



Small but Perfectly Formed: Designing Learning Materials for Use with Mobile Devices
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PREFACE

The m-learning project is a 3-year pan-European research and development study which has partners in Italy, Sweden and the UK. Its aim is to use portable technologies to provide learning experiences relating to the literacy and numeracy skill development for young adults aged 16-24 who are outside full-time formal education settings, and to promote the development and achievement of lifelong learning objectives. The m-learning project partners are:

- Cambridge Training and Development Limited, United Kingdom – an organisation with technical knowledge and expertise in multimedia, print and hypertext which specialises in the design and delivery of training/education programmes
- Centro di Ricerca in Matematica Pura ed Applicata, Italy – the Centre for Research in Pure and Applied Mathematics at the University of Salerno, which is a specialist Maths and ICT research and development centre, particularly in areas related to artificial intelligence
- Learning and Skills Development Agency, United Kingdom – a strategic national resource for the development of policy and practice in post-16 education and training. The LSDA is also the project co-ordinator
- Lecando AB, Sweden – an organisation which develops software for the development of training and learning materials over the internet
- Ultralab, United Kingdom – a research and development centre, part of Anglia Polytechnic University, specialising in learning with ICT technologies and which has undertaken previous research into using ICT to re-engage teenagers into learning (eg the ‘NotSchool’ project).

About the author

Prior to working for CTAD, I was a teacher in Further Education for twenty years, as a subject specialist in English, English as an additional language and basic skills. I also designed computer-based materials for literacy and numeracy, including Target Skills and Skills Mission (materials for training young soldiers). The learners I worked with tended to be young adults with poor basic skills and a negative experience of education, who often benefited from non-traditional resources and methodology. I gained a masters degree in literacy, researching using creative writing techniques with reluctant young writers. My role in the m-learning project is to design content which can fit into mobile devices, is both

engaging and accessible by the target group and which can also act as a hook to attract them back into considering education or training.

What is the m-learning project doing?

Developing, trialling and evaluating a range of materials and systems for disengaged young adults

The m-learning project is attempting to meet the challenges by producing a set of innovative games, materials and activities which will not only motivate reluctant learners but also give them an opportunity to improve their basic maths and English skills in a way which complements their disconnected, mobile lifestyles. The m-learning system will be accessible via a range of mobile devices and will support both individual and collaborative learning via an on-line community. Some parts of the system will include a virtual tutor, whereas others will be supported via human mentoring.

What are the issues?

There are two main issues: technologies and learners. From the technology viewpoint, there is now a wide range of gadgets and systems: mobile phones, Palm, PocketPC, camera phones, SMS, MMS, J2ME, WAP, HTML, Voice XML. From the learner viewpoint, our target group covers a number of different groups of people with varying skills, both in terms of literacy and numeracy and in terms of IT. We need to establish a sense of unity across choice of gadgets and also develop materials that make use of appropriate pedagogy and are both credible and commercial.

Lessons from First Phase

The first set of materials were trialled with 33 young people in the UK from a range of centres (one of which provided a meeting point for homeless young people). A range of materials were trialled, using the themes of sport and moving into your own place, in which were embedded literacy and numeracy skills development. The learners were unanimously enthusiastic about this way of learning, and developed ways in which they could use collaboratively materials developed for individual use. The negative issues centred around cost: learners were reluctant to dial if they thought this would incur a cost to their phone, even after they had been credited with vouchers or reassured that it would not cost them. Additionally, although the learners were enthusiastic and enjoyed using the materials, it was not easy to measure learning gains.



The Second Phase

In the second phase, we will use both the new learning materials and also the whole m-learning system, including the m-portal and Individual Learning Adviser. The m-portal will provide both an access point and a communal space for learners to work as individuals or as part of a learning community. In terms of content, innovations in technology have led us to expand and modify our current themes. Lower spec technologies such as SMS and MMS will be our main focus, plus an increased use of Voice XML. We will be looking to adjust our methods for roll out to much larger numbers (300 learners). We are also interested in developing collaborative learning activities, using the information given to us from learners in the first phase of trials.

We are working with community, voluntary and education organisations, and the young people they support, to explore:

- How different groups of young adults interact with, and experience, the learning materials and systems designed by the project
- Whether their enthusiasm for learning appears to be improved by their mobile learning experiences
- Whether learning gains are made, including young adults' perceptions of their progress
- Different models of learning and support, eg collaborative learning, individual learning (with or without peer support), online tutoring, blended learning and standalone units of learning etc.
- How m-learning might contribute to addressing government targets for improving basic skills and engagement in education and training

Learning Content for Individual Use

There are advantages in using a mobile device for learning as an individual, particularly if you struggle with basic maths or English. The device provides a private, individual space for learning where you can work at your own pace without embarrassment. Individual content includes basic skills "health check" questions in the style of the new UK national tests, quizzes to develop literacy and numeracy using themes such as health, fitness, sport and driving, and more classic basic skills development modules ported from Target Skills (existing basic skills material developed by CTAD).

Learning Content for group learning: the collaborative map

The findings from the Phase 1 trials bear out the theories of situated learning: learners benefit from social aspects and enjoy debating, reflecting and articulating to others. CTAD is developing a means to develop an environment that mirrors a cycle of learning: providing an opportunity to try things out, to think about outcomes, to propose alternative theories and then apply them. New developments in technology will also be incorporated.

The "map" is a multi-dimensional virtual space created by a group of learners. The map could be of a real geographical place – a community, town, or building, for example – which learners have investigated and added to through photos, text and audio provided through a mobile device. A simple example would be an investigation of a town or city, with learners finding information about the history, geography or current facilities. Their pictures, audio and text would be fixed to the existing map to provide a multi-dimensional resource which could be added to and used as further learning material. A more complex interpretation could

be a map of the human body developed as a health education resource: learners could add pictures of healthy / unhealthy food, audio interviews with people who smoke or drink, interviews with health professionals, data from a huge variety of sources. This would make a much more interesting resource, and provide learning in the process as much as in the product. The idea could also be extended to more abstract or imaginative concepts; learners could use pictures for locations for a narrative, use audio text as part of the story, add music and so on.

Evaluation in Phase 2

m-learning will be evaluated using the mobile devices as far as possible, so that learners might receive a set of questions which they can answer via SMS or VXML. Content, learning and attitude will all be assessed, but it is envisaged that attitude to learning and degree of engagement with materials will be where most of the data is obtained.

Commercialisation

Bite-sized learning in the form of small engaging quizzes and games will have commercial value to suppliers and educators, as will the collaborative map kit. The learning content may have value as stand-alone or as part of a blended solution to learning. Evaluation tools may also have commercial value.