather than the starting point.

Existing programmes will need to evolve and re-orientate, but new programmes have the opportunity to invest in well designed mobile learning environments from the outset and treat the mobile learner and m-learning as an important first piece in a jigsaw. Fixed set up costs for distance learning are high, so it is important to plan early for the future. The diagram above is an initial attempt to capture the elements of an environment centred on the mobile distance learner.

Whilst they have not been specifically tested in this pilot project, other trends that make use of the devices capability to connect to web applications and online content repositories, are likely in the medium to long term to be of equal or maybe even greater significance. In particular the emergence of social software applications that network communities and interest groups (making use of blogs, wikis, podcasts), which will soon feature very strongly on mobile devices, have the power to impact upon and transform the design or learning resources and environments. Equally the move towards greater collaboration in the creation and sharing of educational content, as evidenced by the creative commons licensing approach and open educational resource movement will impact upon the design of learning materials.

The new generation of learners coming out of schools, have new expectations and already make significant use of many of the component applications shown in the diagram. However, it is very unlikely that mobile technologies can ever meet all the needs for delivery of teaching and learning. The jigsaw will continue to have face to face, e-learning (web and PC based) applications and make use of printed media. It is also important to note that delivering a coherent version of this kind of reformulated model requires rethinking assessment, quality assurance, authentication, plagiarism, administration and processes for authoring that efficiently produce learning resources for use on different media. E-learning has already created momentum for work on these areas, but a lot more would need to be done.

CONCLUSIONS

Distance learning is truly coming of age, and offering huge scope for innovative solutions. Most importantly, when m-learning approaches become embedded and fully accessible, distance learning also has the potential to be used strategically to address the access constraints to higher education in developed and developing countries, and support organisational training and professional development in new ways. The potential for connecting distance learning and m-learning approaches to global agendas such as poverty reduction, sustainable development, HIV/AIDs and climate change cannot be ignored within international development, and consequently cannot be ignored by the distance learning programmes focussed on development.

M-learning offers the potential to look at a design model for distance learning that starts with what 'Communication for Development' pioneer Don Snowden referred to as 'the first mile'. As connectivity improves the mobile learner becomes empowered to

- take their own responsibility for learning anywhere and anytime

- interact with and learn from fellow students globally

- access formal and informal learning environments and social software

- engage in the process of creating learning resources

- make use of personalised mobile technologies, that have utility in different learning contexts (e.g. University, workplace, social spaces)

The current project highlights that from an instructional design perspective, design of m-learning is contingent on context, student profile and subject matter. The focus needs to be on supply of multimedia learning resources, with communication and file sharing based initially on the exchange of text messages and sound files between students and programme. As the mobile web grows, there is great scope for use of social software supporting mobile technologies and engaging with a web based mobile learning environment. The immediacy of communication that mobile devices offer will lead to pressure to further adjust tutoring and administrative support models. Whilst there would be some obvious benefits from 'going mobile', many of which have been highlighted in this pilot project in the developing country context, the cost implications and time commitment involved also need to be carefully assessed.

Note: This paper includes adaptation of material included in the following conference papers:

Gregson J (2007) 'M-learning: the first piece in the distance learning jigsaw'; Paper for presentation at MLearn 2007, Melbourne

Gregson J and Jordaan D (2006) 'Exploring the challenges and opportunities of m-learning within an international distance education programme', Paper for presentation at the MLearn 2006 Conference in Banff, Canada

Gregson J and Jordaan D (2007) 'Designing courses for distance learners in Africa that make good use of mobile phone capabilities', Paper for presentation at the eLearning 2007 Conference in Nairobi