MOTILL

MOBILE TECHNOLOGIES IN LIFELONG LEARNING/BEST PRACTICES

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PREFACE

Ten years ago, in a paper on 'The Design of Personal Mobile Technologies for Lifelong Learning' I wrote that "there has been widespread discussion of the need to widen access to learning resources, particularly the worldwide web, from public places such as libraries. Far less consideration has been given to providing learners with technology to help them learn when and wherever they choose and to support their personal learning throughout a lifetime."[1] Since then, we have seen significant developments in technology, with smartphones offering mobile access to Internet resources, in the theory and practice of mobile learning, and in the introduction of personal devices such as laptop and netbook computers to universities, colleges and some schools. What is still lacking is the recognition in national policy that mobile technology forms an integral part of the new ecology of lifelong learning.

Learning is a process of mental and social development over a lifetime. It is not feasible to equip learners at school with all the knowledge and skills they need for a rapidly changing society. Instead, they need to be taught how acquire a set of conceptual and physical tools that will enable them to benefit from a diverse range of information sources, knowledgeable peers, and social networks. They must learn how to maintain a personal learning environment, to create a lasting profile of personal needs and interests, to access and filter a vast amount of information, and to manage formal and non-formal networks for social learning.

The mobile phone and the laptop computer have become the tools to organise this integration of personal, social and institutional learning. The MOTILL project, in collating, analysing and presenting good practice in the use of mobile technologies for lifelong learning has performed a valuable service to policy makers throughout Europe. As External Expert for the project I have been impressed by the care and expertise with which the team has reviewed research and presented it in a form that can influence policy and practice.

It is clear from the MOTILL database that Europe is the focus for world-leading research and development in mobile learning. The challenge now is for policy makers to draw on the good practices identified by the project to form strategic priorities for lifelong learning in the mobile age. This will require some further investment in mobile networks and in the reform of European telecommunications. But the main work will be in alerting educational leaders to the opportunities of mobile technologies as resources for learning. The good practice identified by MOTILL needs to be disseminated, showing how mobile technology can connect learning across formal and non-formal settings, how smartphones can be used as scientific instruments for collecting and analysing environmental data, how students on work placement can capture critical learning events, and how mobile phones can support peer learning networks. In just ten years there has been a transformation of personal learning, such that mobile communication, digital media, and technology-mediated social networking have become part of daily life by many people across Europe and worldwide. Most people now have technology that can help them learn when and wherever they choose. The next step is to harness this social and technological change for the benefit of learners of all ages, social settings and cultural backgrounds.

Mike Sharples, University of Nottingham

1. Sharples, M. (2000) The Design of Personal Mobile Technologies for Lifelong Learning. Computers and Education, 34, 177-193.

PART I

THE MOTILL PROJECT

The widespread diffusion of mobile technologies in all the EU countries offers an opportunity to develop policies aimed at participation and social inclusion, considering that the use of mobile devices transcends age, social status, economic level, gender and ethnic origins. Although the scientific community has highlighted that mobile learning could be a suitable Methodology to support lifelong learning (LLL), national policies have not yet taken any significant steps to integrate LLL and mobile technologies. This integration could have a positive effect on several indicators, such as the participation rates in education[2], the skill level of teachers/trainers in the use of ICTs, the diffusion of mLearning.

The MOTILL project, funded by the European Commission within the National Lifelong Learning Strategies, fulfils this need for integration by developing a common framework that involved educational research centres and both public and private agencies engaged in the sector of education and training. The project involves partners from four different countries: Italy, the United Kingdom, Ireland and Hungary. Each national context is different with respect to the lifelong learning policies adopted[1] and to the diffusion of mobile devices. For example, Italy shows high diffusion of mobile devices but insufficient participation in LLL activities, and the objective to increase this participation level is explicitly declared in the government's strategic plans for 2007-2013. As reported in the Final report of the Committee of Inquiry, Changing Learner Experience, in the UK, the number of people involved in LLL programs is more significant and there are initiatives to analyse the impact of the newest technologies, such as mobile devices, on the behaviour and attitudes of learners. Ireland has established national targets in the benchmark areas defined by the EU in the "Education & Training 2010" program, but there has been a delay in setting out strategies related explicitly to LLL.

2. ECs Commission, Progress Towards the Lisbon Objectives in Education and Training - Indicators and benchmarks, SEC (2007) 1284

In contrast, Hungary has established explicit national LLL strategies, but mobile technologies have not yet been as widely adopted as in other EU countries[3].

The MOTILL project focused on the use of mobile technologies as a key factor in developing flexible LLL frameworks for education. The project collected, organized and analyzed pedagogical approaches that exploit mobile technologies for LLL in order to identify and spread good practices in this field. This action could have a positive impact on educational policies, fostering learning communities, promoting LLL initiatives, and facilitating the involvement of groups at risk of exclusion.

During the project, the main results obtained were as follows:

- ↘ a Scientific Annotated Review Database (SARD) offering reviews papers concerning the use of mobile technologies in LLL;
- ↘ an Evaluation Grid (EG) used as a methodological framework to analyse and highlight mobile learning experiences. This framework takes into account management, pedagogy, policies and ethical issues;
- ↘ a Best Practices Collection (BPC), assembling the most relevant mobile learning projects carried out in the partners' countries;
- ↘ a MOTILL Web Portal (MWP), an open space for public dissemination of the project outcomes dedicated to public and private institutions, research centres, educators, and trainers and emphasizing the impact of Information Society Technologies on the future of LLL.

One of the most important aspects of the MOTILL project is the involvement of policy makers to promote local and national targets for lifelong learning in line with European benchmarks and strategic objectives.

In fact, policy makers play a crucial role in this field because of their capacity to promote the benefits of mobile lifelong learning by:

3. www.ec.europa.eu/education/pdf/doc66_en.pdf

↘ making the best use of the efficiency of mobile working, learning and teaching in their own institutions;

↘ setting out strategic priorities that contribute to meeting existing and future targets for adult learning, vocational training, and higher education;

↘ increasing investment in pre-primary and post-compulsory education;

↘ promoting private investment in mobile learning technologies;

↘ investing in further research into the impact of mobile technologies on lifelong learning;

↘ supporting the development of next-generation mobile networks and the reform of European telecommunications;

↘ ecouraging institutions and educators in the private, public, and not-for-profit sectors to explore and adopt innovative mobile learning technologies.

As illustrated in figure 1, the MOTILL project brought the identified good practices and methodologies to the attention of policy makers. To achieve this goal, the partnership introduced the policy makers to the state of the art on how mobile technologies can best support lifelong learning (SARD), as well as the good practices in this field resulting from the main activities carried out in the partner's countries (BPC).

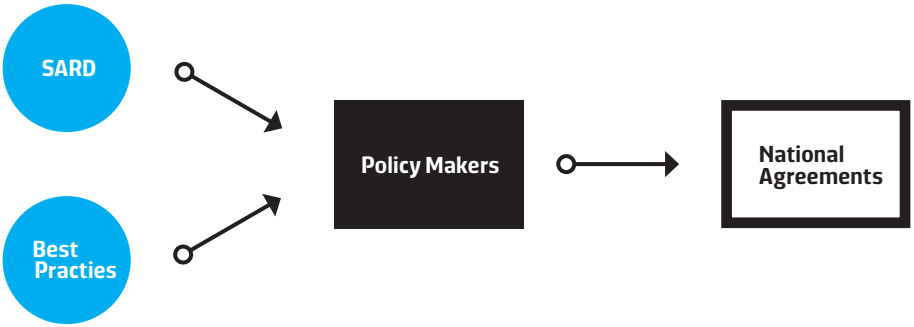

Figure 1/ Main MOTILL outcomes.

Finally, partners signed national agreements with policy makers to promote new national initiatives in which mobile technologies will play a crucial role in lifelong learning strategies. The following sections provid a brief description of the activities and procedures adopted to obtain the main project outcomes.

SARD/ SCIENTIFIC ANNOTATED REVIEW DATABASE

The SARD is a Scientific Annotated Review Database that provides a comprehensive set of references to the major research initiatives concerning the use of mobile technologies in Lifelong Learning (LLL) supported by integrative and critical commentary. This database is accessible online to the community of scholars, teachers, and researchers. Its content is also relevant to policy-makers, as the reviews include specific comments on the implications of research for policy. In order to design the SARD, a rigorous approach was adopted to collect, tag, and review the selected research initiatives. The project team first identified appropriate descriptive 'common tags' and key concepts in mLearning and Lifelong Learning and grouped these into categories; then, the tags have been used to classify the research initiatives. The Methodology used is described in details below.

METHODOLOGY

Paper collection/ Each partner selected and studied at least 10 significant papers about mobile technologies in LLL.

Tag phase/ The partnership identified the most suitable descriptive tags for each paper using a bottom-up approach and then shared them with the project members. The partnership defined some categories and grouped tags with a similar level of granularity. The result of this phase was a group of common tags to be applied in the paper reviewing process.

Planned reviews (40+papers)/ A structure for each review was agreed, comprising:

- a summary;
- a comment about the lifelong learning context;
- a comment about mobile technology and learning;
- a critique of the paper;
- a comment about implications for policy-makers;
- a selection of relevant tags, from the agreed list of 'common tags';

The reviews have been carried out applying a 4 phase procedure:

first review/ The papers have been split in 4 groups and assigned to each partner to be reviewed;

peer review/ Each review has then been peer reviewed by a researcher belonging to a different partner;

super review/ The reviews have been super-reviewed by the irish partner in order to guarantee a common qualitative level from a scienfitic point of view;

editorial review/ The super reviews have been edited by the uk partner in order to improve the documents' linguistic quality.

Extra reviews (8 papers)/These reviews are a selection from a list of additional relevant papers proposed by external experts involved in the project.
The extra review phase was exactly the same as the planned review phase.

A schema of the proposed Methodology is illustrated in figure 2.

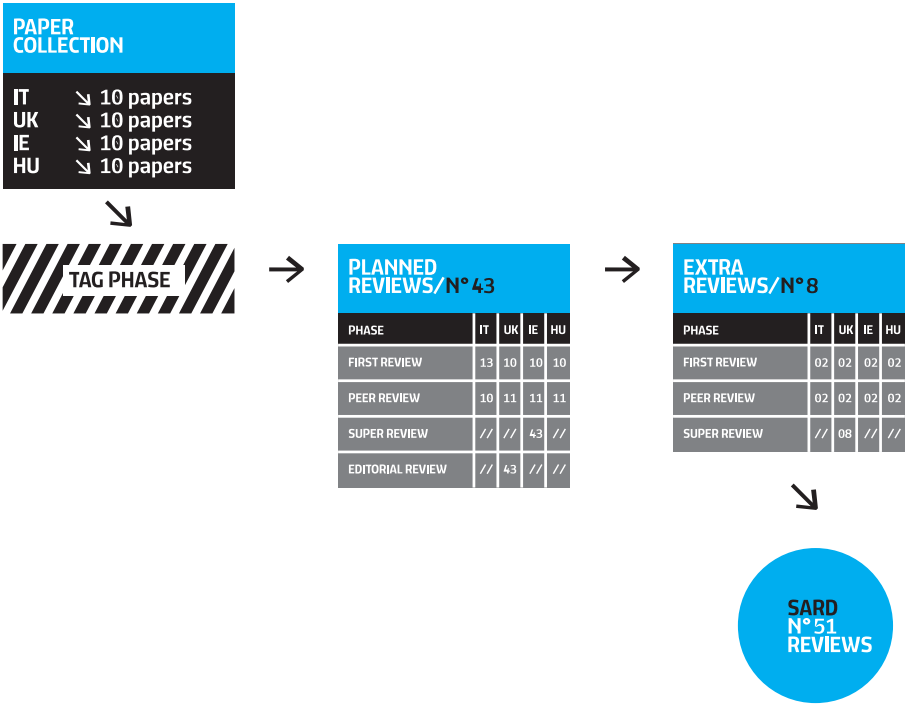

Figure 2/ SARD Methodology

EVALUATION GRID

The Evaluation Grid was conceived as a tool that would enable MOTILL project partners to work in a consistent manner to identify 'best practices' in the use of mobile technologies for lifelong learning, whilst taking national and local contexts into consideration.

METHODOLOGY

The Evaluation Grid (figure 3) was designed taking into account the work done by MOTILL researchers for the SARD. Starting from some of the key concepts identified in the tag categorization phase, the partnership generated 18 items distributed across the Management, Pedagogy and Policy areas. Each item consists of one or more questions that will guide a best practice in-depth examination. The Evaluation Grid was used in interviews with those involved in the best practice projects, to get

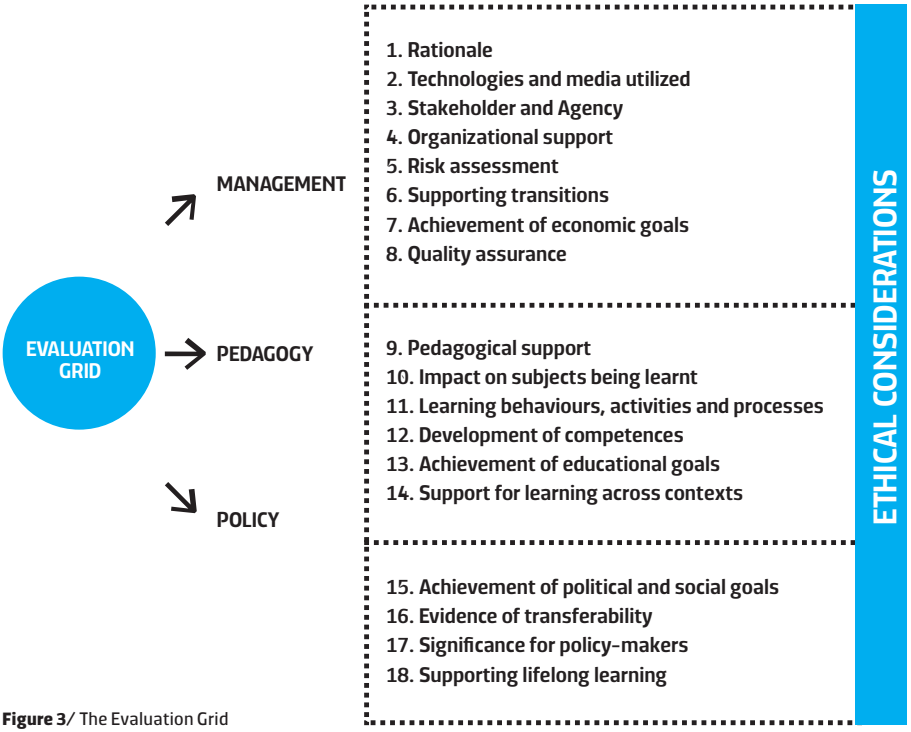

Figure 3/ The Evaluation Grid

more information about each instance of best practice. In the Evaluation Grid, ethical considerations are transversal to all the dimensions considered. The following table reports the questions used for the interviews.

MANAGEMENT

↘ 1. Rationale

What is the rationale for this new practice or innovation? Why was it introduced?

↘ 2.Technologies and media utilized

Specifically which technologies and media are used, and how?

↘ 3. Stakeholder and Agency

Who is involved in this practice? Who initiates the practice: the learner or another party? Who manages the practice: the learner or another party?

↘ 4. Organizational support

Who provides support for this practice? What are their roles? What is required to conduct this practice? (e.g. Staff, equipment, expertise, venue, funding etc

Does this practice have a sponsor/funding?

What are the costs of implementation (for the organization and the learners)?

↘ 5. Risk Assessment

What are the main challenges faced by this practice? How have these been addressed? How could they be overcome more efficiently?

↘ 6. Supporting transitions

Specifically how do mobile technologies support transitions at the level of educational practices? (e.g. between formal and informal learning, between one level of learning and the next).

↘ 7. Achievement of economic goals

What economic challenges/issues does this practice address? What problems does it solve? Are these local or national?

↘ 8. Quality Assurance

What is the value of this innovation? Has it been evaluated or researched?

Has the evaluation or research been reported & how? What were the findings?

Is there evidence of quality? What is the best of this innovation?

What needs to be improved & how could it be improved?

PEDAGOGY

↘ 9. Pedagogical support

What pedagogical approach is used? What pedagogical resources? How does this practice support or enhance teaching and learning?

↘ 10. Impact on subjects being learnt

How is the subject or discipline changed by the use of mobile technology?

↘ 11. Learning behaviours, activities and processes

How does learning take place? What are the learners doing and why? To what extent do learners initiate and manage their learning?

↘ 12. Development of competences

What skills and competences are learners acquiring through the use of mobile technology?

↘ 13. Achievement of educational goals

What political educational challenges/issues does this practice address? What problems does it solve? Are these local or national?

↘ 14. Support for learning across contexts

What are the physical and social contexts in which this practice takes place? (classroom, workplace, outdoors, virtual; individuals, groups, etc...).

How are learners enabled to make connections and transitions between contexts?

POLICY

↘ 15. Achievement of political and social goals

What political and social challenges/issues does this practice address?

What problems does it solve? Are these local or national?

↘ 16. Evidence of transferability

To what extent is this practice transferable to other contexts (local, national, international)? Is there evidence of transferability? Is there potential?

↘ 17. Significance for policy-makers

What makes this practice important, i.e. what is its local, national or international significance? (for example in terms of its actual or potential impact).

↘ 18. Supporting lifelong-learning

Specifically how do mobile technologies support social and cultural transitions? (e.g. social mobility, inclusion, lifelong learning).

ETHICAL CONSIDERATIONS

Were there any ethical considerations when planning, implementing and/or evaluating the project? (e.g. copyright, accessibility, privacy).

BPC/BEST PRACTICES COLLECTION

The Best Practices Collection (BPC) collects the most relevant mLearning projects identified following the guidelines defined by means of the Evaluation Grid. In order to promote and improve the visibility of good practices, the BPC is also accessible online via the MOTILL Web Portal (www.motill.eu).

Methodology

The BPC was created by means of the following phases: gathering, identification, analysis and interviews. In the first phase, in each country of the partnership, experiences of mobile learning for lifelong learning were gathered. On the basis of this set of experiences, the partnership identified 25 relevant projects. In the second phase 11 projects were selected and analysed in detail. Finally, in the last phase, the partners contacted each selected project to arrange an interview based on the Evaluation Grid previously defined. These interviews were conducted both in face to face meetings and online. The data gathered in this phase were used to compile the tables presented in this booklet and they also constituted the basis for developing a meta-analysis of the selected projects. The meta-analysis aimed to summarize the main management, pedagogical, political and ethical issues, highlighting strengths and weaknesses in the organization of mobile learning initiatives to policy makers and education practitioners.

PART II

WHAT HAVE WE LEARNT ?

This section presents a meta-analysis of the systematic comparison of the selected projects detailed in part III. The aim of this meta-analysis, carried out jointly by all the partners, is to highlight the aspects of the 'best practices' which are most relevant for the beneficiaries of the project results, such as policy-makers and teachers. In particular, some general considerations and suggestions on how mobile technologies can best support lifelong learning are proposed and categorized according to management, pedagogy and policy dimensions. Finally, a brief summary of the ethical considerations is also presented.

MANAGEMENT

The projects analyzed in this booklet describe a complex scenario in which the use of mobile technologies in lifelong learning is very flexible. In the case studies, the most common application of mobile technologies is for educational and training purposes. In particular, schools, universities and educational staff have been involved in the following activities:

- CREATING CONTENTS SPECIFICALLY DESIGNED FOR MOBILE DEVICES;
- SETTING UP NEW PEGAGOGIES AND EDUCATIONAL PRACTICES SUPPORTED BY MOBILE TECHNOLOGIES;
- DESIGNING TOOLS AND INFRASTRUCTURES TO MAKE CONTENTS AVAILABLE ON NEW CHANNELS AND DEVICES.

Although many projects have focused on the integration/testing of mobile technologies in traditional educational institutions, the projects in this collection also introduce activities aimed at meeting social needs such as mental health treatment, immigrant integration or young people's participation in cultural events. Many technologies are used in the practices investigated: SMS, MMS, VLE, LMS, GPS, and various models of mobile devices. But the most interesting observation about technological aspects is the role of the device in each practice: in the most frequent

cases these technologies are used only as a gateway to access/create/download particular contents. Only a few projects propose a bidirectional way of communicating, allowing users to interact with tutors, teachers or peers while using the device. This interactive approach seems to have a positive impact on both user motivation and the creation/reinforcement of social relationships, but it introduces further management problems. In fact, these kinds of mobile learning projects require strong support from both IT specialists and educational technologists, as well as from highly skilled educational staff who feel comfortable with the technologies being used. It is in fact the teachers and trainers who may jeopardize the success of a mobile learning project in LLL. An analysis of the collection of projects raises a number of issues that need to be considered in order to maximize the effectiveness of the experience:

- HARDWARE AND INTERNET CONNECTION ARE STILL ONEROUS AND THEY RAPIDLY BECOME OBSOLETE;
- EDUCATIONAL STAFF ARE OFTEN LACKING IN TECHNOLOGICAL SKILLS AND IT MAY BE EXPENSIVE TO TRAIN THEM;
- MOBILE LEARNING ACTIVITIES ARE NOT EFFECTIVE IF TEACHERS ARE NOT COMFORTABLE WI THE TECHNOLOGIES BEING USED;
- DIGITAL CONTENT RIGHTS, POLICIES AND PRIVACY RULES NEED TO BE DEFINED.

Mobile technologies play a crucial role in promoting transition. The projects chosen for this booklet show that they can facilitate the passage from one state to another. This happens by moving informal competences to a formal scenario, improving the level of study, supporting movement between learning institutions (e.g. from school to university), changing from individual and uncreative work to collaborative creative interactions as well as supporting the change from illness to wellness.

Finally, it is evident from these case studies that mobile learning projects require effective procedures for monitoring quality assurance. Strong measures and indicators are needed to guarantee the quality of both the outcomes and the implemented methodologies. Moreover, further guidance has been provided by the production of various national and international scientific papers in which methodologies and results were analyzed in depth.

PEDAGOGY

The projects in this collection have utilized the unique affordances of mobile technologies to construct learning approaches in support of educational and social goals which may be summarized as follows.

In relation to learners:

- FACILITATING ACCESS AND SOCIAL INCLUSION;
- RESPONDING TO LEARNERS' NEEDS (SUCH AS COLLABORATION); AND THEIR TECHNOLOGY USE HABITS;
- ENABLING STUDENTS TO MANAGE AND DIRECT THEIR OWN LEARNING.

In relation to contexts of learning:

- TAKING LEARNING OUT OF THE CLASSROOM AND INTO THE REAL WORLD;
- ENABLING CONSTRUCTION OF LEARNING IN CONTEXT;
- PROVIDING LEARNING CONTENT BASED ON CONTEXTUAL INFORMATION; ABOUT THE USER .

In relation to curricula and learning content:

- USING ONTOLOGIES TO CREATE MULTIDIMENSIONAL CURRICULA THAT WORK AT SCALE AND CATER TO INDIVIDUAL NEEDS;
- ENABLING MASS-CUSTOMIZED LEARNING CONTENT DELIVERY;
- HELPING TEACHERS AND INSTRUCTORS TO PROVIDE PERSONALIZED CONTENT FOR STUDENTS.

A range of familiar pedagogical approaches is evident across the case studies - including behaviourism, cognitivism and constructivism; but the projects have also led to the development of new models of instruction to fulfill specific educational aims. The new models attempt to describe the agency of the learners, the various settings where learning takes place, and how it is necessary to re-think the educational process, content and objectives.

The need for those in post-compulsory education to manage and direct their own learning is widely recognised as essential to their success as lifelong learners. The case studies demonstrate how the use of mobile technologies has increased the level of engagement of the learner with the learning activities. There is also evidence of positive impacts on learners' self-perception. The case study Mobile Mood Diary makes use of an existing model for mood monitoring and shows how mobile technologies can change the medium of the diary with positive educational benefits, allowing the learners to have more control over their own learning (the impetus for the project comes from a teacher or a therapist, but the level of engagement with it relies on the learner). At the University of Bath, the integration of SMS messaging and the Virtual Learning Environment brings about a greater level of transparency in the way that courses are run, and encourages students to take greater control of the style and the content of lesson delivery. Their blended approach to learning uses Laurillard's model of transactions within conversational frameworks to explain how each instance of communication supports the development of reflective pathways within the learner group as a whole.

Researchers on the WoLF project were able to categorise participants according to their use of the PDAs, exploring the relationship between different learner preferences and levels of comfort or familiarity with the technology. Learners using the devices developed a number of important skills, including analytical skills (gathering

and reflecting on evidence), technical (using the PDAs and navigating the Virtual Learning Environment) and communicative. Researchers felt that the project also had a positive impact on the ability of learners to manage (and take responsibility for) their own learning; this was particularly important given that the learners in question were workers with full-time jobs. The PDA devices helped students to organise their work and provided continuity between formal and informal learning contexts, as well as providing important opportunities for course leaders to give formative feedback through email and instant messaging services, both of which were accessible through the device. Overall the case studies show learners' positive engagement with subject matter; furthermore, it may be said that the mobile technologies have a transformative effect upon the subject matters involved and the traditional boundaries between them. The Federica project uses a blended approach assisting students with a web-learning platform in order to reduce digital and cultural divides while facilitating access and social inclusion. Thanks to the open access philosophy of Federica, students and Internet users can orientate their studies across disciplinary boundaries and browse deep into the university website.

According to the social constructivism paradigm, knowledge is not transferred from teachers to students, but is the result of collaborative activities; when these activities take place in a mobile environment, it is extremely important to consider how the temporal and spatial factors can influence the collaborative process. The learning activities of the MoULe project have taken place in different physical contexts (the classroom, outdoors) and across different cultural environments, and a model for a mobile Knowledge Building Process was defined. On the basis of this model, the researchers studied the evolution of a mobile collaborative learning experience through interactions in social, information and geographic spaces. One of the aims of the system was to introduce the constructivist paradigm in everyday life

situations: students learnt that the objects around them can be transformed into learning objects. The appeal of real life learning is also exploited in the Fón project, which extends the context for increasing fluency in a spoken language out of the classroom and into real conversations supported by mobile technologies.

The LOGOS and Contsens projects have considered pedagogy as a means to validate technological developments, but what is notable is that both projects have used ontologies in order to give a structural description of pilot courses. Ontologies have great benefits in education as descriptors, and with the help of ontologies it is possible to create a multidimensional curricula model which both enables mass-customized learning content delivery and helps teachers and instructors to provide highly personalized learning content for students. Mobilization of learning has also been a key issue in both these projects. The LOGOS project concentrates solely on multiplatform content delivery of a given learning object, whereas the Contsens solution uses the mobile device as a sensor, collecting contextual information about the user. Later, content based on this information is provided to the learner automatically. The innovative aspect of the ENSEMBLE project lies in the research and experimentation involving specific approaches for producing mobile technology resources; furthermore, the participation of adults and students in the ENSEMBLE project emphasizes the use of open, flexible and innovative learning methods responding to the needs and habits of learners (as in the use of mobile phones and other personal devices). In particular, the research team identified specific formats and language styles for the MMS and podcasts produced in the project, which take into account the constraints of the adopted technology, the characteristics of the beneficiaries, and their expected use of the technology. Consequently, the MMS and podcast formats aim at producing stimuli for the learner by adopting effective communication solutions. Pedagogical knowledge, instructional design competences, usability and ergonomic

strategies are important elements of the research work done by the project team. Mobile devices are also suited to supporting learning in contexts which are less formal, or where the learner is substantially or entirely self-managed or self-directing. At Bletchley Park, learners are supported in the transition between the formal environment of the museum and more informal learning scenarios through the continuity provided by intelligent navigation of the museum's digital archives. The transferability of the success of all these projects, together with lessons learnt from aspects that did not work so well, represent a significant contribution to the role of mobile technologies in teaching and learning.

POLICY

There are various issues emerging from the policy related findings of the Motill good practice selection. These issues cover a wide range of economic and social problems, where mobile learning can make a positive contribution. However, policy makers should also keep in mind that, just like any other solution, mobile learning only works if there is suffient financial backing. To sum up the most important policy related factors, the Motill project created the following list:

Educational challanges:

- ↘ national accreditation and acknowledgment of mobilized courses is still problematic;
- ↘ mobile learning addresses problems regarding the organization of educational curricula, which needs to be solved;
- ↘ open content initiatives proved to be viable, worth to raise further attention.

Social challenges:

- ↘ mLearning initiatives are tackling horizontal Lifelong Learning policies, like discrimination based on race, religion, location, health or age;

↘ through lifelong learning processes mLearning applications act towards the favor of social groups, which are at risk of being marginalized.

This experience is transferable across Europe;

↘ mLearning may have a significant impact on social inclusion of immigrants across Europe;

↘ mobile technology in education works towards widening participation in educational activities.

Financial challenges:

↘ there are models and good examples for cheap mobile learning;

↘ however new forms of funding are necessary, as institutions have great difficulties when integrating the latest technology into their administrative and educational processes.

ETHICAL CONSIDERATIONS

Which arise from the use of Mobile Technologies in LLL: Due to the diverse nature of the projects evaluated a range of ethical issues emerged. These issues can be categorized under three main headings: Accessibility, Privacy and Security and Copyright.

Accessibility

Giving learners access to the mobile technologies in these projects raised various ethical issues. Where lack of access to mobile technologies would lead to an inability to engage with the learning experience, mobile devices were provided to the learners. However, where the provision of a mobile device in order to facilitate engagement with the learning experience could be perceived detrimental to the learners perceptions of the experience, their own devices were used. Keeping the cost of using mobile technologies to a minimum was an ethical consideration for the projects. As the proliferation of Mobile technologies was not considered universal, by some of

the projects, the learning activities formed a supplementary role and other means of access to the learning experience were provided. An alternate means of access to the experience was an ethical consideration arising from concerns about the literacy of users in relation to using mobile technologies.

The context for the use of the mobile technologies also revealed ethical issues in relation to accessibility; care had to be taken not to undermine the ethos of the learning institutions approach to mobile technologies. This was particularly evident in projects in schools and museums. Modifications to the learning experience in order to support access by learners with physical and cognitive disabilities were also undertaken to foster inclusion.

Privacy and Security

The provision of private and secure learning environments for learners was a prevalent ethical concern. Many initiatives were undertaken to protect the privacy of all partners in the learning experiences. The limitation of the functions of the devices used, the anonymity of users and adequate mentoring and monitoring of the use of the technologies were all employed to alleviate these concerns. The use of Mobile technologies to communicate with learners can be perceived as an invasion of privacy and this concern was usually addressed through consultation with the learners. The ethical use of images, video and sound recordings obtained using the mobile by learners was another area that needed to be addressed.

Copyright

The need to adhere to the relevant copyright and media ownership issues while incorporating mobile technologies for learning, raised ethical issues. These issues were addressed by obtaining permission to use the material from the owner, the development of unique material and the use of material available under creative commons licensing.

Part III

BEST PRACTICES

This part of the booklet describes the 11 projects that have been included in the Best Practice Collection:

↘ **MoULe** ↘ **Federica** ↘ **ENSEMBLE**

which have been selected by the Italian National Research Council, Institute for Educational Technologies, Italy;

↘ **Bletchley Park Text** ↘ **BathSMS: University of Bath** ↘ **WoLF**

which have been selected by The Open University, Institute of Educational Technology, United Kingdom;

↘ **Fón** ↘ **Mobile Mood Diary** ↘ **MobileDNA**

which have been selected by the Trinity college Dublin Crite (Centre for Research in IT in Education) Schools of Education and Computer Science & Statistics, Ireland;

↘ **Contsens** ↘ **LOGOS**

which have been selected by the Corvinus University, Department of Information Systems, Hungary.

Selected projects have been evaluated against the 18 key features identified by the research team and organized in 3 dimensions: management, pedagogy and policy. Moreover, ethical considerations have also been analysed. In the following pages, each project is described by means of a shortened version of the evaluation grid which has been used to interview people responsible for the projects; part I of the booklet sets out all the questions included in the grid. The extended version of the Evaluation Grids are available in the Best Practice Collection (BPC) accessible online via the Motill Web Portal. /**www.motill.eu**

For the sake of completeness, it should be noted that 'best practice' is a debated term (Coffield & Edward, 2009), although widely used in the field of learning technology, along with 'good practice' and 'effective practice'. It reflects the demand for succinct and useful information that can act as a guide. In the Motill project, the Best Practices Collection (BPC) assembles mobile learning projects carried out in the partner countries which present significant elements to draw on for future LLL initiatives.

MOULE

www.moule.pa.itd.cnr.it

MoULe (Mobile and Ubiquitous Learning) is an online environment for collaborative learning; by integrating smart phones and portable devices, it enables educational activities based on the exploration of a geographical place. The system includes specific functionalities to search and access information spaces, to communicate and to annotate places according to their geographical coordinates. Data stored in the system are enriched by the information concerning geographical localization, so that the system provides users with information specific to the place they are visiting. Administrators can use MoULe to design educational paths, monitor users' activities in real time, and evaluate quantity and quality of interactions among users.

↘ MANAGEMENT

1. Rationale

The MoULe project aims to support students using context sensitive handheld devices in collaborative knowledge construction.

2. Technologies and media utilized

In the MoULe project smartphones supplied with GPS are used, in order to link all the activities carried out by the students with a specific location within an area of interest. The goal is to track students during the whole collaborative knowledge building process and reconstruct the physical exploration of their learning space. In this way the student activities create an augmented space consisting of physical objects as well as the didactic objects/items they produce. The augmented space, which is represented through a geo-conceptual map, transforms a city tour into a real educational experience.

An e-learning environment was integrated with functionalities allowing teachers to design, implement and manage the mobile learning activities. The goal was to create a single system in which on site learning activities can be alternated with classroom learning activities, so that the knowledge building process is supported in both learning environments.

3. Stakeholder and Agency

The project involved secondary school teachers and students and the researchers at the Institute for Educational Technologies.

Testing of the MoULe system was designed to take place in two identical cycles involving four high schools in Palermo, each cycle lasting for a four month period. The first cycle ran from February to May 2007 and the second from December 2007 to April 2008. Moreover, each testing cycle was divided into two phases: in the first phase, we supported teachers in planning educational activities based on the MoULe system; in the second phase, we tested the prototype with both students and teachers.

In particular, the first phase involved 29 teachers (15 in the first cycle and 14 in the second) of different subjects (science, arts , languages, etc.) from schools in Palermo.

The second phase of the testing cycle involved 114 students in the fourth year of high school. One school specialized in socio-pedagogical subjects, two schools in tourism and one in economics. The students started learning about the main functionalities of the MoULe system and getting used to the mobile devices. In particular, the students carried out a learning task partly in the classroom and partly on site; they worked collaboratively to achieve the educational objectives set by the teachers.

4. Organizational support

Researchers from the Institute for Educational Technologies were involved during the two phases of experimentation. In the initial phase they supported teachers in designing the learning paths, while in the second phase their activities were more related to monitoring students both in situ and in the laboratory. The MoULe project was founded within the

framework of the CORFAD project, a Sicilian government initiative with the aim of developing a centre of knowledge for distance learning. During the whole project 6 researchers were involved. In the first phase each meeting with teachers normally required 2 researchers while during the second phase 4 researchers followed the activities in situ and the other two assisted students in the classroom. Apparatuses and connections was provided by the Institute, and these are the principal costs to implement a similar didactic experience. Both teachers and school deans have identified in costs the main difficulty to spread the use of mobile learning during scholastic activities.

5. Risk Assessment

Schools generally consider outside activities difficult to manage. The running of the project involved procedures of careful planning and control of the activities. Some of the factors which differentiate this experience from others involving mobile learning:

- ↘ mobile learning activities are often planned to take place in indoor sites (museums) or in circumscribed areas (university campuses, defined places). Instead the MoULe project did not impose any restrictions of this kind;
- ↘ many mobile learning activities take place in a setting which is already equipped with, for example, WiFi, or labelled items or radio frequency ID (RFID), etc ; the MoULe project, on the other hand, took place in a «natural» setting where there was disorder, complexity and a wealth of stimuli.

The engagement of the researchers was constant for the whole period of the experience. It is not simple to make teachers autonomous in the use of these apparatuses. Moreover, teachers and students have to overcome habits and bias when they evaluate the real potentiality of the mobile devices.

6. Supporting transitions

The transition between formal and informal learning was promoted by the design of experimental activities based on alternating onsite and classroom learning, and by the learning environment created which was accessible through the use of both mobile devices and computers. During these learning experiences, the students can discover different sources of information, different ways to extract, elaborate, construct and store the knowledge. This transition, from a mere notional knowledge to a situated learning experience, is probably one of the most important transformations needed or students to support their learning throughout a lifetime.

7. Achievement of economic goals

The practices developed during the MoULe activities only indirectly addressed economic issues. The involved students were not at work, but in scholastic institutions. However, how the work was organized during these experiences has some common features with the work organization in some innovative firms. The student has used new technologies and new modalities to interact and collaborate. With the help of these apparatuses they discovered the value of the cultural heritage, preserved in some places and some persons; and they have integrated these sources to create valuable web sites, full of very useful information.

8. Quality Assurance

The research studies resulting from the project activities have been reported in various national and international scientific articles, many of which analyse the quality and quantity of the experimental activities. The research shows the impact of the mobile technology on the evolution of social relationships within the group of students involved. The analytical methods used also show a correlation between the activities which are carried out in the physical location, the social interactions and the conceptual space in which the process of knowledge construction takes place. This model of analysis of the mobile learning activities

is the most innovative aspect of the project. The formal analysis of this relationship requires the development of suitable theoretical models and tools of quantitative analysis to demonstrate the efficacy of the learning activity. To evaluate the innovation of the system it was taken into account the artefacts produced by students, and the opinions of teachers and students. Moreover, the researchers applied an ethnographic approach to collect observations on field. The system has gained the GOLD Award at the mLearn 2009 – Orlando,FL- in recognition of Mobile Learning Excellence for the Education category.

↘ PEDAGOGY

9. Pedagogical support

In this project a model for mobile Knowledge Building Process was defined; on the basis of this model, the authors studied the evolution of a mobile collaborative learning experience through its interactions with the social, the information and the geographic spaces.
According to the social constructivism paradigm, knowledge is not transferred from teachers to students, but is the result of collaborative activities; when these activities take place in a mobile environment, it is extremely important to consider how the temporal and spatial factors can influence the collaborative process.

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10. Impact on subjects being learnt

Mobile technology modified and enriched the didactic activities carried out during the project. During the onsite visits the mobile devices allowed the students to move around in an augmented physical space, with information available from a variety of different sources. Moreover, the students both onsite and in the computer lab, were able to make further additions to the information space. Besides, the use of mobile devices opened up a communication channel between the two groups of students, promoting a collaborative process of knowledge construction.

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11. Learning behaviours, activities and processes

The learning activities took place both in the classroom and onsite. Generally a class of students was divided into two groups. The group which went out was given handheld devices while the other group went to the computer lab where each student had his own PC. All the students thus were able to access the MoULe environment to carry out the learning tasks.
Learners made use of mobile device principally to create artefacts, rarely to seek information or communicate, by means of synchronous and asynchronous tools. From desktops, they shared images and texts, created wiki pages and collaborated with students outside.

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12. Development of competences

The students acquired competences in using online educational tools, particularly applications which promote processes of collaborative knowledge construction and improve their abilities to work in a group. They worked using social network tools, such as the wiki editor, forum and chat.

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13. Achievement of educational goals

This practice promotes collaborative learning processes during onsite learning activities. The onsite activities, which may be guided visits, school trips etc, give students the opportunity to widen their cultural and social horizons. The MoULe project provides teachers and schools with tools which enable them to exploit the educational potential of these activities. The tools provided by the MoULe project to carry out the tasks also represent an environment of qualitative and quantitative analysis for evaluating the efficacy of the activities. The introduction of the mobile learning into schools can be promoted if some technological and pedagogical troubles will be faced up and overcame.

14. Support for learning across contexts
This practice takes place partly in the classroom and partly in a location outside the school. The transition between the various contexts is facilitated by the use of mobile technology which opens up a communication channel with the classroom environment.
The learning activities have had place in different physical contexts: classroom, outdoors; across different cultural environments; applying a collaborative approach.

↘ POLICY

15. Achievement of political and social goals
The learning tasks connected to the project enabled the students to extend their knowledge of the local area and to discover social, cultural and economic aspects of their city.
From a political point of view, the system extends the meaning of learning in new contexts, and raises some questions about the possibility to recognize similar experiences as part of institutional curricula. The acknowledgement of mobile learning programs is a national problem. From a social point of view, the practice of the mobile learning had an impact on the distribution of the roles within the class, new social ties are been established during the experience, and students have found new ways to learn and work.

16. Evidence of transferability
The various learning tasks carried out during the project by the schools involved show that it is possible to transfer the model to different educational contexts. The technologies used can be transferred to wider areas.

17. Significance for policy-makers
The system represents a new experience in the Italian school. The use of mobile devices within a scholastic environment is a novelty. Policy makers must to evaluate the opportunity to spread this practice in wider contexts, creating networks between different schools, integrating learning activities with other social and cultural initiatives. The necessity to introduce new technological tools at school has to be taken into account to obtain a greater involvement of students and also to verify the didactic efficacy of these new apparatuses.

18. Supporting lifelong-learning
The results of this experience have put on evidence some important issues related to lifelong learning. First of all, the necessity to support the training of teachers in the use of mobile devices to teach. Then, the good results, in terms of involvement and performance, that the mobile devices could help to obtain when they are integrated in the scholastic environment. Finally, the opportunity to enlarge the knowledge space, in a such way it can include also objects of the cultural heritage, distributed on the territory.

↘ ETHICAL CONSIDERATIONS

During the learning experience was used a wiki platform accessible only by the students participating in the project. At the end of the project most of the schools involved decided to publish the contents produced during the learning experience on the web. Problems related to copyright and fair use were discussed with teachers and students during the experience.
The researchers explained the privacy issues regarding to the use of personal images, and of movies in which appear the students. Personal data were stored in private archives, that are not possible to consult from outside. The system has a specific interface that permits the use of the mobile application also from cognitively impaired students.

FEDERICA

www.federica.unina.it

Federica is the e-Learning of the University of Naples Federico II, is born to offer free access to the academic knowledge of the university, with the free offer of educational materials as courses of instruction and a structured guide to the enormous informative patrimony already available in Internet. New tools are available to students and to how want to reach through Internet the information scientifically correct. The interface of the web learning portal of Federica use a modular approach that combines simplicity, flexibility and high technological quality. Is possible to consult the study materials for university courses in e-Learning, also available in podcast format, at any time, with extraordinary wealth of contents organized in training modules with different media format: text lessons, images, videos and links.

↘ MANAGEMENT

1. Rationale

The Federica project was introduced in order to provide homogeneity and a coordinated overview of the various courses on offer in the various faculties of the University of Naples Federico II. An open approach to the learning content and material was adopted as an Open Courseware initiative. Thanks to its flexibility and user-friendly interface, Federica already includes more than 120 courses from all 13 university faculties (180 new courses are in preparation), freely accessible online. The intention is to give broad and easy access to students, potential students, professionals and workers to the knowledge contained in university courses, through a wide choice of multimedia materials and commonly used devices like computers, laptops, smartphones and portable media players.

2. Technologies and media utilized

The developer of Federica have abandoned all proprietary LMS systems previously used in each department of the university, in favor of a more open way of learning, based on open web content and using a methodological framework developed by the Department of Sociology at the University of Naples. In fact Federica offers free access to a network of academic knowledge and to all the multimedia materials: full-texts, images, video and audio recordings, directly provided by the professors, to facilitate and improve the learning experience. Each online course provides access to lesson abstracts, research material, multimedia resources, video and audio files, extra web hyperlinks.

With its innovative design and great usability, the Federica portal interface is setting a new standard by combining two popular communication tools: Power-Point presentations and the smartphone. Its open access policy and extreme flexibility mark what can appropriately be defined as a revolution in Italian higher education.

The educational initiative provided by Federica includes three other learning environments:

- ↘ PodStudio downloading of all course lessons as podcast files, easy to use anytime and anywhere on the latest-generation of portable multimedia devices;
- ↘ Living Library: 600 external worldwide Web resources (magazines, e-books, databases, research centers, etc.), selected by a multidisciplinary expert panel;
- ↘ Federica 3D: a virtual rendering of the University campus with all departments placed around one single square, for exploring their educational resources in an exciting 3D environment.

3. Stakeholder and Agency

The initiative has been strongly promoted by the dean of the university in order to reorganize and improve the structure of e-learning at the university. Right now local politicians, particularly in the region of Campania, are showing a lot of interest and involvement and are, working to support the initiative financially as well as politically.

4. Organizational support
The initiative is fully managed by the university and an ad hoc staff has been created consisting of researchers and teachers who support both the student and teacher activities. Educational content is implemented by the teachers themselves when they have the knowhow, or set up by the technical staff under the guidance of teachers.
The Campania region has used European Structural Funds to invest quite substantially in the initiative and right now it is considered a key factor in territorial development and planning.

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5. Risk Assessment
The intention is to provide better support to students in gaining access to university knowledge content, in particular, this support is targeted at students who are behind with their studies, to those off campus and to foreigners. The objectives are manifold:

- to provide authoritative information to users and to improve individual and professional training;
- to promote social inclusion;
- to encourage the enrollment of new students including foreigners.

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6. Supporting transitions
Regarding the use of mobile technology, this varies from a soft approach, designed more for the dissemination of academic content, to a more sophisticated approach, designed mainly for interactivity. The soft approach is via audio podcasts, which are also available from simple portable digital audio players, like an iPod or similar, that are inexpensive and are used widely by students and young people. The more sophisticated and interactive approach is via a web interface and smartphone, eg. iPhone or similar, that has a higher cost and is more commonly used by professionals workers than by students . The intention is to introduce the student to the use of mobile technologies in a progressive manner, allowing even those who are economically disadvantaged to be able to use low cost resources.

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7. Achievement of economic goals
It has certainly encouraged the integration of disabled students, the integration of foreign students (who are also starting to provide content in other languages like English), and it has increased enrolment in some faculties with historically low visibility (e.g. since it has been online the faculty of agriculture has seen a 30% increase in enrolment). Sights were initially set on local users, but over time they have been expanded nationally and internationally, because the platform has been accessed by users of different nationalities and from different countries.

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8. Quality Assurance
Federica has received more than two million hits in its first year, an indication of a significant user base. In fact, in Italy it is one of the initiatives which has attracted the largest number of users, so in terms of numbers it is an initiative with high impact. In terms of innovation Federica does not focus only on one particular mode of access to its contents, but attempts to reach the largest number of users with different modes. With regard to the mobile technology system, the contents are accessible not only from computers and smartphones but also from portable digital media players and in the future probably through the eBook reader, too, so the real innovation is in trying to make university content more accessible depending on the means used by the user. Moreover, the region of Campania has invested funding in a quality product with a wide outreach.

↘ PEDAGOGY

9. Pedagogical support
Federica uses a blended approach assisting students with a web-learning platform.

10. Impact on subjects being learnt
The main goal is the content portability because students using Federica come from different areas and regions (many students are from Albania, ex-Yugoslavia, Greece, the Middle East), so they are able to follow courses from other countries without an Internet connection.

11. Learning behaviours, activities and processes
With Federica, students are able to use new tools, besides the traditional learning methods. They have access to different learning methods. Lessons in Federica are also accompanied by an audio explanation by the professor, and the students can consult texts, audio content and videos. An authoritative selection of scientific sources is available for in-depth learning processes.

12. Development of competences
Students can develop competences in ICT, subject specific language and concept organization.

13. Achievement of educational goals
Federica web learning reduces digital and cultural divides, facilitating access and social inclusion.

14. Support for learning across contexts
Due to the open access philosophy of Federica, students and Internet users can orient their studies across disciplinary boundaries thus browsing in depth into the university Web.

↘ POLICY

15. Achievement of political and social goals
The focus of Federica is to interest people in university education and to make knowledge within the university easily accessible to all. At the start of the initiative the aim was to focus on the local territory, but this was followed by the natural evolution of Federica towards international users because it aroused interest in various regions of the world in university courseware.

16. Evidence of transferability
At present courseware accessible by Federica is used in other countries; one example is Spain. The full framework of Federica is based on open technology and is easily implementable with few changes in other universities. The staff running Federica has acquired all the technical, economic, legislative, pedagogical and didactical competences needed to make it available to anyone who wants to use it.

17. Significance for policy-makers
Federica is considered an important initiative making Italian university courseware available both to Italian and international users around the world, independently of their social or working status.

18. Supporting lifelong-learning
In this case the mobile technology used is not restricted to the few who have expensive devices but is available to a wider user base relying on relative low cost mobile devices. As far as

Lifelong Learning is concerned, Federica makes university courseware knowledge accessible not only to students enrolled in courses but also to everyone else. Considerable interest in Federica has been shown by working professionals, postgraduates and young people interested in having access to a university.

↘ ETHICAL CONSIDERATIONS

Federica is an open courseware designed for free accessibility from various devices. When it was implemented one of the first problems to resolve was the problem of copyrighting the material. In Federica all the material is distributed via Creative Commons and a lot of original material provided by the professors was affected by copyright issues. The problem was resolved in two ways; reaching an agreement with the owner of the copyright for distributing the material, or using freely distributable material.

ENSEMBLE

www.ensembleproject.org

The main objective of the ENSEMBLE project is to test innovative and multi-modal training approaches to support integration and active citizenship for young and adult migrant groups in accordance with the 2003 Progress report about Democratic values, participation and active citizenship education. New mobile communication tools represent strategic instruments for increasing and improving the participation of populations at risk of exclusion, regardless of differences of age and education. The participation of adults and young people in the ENSEMBLE project emphasizes the use of open, flexible and innovative learning methods responding to learners' needs and current habits (use of mobile phone and podcasts).
ENSEMBLE is a project co-funded by the European Union within the Lifelong Learning Programme (LLP).

↘ MANAGEMENT

1. Rationale

The general background of the ENSEMBLE project proposal is provided by the European immigrant integration policies and by the recent Communication "European i2010 initiative on e-Inclusion - to be part of the information society" in which the Commission underlines the role of ICT in providing the conditions for everyone to take part in the information society by bridging the accessibility, broadband and competence gaps, accelerating effective participation of groups at risk of exclusion and improving the quality of life.
In the last five years, the political approach to immigration has emphasised integration measures for newly arrived immigrants and their families as second generation member state citizens. As part of these policies, the EU underlines the relevance of the media which has considerable responsibility in its role as an educator of public opinion. In the above mentioned framework, the ENSEMBLE project seeks to combine the development of an innovative didactic Methodology with the social integration of groups at risk of exclusion. The digital divide concept as a transversal subject of the partnership mission, represents the ground where ENSEMBLE will test and analyse the use of mobile media by immigrant populations in order to enhance their participation in training and education. The steadily increasing availability of these devices, their versatility and mobility are heightening interest in the use of such instruments in disadvantaged contexts, where there is no Internet, but there are mobile phones; in fact, low-cost mobile devices offer opportunities for reducing inequalities at a global level. Moreover, mLearning can also reach isolated populations. The purpose of the ENSEMBLE project is therefore to meet the need to find new ways of promoting the integration of social groups which are at risk of exclusion, by combining the development of an innovative didactic Methodology with the use of very common mobile technologies. The target group of the project is represented by first and second generation immigrants. Specifically, we have decided to work with students of 13-15 years old (second generation immigrants) and the students' parents (first generation immigrants). Despite the socially disadvantaged conditions of wide sectors of the immigrant population, tools such as mobile telephony and MP3 devices are widely used even in these cases. Therefore, our aim is to explore the possibility offered by mobile devices to favor training and integration processes.

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2. Technologies and media utilized

The project adopts two different technical approaches in Italy and in France, the partners' countries. In Italy, mobile phones are used with adults, and MP3 devices with young students. SMS and MMS are the media adopted for mobile phones, and have been mainly designed to target adults; nevertheless, since language and style is extremely easy, MMS have been rearranged in Learning Objects, and uploaded into a Learning Management System, Moodle, that can be accessed by students. Podcasts are used for MP3 devices, and have been specifically designed for young students. Two different kinds of podcasts have been produced, depending on the narrative style: radio-drama and explicative. Finally, the Learning Management

System Moodle is used both for storing Learning Objects based on the MMS, and to store podcasts produced by students. This platform is aimed at the young students.
In France, students have been provided with laptops, that they can take home; on their laptops, students can listen to podcasts and visit MMS in the form of Learning Objects.
The same laptop is used by parents to view the MMS contents.

3. Stakeholder and Agency

The experimentation has been undertaken in two different areas in Europe: the town of Prato in Italy, and the district of Yvelines in France, on a sample population of different national/ethnic origins. The practice was mainly initiated by the Prato municipality and the Conseil Général des Yvelines, since these stakeholders were already making big efforts to foster social inclusion of immigrants. The activities with young students are handled directly by teachers in schools. In addition, the municipality of Prato already uses SMS-based communication to inform citizens, and were interested in experimenting with the effectiveness of MMS as communication media.

4. Organizational support

Specifically to organizational support, the main actors are the municipality of Prato and the
With regard to the organizational support, the main actors are the municipality of Prato and
the Conseil Général des Yvelines. The activities with young students are handled directly by teachers in schools, both in Italy and in France. MP3 devices in Italy and laptops in France are provided through the funding of the project. Ensemble is a 2-year project co-funded by the European Union within the Lifelong Learning Programme (LLP). It's a Multilateral project - Key activity 3 - Development of ICT-based content and services.
Budget: €500.000 (co-financing: 25%).

5. Risk Assessment

The main challenge in the project is the language. Many immigrant students have a good level of French/Italian, but others don't. Generally adults have many difficulties with the language of the country they have immigrated to. For these reasons:

- MMS are based on images and a few simple sentences;
- in Italy, a cultural mediator has been added to the project team in order to improve communication with adult immigrants, especially Chinese people. The mediator is available for meeting Chinese people on a weekly basis, and has proved to be very effective in involving young students' parents in face-to-face meetings at school.

Another problem is related to the lack of a common standard in the MMS field. In order to guarantee the transferability of project results, the possibility of giving the target groups the same technological device has not been taken into consideration The MMS have been produced in a very simple form to allow as many adults as possible to receive and correctly visualize them: they consist of just a sequence of gif images, with no audio.

6. Supporting transitions

Informal learning is present for both the target groups: students and adults; actually, adult learning occurs almost entirely on an informal basis. Specifically for young students, MP3 devices allow young students to move from formal learning strategies in the classroom, towards informal learning opportunities occurring outside the school. Further investigation would be necessary in order to evaluate the role of these informal learning moments in the whole learning process; in addition, these informal learning occasions are strictly related to something occurring in a formal educational setting, and are sometimes dependent on the activity performed in the classroom.

7. Achievement of economic goals

No direct economic goals are addressed by the project. Social inclusion for immigrants is a

very important issue at national and international level, and it is the main objective of the project. Of course, indirect economic goals are a consequence of the benefits arising from the achievement of the project aim.

8. Quality Assurance

The testing phase started in January 2010 in Italy and will start in March in France; there are no quantitative data available at the moment. However, there are some qualitative data that show the effectiveness of the strategy both for young students and for adults.

↘ PEDAGOGY

9. Pedagogical support

The structure of the course is organised in 4 learning modules with 4 units in each module. The modules are: European citizenship, Intercultural Education, To be parent, To be children and student, Old and new addictions.

As far as the adults are concerned:

- ↘ they have been asked to participate in a start-up meeting;
- ↘ every week they receive the MMS which make up a unit (8 MMS) and an SMS for inviting them to send back comments or requests to meet the cultural mediator (in France they receive SMS asking them to see the contents on their laptops);
- ↘ in Italy they have the chance to meet the cultural mediator and to discuss issues with him;
- ↘ they are invited to other meetings at the school.

As far as students are concerned:

- ↘ every week their teachers ask them to download the podcasts on their MP3players (Italy) or on their laptops (France);
- ↘ they listen to the podcasts by themselves;
- ↘ their teachers involve them in discussions in the classroom and ask them to do some team work (in Italy the students produce podcasts).

10. Impact on subjects being learnt

Mobile technology is not used to teach a specific curricular discipline; it is used to teach concepts belonging to different disciplines, or that are absent from the traditional school curricula. Consequently, it is not possible to give a full answer to this question.

11. Learning behaviours, activities and processes

Students are required to download post cast from an online platform, to listen to the selec-
Students are required to download podcasts from an online platform, to listen to the selected podcasts at home using their MP3 device (or laptop), and to comment on the content of the podcasts with the class the following day. In addition, students have to design and produce their own podcasts, and upload them onto the online platform. Adults are required to read and watch the MMS they receive, and after a number of them, to send an SMS to the project tutor to confirm receipt and, above all, to assess the level of knowledge acquired with that set of MMS. Face to face meetings are also scheduled during the project.

12. Development of competences

Knowledge specific to the topics selected for the project. In addition, since students have to produce their own podcasts, they have to acquire competences related to story-boarding, audio management; software to handle audio and produce podcasts. No specific competences are required or developed specifically for the devices adults and students are using, since they are everyday tools.

13. Achievement of educational goals
N/A

14. Support for learning across contexts
See answer to point 6.

↘ POLICY

15. Achievement of political and social goals
See answer to point 1.

16. Evidence of transferability
The Methodology adopted can subsequently be transferred to other content areas as well as to other target populations. Translation and cultural adaptation of the materials produced during the project should be taken into account.

17. Significance for policy-makers
The current and potential impact on policy makers is huge, since social inclusion for immigrants is becoming an emergency issue in almost all parts of Europe. For this reason, the project has been promoted by two towns in Italy and France.

18. Supporting lifelong-learning
Lifelong learning is central to the project, since ENSEMBLE attempts to target adult learners and to foster learning processes in them. Social inclusion, as mentioned above, is the main objective of the project. Refer to answer to point 1.

↘ ETHICAL CONSIDERATIONS

All the materials (podcasts, MMS resources and Web learning objects) produced during the project are distributed with Creative Commons licenses. This reflects the general aim of the project to widen access to education.
Privacy matters related to the management of the telephone numbers of adults and young students by the project team are dealt with carefully, by taking into account the specific Italian and French legislation concerning the management of private data.

BLETCHLEY PARK TEXT

www.bletchleypark.org.uk/text

The Bletchley Park Text system is an information service provided for visitors to Bletchley Park, the home of the British Government's Code and Cipher School during the Second World War. The Park is now a museum dedicated to telling the story of the work done there and the influence it has had on our modern day communications and computing technology.
Visitors to the museum identify the items of interest to them by sending SMS text messages containing keywords taken from labels on the exhibits. These messages are later used to select relevant resources, which are organised into a number of views and presented as a personalised website for the visitor to explore when they return home from their visit.

↘ MANAGEMENT

1. Rationale

Bletchley Park, a complex of buildings which is now a museum, was the secret operational base for the famous codebreakers of World War II (including Alan Turing) and the birthplace of the modern computer. As such, it has a reputation for being at the forefront of technological innovations. The museum at Bletchley Park – including a reconstruction of the Enigma codebreaker or 'Bombe', a rebuild of the first semi-programmable computer and a wealth of early-mid 20th Century memorabilia – attracts more than 100,000 visitors every year.
The previous director of the Museum noted that most of the visitors were aged over 65, and the introduction of the text system was partly inspired by the need to engage with a younger audience.

2. Technologies and media utilized

There are two main aspects to the text system at Bletchley Park: SMS and online content. More than 600 exhibitions and collections at the museum are labeled with keywords which can be texted to a special number from any mobile phone. The keywords selected and the telephone number of the originator are recorded so that when the same person logs into the web portal they are presented with extra information about the exhibits they were interested in. These form the basis for exploring the collections by browsing a semantic network of keywords and key themes. It is worth noting that modern smartphones obviate the need to separate the SMS and multimedia content, but at the time this kind of technology was not generally available. As a result of technological changes, the SMS system is currently being re-thought. The website is organized into the following sections:

Stories/ 'View the stories in the archive related to your interests';
Connections/'Discover pathways through the story archive connecting your chosen subjects';
Categories / 'View stories about your chosen subjects arranged in a list of categories';
Hierarchy / 'View stories about your chosen subjects arranged in a hierarchy of categories';
Spotlight / 'Explore the stories from the archive directly and indirectly related to your chosen subjects';
Modify / 'Modify your chosen set of subjects'.

3. Stakeholder and Agency

The Bletchley Park Text project was the result of a collaboration between the heritage sector (Bletchley Park) and university research (The Knowledge Media Institute at The Open University). In this case, learning is very much a learner-driven activity. Visitors to Bletchley Park are provided with an instructional leaflet and there are two instructional boards among the exhibits. Keywords are displayed on the text panes which accompany each of the selected artifacts. By navigating the semantic pathways on the web site, learners are provided with a structured learning experience which is grounded in their physical journey through the

museum. At no point does the site allow learners to ask questions or solicit feedback, though it could be used to support organized visits.

4. Organizational support

At some level, it seems as though a lack of institutional support has impacted upon the project. The Bletchley Park Text scheme took place during a time of significant institutional change. Since the Museum is funded almost entirely by its own income, it was particularly vulnerable during the recent economic downturn. The staff originally involved setting up and running the project are no longer in position, and responsibility for the text service has not resided with one member of staff for a number of years.

5. Risk Assessment

This project faced a number of challenges, including:

- a need to understand and profile the users of the service;
- lack of funding for the scheme as a whole: the educational activities of the museum need to be self funding, but the SMS scheme was free to use and brought in no revenue;
- limited resources for promoting the SMS service;
- issues surrounding the appropriacy of communications devices in a museum context: school visitors are not currently allowed to use their phones in the museum at all;
- operational problems with the technology and its maintenance;
- some mobile phone signals set off the alarm on the Enigma machine cabinet;
- the SMS/Web crossover model became somewhat outmoded with the introduction of smartphones.

6. Supporting transitions

The transition between the museum environment and learning opportunities in the classroom (formal) or home (informal) is supported by allowing visitors to highlight items of interest which act as the basis for a structured learning experience inspired by the exhibits that originally caught the attention of the visitor. Organisation of the collection is both 'bottom-up' (built from the semantic descriptions of each item) and 'top-down' (according to a formal representation of the overall museum experience, presented as a narrative).

7. Achievement of economic goals

Bletchley Park Museum is run as a charity, with 50% of its income coming from admissions, and 50% from the hire of buildings within the complex. The financial circumstances of the museum meant that little ongoing organisational support was made available. Digitization of (part of) the museum's considerable archives – including interviews, documents and represents a cost-effective way to make museum materials available to an international audience. The 'Bletchley Park Text' archive may also be accessed through laptops, smartphones, PDAs, and other web-enabled mobile technologies.

8. Quality Assurance

Interestingly, very little internal evaluation of the project has taken place for reasons of cost. However, a number of academic papers have focused on the project, most notably Mulholland, P., Collins, T., and Zdrahal, Z. (2005). Bletchley Park Text: Using mobile and semantic web technologies to support the post-visit use of online museum resources. Journal of Interactive Media in Education (Portable Learning: Experiences with Mobile Devices. Special Issue, eds. A. Jones, A. Kukulska-Hulme and D. Mwanza), 2005-review/24. ISSN: 1365-893X. It is worth noting that this research paper largely focused on aspects of technological and pedagogical innovation, not the practicalities of maintaining the learning system.

↘ PEDAGOGY

9. Pedagogical support
Both the online resources and the SMS messaging system rely on the learner being largely self-managed and self-directing, though it's clear that the semantic pathways used to navigate the web content help to structure the learning experience.
The SMS system is also flexible enough to be used by, for example, schoolteachers to structure a lesson around. It's important to appreciatethat the learning activities associated with the SMS service are considered peripheral to the activities of the museum.

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10. Impact on subjects being learnt
In this case, the SMS learning system provides a synergy between using technology and learning about technology.

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11. Learning behaviours, activities and processes
Learners build up a site specific personalized learning enquiry website as they move through the physical space of the museum. This forms the basis for a structured navigation of the museum's digital resources and archives.

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12. Development of competences
The SMS system encourages users to develop their ability to successfully use information & communication technologies, and helps them to develop their understanding of the ways in which mobile technologies improve the accessibility of information.

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13 Achievement of educational goals
One of the great achievements of the project was to make more effective use of the museum's archives, which are undoubtedly of international importance. By publishing content online in an accessible format, the museum made this available to a much wider audience than it could previously have reached. The SMS project is consistent with Bletchley Park's reputation as a technological innovator, and also helped to forge stronger links between the museum and The Open University.

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14. Support for learning across contexts
Learners are supported in the transition from the (formal) museum environment to any other learning context (whether informal or formal) by the continuity provided in the form of the navigation of the digital archives, which corresponds to their own expressed interests. The learning experience begins in the museum, but takes place across any number of physical contexts where the learner has access to the Internet. More recent mobile technologies – such as smartphones and netbooks – have dramatically increased the number and scale of such opportunities.

↘ POLICY

15. Achievement of political and social goals
N/A

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16. Evidence of transferability
Making a judgement about the transferability of this scheme is hampered by the absence of reliable evaluation and feedback activities. The interviewees felt that other museums should pay particular attention to the potential use of mLearning projects to encourage interest among teenagers and younger people. There is certainly no reason in principle why similar schemes couldn't be put in place elsewhere.

The interviewees identified the following issues:

- ↘ the need to integrate mobile technologies into museum environments in a non-disruptive way;
- ↘ the importance of an adequate system for collating feedback and evaluating success;
- ↘ the need for institutional and financial support for projects of this type, particularly in the voluntary or heritage sectors;
- sufficient funding needs to be in place to start and maintain mLearning projects;
- ↘ those working on such projects need to be sensitive to the rapid pace of change in mobile and other technologies, and similarly sensitive to the museum audience and their expectations.

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17. Significance for policy-makers

This case clearly illustrates the impact of financial and operational pressures on organizations in the 'third sector', since these processes were deemed to be a non-essential cost to an organization whose margins are already being squeezed. Policymakers therefore need to ensure that adequate provision for this kind of assessment is figured into planning for mobile learning initiatives, and seek to form partnerships between their own institutions and educational technologists.

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18. Supporting lifelong-learning

Museums and heritage are an important part of any modern lifelong learning strategy, since they provide a route for informal learning which appeals to the broadest user base. In this case, mobile technologies help learners to structure their own learning experience, and manage the transitions between formal and informal learning environments, and between physical and virtual learning spaces.

↘ ETHICAL CONSIDERATIONS

The interviewees expressed some concern with the idea of museums being converted into 'communications hubs', which they felt was at odds with the notion of 'sacred space' and respect for the museum experience. They were also wary about the prospect of further extending similar schemes on the basis that many people who lack the requisite technological literacy would be unfairly restricted from accessing museum content. As a result, guided tours will remain the focus of the museum.

BATHSMS: UNIVERSITY OF BATH

www.tinyurl.com/ybo9e37

The Department of Education at the University of Bath has a strong national and international reputation for education research and teacher training. This project assesses the extent to which a mobile SMS communication system can encourage and enhance learning among first year undergraduates when supported by a Virtual Learning Environment (VLE).

↘ MANAGEMENT

1. Rationale

The motivation behind the project was to investigate how the academic and personal development of first year students from different undergraduate degrees can be supported and enhanced with mobile SMS (Short Message Service) communication. SMS-based technologies were introduced in response to the particular needs of students (in the transition to Higher Education) and characteristics (proficiency as mobile communicators). Despite being unaccustomed to using their mobile phones for academic study, students did engage in SMS communication with their tutor via a texting management service. The main aims of the project were to promote good study habits and encourage the better use of time between classroom sessions, as well as providing an introduction and guide to the Virtual Learning Environment (VLE) through SMS.

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2. Technologies and media utilized

The EduText Messaging service allows schools to instantly send secure SMS text messages to pre-defined groups with just one click. The SMS technology (which was part of a wider learning environment) provided students with 'bite-size' learning experiences which could be completed at the convenience of the learner. Students might be asked, for example, to reflect on something from the classroom session and perhaps text their thoughts back to the tutor. These would be collected and brought back to the face-to-face sessions, helping to structure the sessions according to student needs. The SMS messages were also used to motivate, prompt or initiate self study. The VLE provided a number of more informal opportunities for communication, including forums dedicated to discussions about adjusting to higher education and questions from the course. Wiki-based activities allowed students to collect their contributions and record group work. Tutor inputs that would often be given at the end of a face-to-face tutorial – such as questions for research, signposting study areas and reminding students about deadlines – were delivered via SMS at regular times of the week. Further texts would highlight related learning activities within the VLE and tutors would provide feedback by SMS or face-to-face.

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3. Stakeholder and Agency

Student learning was, in this case, self-managed but scaffolded or guided through a combination of SMS and VLE. Learning activities were managed by the Teaching Fellow, Gabriele Edwards, who worked from the reports of student experiences to organize course topics and the way in which they were delivered.

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4. Organizational support

The programme administration was responsible for the technical management of the VLE, including group SMS messaging, generating message templates and answering queries. The project was supported by both the faculty Dean and the Pro-Vice Chancellor, and this was helpful in securing monies for the project, which was funded by an award from the 'Teaching Development Fund', a source of funding available within the university on a competitive basis.

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5. Risk Assessment

There were three main challenges to the success of the project. Firstly, the cost of the licence

for the Edutext software and the cost of sending the text messages themselves. Secondly, the issue of preserving academic integrity while delivering a portion of the course throug SMS messaging. Thirdly, the relatively labour intensive nature of writing and sending messages while the Edutext messaging system was not integrated with the Moodle VLE. Students were audited for their technological 'literacy' and attitudes towards learning before the start of the course, and researchers also gathered information about the kinds of mobile phone contracts that students already had.

6. Supporting transitions

There are three distinct forms of transition which are supported by mobile technologies in this case. Firstly, and perhaps most significantly, there is the transition students make from school or college to university, which has a different emphasis on self-motivation and self-organisation, and often involves new subjects and new forms of study. The SMS system provided guidance, structure and motivation in the early phases of the first year of a degree course. The VLE helped to bridge the gap between formal and informal learning scenarios, while the SMS system helped students to negotiate the division between the formal, face-to-face parts of the course and interaction which took place within the Moodle VLE.

7. Achievement of economic goals

There is a pressure within UK higher education to continually cut costs while class sizes increase. This has led to more courses being delivered by junior staff or research students (who often work on a temporary basis). By structuring and motivating student work, the SMS/VLE can work to reduce student drop-out rates and so improve efficiency.

8. Quality Assurance

The project has been evaluated in two conference papers, two journal articles and a conference poster presentation. In one of the papers (Jones, G., Edwards, G., & Reid, A. "How can mobile SMS communication support and enhance a first year undergraduate learning environment?" ALT-J, Volume 17, Issue 3 November 2009 , pp.201-218) it is argued that mobile SMS can be of both intrinsic and instrumental value to academic courses of study.

The researchers sought regular feedback from the students via surveys, access statistics from the VLE and text management services, and student focus groups. The tutor's journal was also consulted for the purpose of evaluation. Overall, the authors contend that the advantages of using SMS to manage the transition to higher education far outweigh any disadvantages, particularly for more vulnerable students.

↘ PEDAGOGY

9. Pedagogical support

The simplest way of describing the pedagogical approach which emphasizes the integration of the VLE, SMS and face-to-face learning is 'blended'. To evaluate the impact of the SMS system on the learning environment, the researchers used Laudrillard's conception of transactions within conversational frameworks, showing how each instance of communication can support reflective pathways within a learner group as a whole.

10. Impact on subjects being learnt

The main impact that mobile technologies appear to have had in this case are to improve student engagement while evidencing student experiences and integrating them into the design of lessons.

11. Learning behaviours, activities and processes

Overall, there is a much greater level of transparency in the way that the course is run, and

students arguably have greater influence over the manner and content of lesson delivery. The evidence gathered in the course of evaluating the project suggests that the SMS/VLE system had a positive impact on students in terms of increasing the frequency and focus of learning.

12. Development of competences
The regular use of text messaging encouraged students to develop their communication skills, particularly their succinctness of expression (given the limited number of character an SMS message can hold). They also had to develop a new technical and academic vocabulary for discussing the course with their tutors and peers. The biggest impact of mobile technology in this case, however, concerned the improvement of study skills, including reflectiveness, the ability to focus on key questions or issues, and the ability to organize one's own time productively.

13. Achievement of educational goals
The VLE from this project encourages the new and fruitful use of technologies already owned by students. It shows how these technologies can be used to motivate and structure learning experiences.

14. Support for learning across contexts
Students were encouraged to make connections and transitions between contexts using their mobile devices in a number of ways. The contexts involved were typically the classroom, other learning spaces around the universities, and home (or halls of residence). By storing the texts received students could access a ready-made 'to-do' list of all the things they needed to do for their course. Since the learning tasks were divided into 'bite-size' chunks, students could engage with them at their own convenience, even while travelling to/from university.

↘ POLICY

15. Achievement of political and social goals
Student retention (i.e. preventing student dropout from courses) is a challenge recognized nationally by the UK. This project demonstrates how mobile technology can have a role in keeping students connected and engaged with their studies.

16. Evidence of transferability
Students reported that they would be happy to use the system on other courses. Given that the technology used in this project is commercially available and relatively cost-effective, there are good reasons to think that this scheme is highly transferable. However, this is a very specific case study involving specialist staff and educational technologists, and although it is tempting to generalize from project outcomes rather than processes, it seems that clearer guidelines need to be developed before it could be rolled out on a larger scale.

17. Significance for policy-makers
There were lots of positive learning outcomes from the project, and policymakers in Bath were quick to try and expand the system to other courses at the University. While the researchers felt that developing and refining the SMS timing and frequency was a priority, the system has been successfully rolled out to distance learners and work-based/professional learners.

18. Supporting lifelong-learning
Evaluation of the project suggested that the students who most valued the service were

those who were less well organised or less well prepared for higher education in general. This suggests that the devices were effective in helping learners make the transition to a higher education context. An interesting transition that was also supported through the project was for the researchers themselves to develop their use and understanding of mobile technology. The devices themselves acted as a gateway for the researchers to access the world of mobile communications.

↘ ETHICAL CONSIDERATIONS

Taking part in the project was not mandatory for the students, and one issue identified by the researchers was the need to accommodate students who lacked mobile phones (or didn't participate for other reasons) so that they were not disadvantaged by their lack of participation. It was important to ensure that students were adequately mentored, with feedback regularly solicited and acted upon so that students felt in control of their own learning.

WOLF

www.wolf.lec.ac.uk

WoLF was a collaborative project run between Leicester College and the University of Leicester and was externally funded by the JISC under the Circular 04/06: Capital Programme (JISC supports innovative use of ICT for education and research across the UK Further and Higher Education sectors). WoLF investigated how Pocket PCs support portfolio development by teaching assistants (TAs) on foundation degree courses. The project developed a model for integrating institutional VLEs and personal mobile devices, for the purpose of learning in work-based settings.

↘ MANAGEMENT

1. Rationale

The idea was to investigate how the learning experiences of a group of teaching assistants (studying for the foundation degree programme in education at Leicester University) could be enhanced with technology. In the past, a paper-based portfolio was used for course assessment, and the WoLF project sought to encourage students to use small personal computers or personal digital assistants (PDAs) to build better quality portfolios, both from the point of view of assessment and in terms of supporting the student's own learning. The project was run in conjunction with Leicester College, which is where the students on the degree course were based.

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2. Technologies and media utilized

There were two main aspects to the technologies used. The PDAs were used primarily to gather, organise and access portfolio evidence. However, they were not used in isolation. A virtual learning environment (VLE) for the course provided students with access to a range of useful course information, such as syllabi, reading materials, electronic communication and administrative records, all of which could be accessed through the PDA. By sharing their portfolio materials over the VLE, students were afforded opportunities to solicit and offer feedback on their work and the work of others. In both the schools where they worked and at their home college, the PDAs allowed students to access existing teaching materials from any location.

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3. Stakeholder and Agency

There were a wide range of stakeholders involved in this project. There was an operational partnership between Leicester College and the University of Leicester, so that the researchers and learners could synchronise their activities effectively.

Leicester College was responsible for recruiting teaching assistants, and provided learning technologists. The University of Leicester oversaw the research aspects of the project. Headteachers from the relevant schools also needed to be involved in negotiating the use of the PDA devices in classroom contexts, and parents had to consent to their children being recorded in class.

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4. Organizational support

A number of senior managers from the University of Leicester were involved, and the Pro Vice Chancellor actually sat on the steering committee for the project. This meant that there was a good level of strategic support available to the project leaders. Individual tutors had responsibility for managing the learning needs of the students, and would meet weekly with them to discuss their progress and find out what they had used the PDA for in relation to the assignment that had been given. As the project progressed, this was expanded to include online support and e-tutorials through messaging services.

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5. Risk Assessment

The project faced risks at a number of levels. At an operational level, there was the problem of getting student teachers involved, and retaining their interest in the project. It was also

necessary to obtain permission from schools and parents in order to use the PDAs in the classrooms, and to provide training and support for developing the competence of the teaching assistants in using the PDA devices. There was an ongoing security issue for the project in respect of both the risk to the device itself, and the risk of being mugged to those who were using the devices. Finally, there were pedagogical concerns about how successfully the PDA could be integrated meaningfully into the existing learning strategy.

6. Supporting transitions

The two-year foundation degree programme upon which the teaching assistants studied involves making a significant transition from foundation level to degree level study. By improving the quality of the portfolio and providing opportunities for formative and summative feedback, the PDAs gave students a better chance of making the transition to the full degree programme. By encouraging the students to share their experiences of different working contexts, the PDA facilitated reflective and collaborative learning, giving students a better idea of what to expect in the workplace.

7. Achievement of economic goals

The main economic challenge for the project was in balancing the cost and functionality of the PDA model. To do all that was envisaged for the device required a high-tech PDA, and some compromises were made; some students felt that the device used was bulky, suffered from limited battery life, and was limited to poor audio recording quality. The smaller size of the screen (too small for comfortably reading texts) and the general usability of the device in classroom contexts also resulted from this need to compromise over costs.

8. Quality Assurance

Students were interviewed at the end of the course to assess the impact of the technology from their point of view. Compared with previous years, there was a noticeable qualitative improvement in the portfolios submitted with evidence from the PDA, which included audio recordings, pictures and video clips. The level of learning support to the students was also improved by the provision of new communication channels through the PDA. Records from the VLE showed that students did use the PDA to access materials from home and other locations.

↘ PEDAGOGY

9. Pedagogical support

Specific assignments were needed to enable students to make the most of the PDA functionality, but course objectives were set well in advance of the WoLF project. As a result, there was a tension from the outset between seeing the device as a tool for problem-based learning, and using it as an instructional device. The importance of formative feedback was emphasized throughout the course, and the functionality of the PDA was intended to maximize the use of this learning activity. The PDAs were used more generally to bridge informal and formal learning activities.

10. Impact on subjects being learnt

The main impacts of the technologies used were in building a portfolio of evidence for reflective practice, managing and planning workloads, providing new opportunities for formative feedback, and ways to contact tutors and other sources of support.

At the end of the project, the researchers classified the learners into six different learner types with reference to their use of and attitude towards using technology in this way. These classifications indicate the extent to which the sample groups exhibited diversity within their own learning behaviours and portfolios.

11. Learning behaviours, activities and processes
These learners were work-based, and as a result they had to be relatively independent and autonomous in their use of the devices, working without close supervision. The ways in which they used the device were to some extent dictated by the nature of the tasks they had been given for their course and the forms of assessment that applied. The researchers found evidence to suggest that students had been using the PDAs informally and collaboratively to comment on each others' work. However, some students were reluctant to share their work, largely through fear of plagiarism.

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12. Development of competences
Learners using the devices developed a number of important skills, including analytical skills (gathering and reflecting on evidence), technical (using the PDAs and navigating the Virtual Learning Environment) and communicative. Researchers felt that the project also had a positive impact on the ability of learners to manage (and take responsibility for) their own learning; this was particularly important given that the learners in question were workers with full-time jobs. The need for those in post-compulsory education to manage and direct their own learning is widely recognised as essential to their success as lifelong learners.

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13. Achievement of educational goals
At the start of the project, researchers were interested in the possible impact of a PDA device on constructing a portfolio of evidence. By the end of the project, it became clear that this was part of a wider question about the personalization of one's learning environments to fit one's own personal learning style. This is particularly important for those who could not study in a more traditional way, such as full-time workers. Building a portfolio of evidence is a good way of encouraging this kind of reflective learning.
The researchers developed:

- pedagogical model and proof of concept;
- resources for practitioners for designing reflective learning;
- exemplar and user cases highlighting student experiences;
- guidelines for integrating pocket PCs with institutional Virtual Learning Environments.

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14. Support for learning across contexts
The devices were designed to be used in the classroom, at home, and wherever else learners might be, to extend a learning environment across both public and private contexts. The use of the devices tended to change depending on the context (for example, few people with Internet access at home would use the PDA to access the Internet).

↘ POLICY

15. Achievement of political and social goals
Effective teacher training is an important part of any national education strategy. Effective promotion of lifelong learning through mobile devices is an area where this research could have an important impact. Ensuring that all teaching assistants are professionally qualified to Level 3 is a priority for national government and the local Learning and Skills Council. A Foundation Degree in Educational Studies is the main route for teaching assistants who want to gain qualifications in higher education.

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16. Evidence of transferability
Some evidence of the transferability of the project was provided when a new learner cohort was introduced, and their experiences were largely the same. However, further work needs to be done in this area.

17. Significance for policy-makers

Further education faces many challenges, including financial cuts and the increasing costs of education to students. As a result, the traditional structures of educational systems (which are based in the education system of the 19th century) cannot be sustained.

Policymakers must envisage new forms of learning that respond to these challenges, think about how to incorporate technology into education strategies, and facilitate clear thinking about the future of education in an 'open' and progressive society.

It's clear that the future success of similar innovations is dependent on adequate funding being made available.

In addition to clearer policy guidance, the researchers felt that many ethical questions (concerning the privacy and security of information gathered, and the rules governing the use of devices in different contexts) were provoked by the study, and felt that clear and progressive policies were needed to facilitate and improve further research.

One factor that could hinder transferability is the lack of consistency across different institutions with respect to the appropriate use of such devices in different institutional settings.

In some schools, for example, Internet access was not permitted at all on site.

There needs to be an agreed policy across all of the school, FE and HE sectors with respect to the use of such devices in classroom and less formal contexts.

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18. Supporting lifelong-learning

All the evidence points to the fact that traditional forms of learning are no longer adequate to the modern world, and we need clearer thinking about the ways in which technology can support mobile learning.

↘ ETHICAL CONSIDERATIONS

A number of ethical issues were raised by the project. These typically concerned either a.) the correct use of the devices themselves in such a way that would ensure the privacy and security of students (i.e. the teaching assistants) and their schoolchildren; b.) the kinds of policies that could guarantee accessibility to the learning environment across different institutional contexts; and c.) how to manage the transition away from traditional forms of learning in ways which minimize stress to less technologically minded students.

FÓN

www.foghlaim.edublogs.org

FÓN stands for Foghlaim Ón Nuatheicneolaíocht or Learning through New Technologies. The FÓN project, a mobile technologies supported learning intervention, aims at enhancing the teaching and assessment of spoken (Oral) Irish language in second level schools throughout the island of Ireland.

↘ MANAGEMENT

1. Rationale

Despite the fact that Irish is taught to the majority of Irish students from the age of 5 years to 18 years a large number of Irish people are unable to converse in the Irish language. This failure lead to a review of how Irish is both taught and examined in schools. As part of this initiative a project to investigate the use of ICTs in the teaching and Learning of Gaeilege (Irish) was launched. The Fón (Foghlaim Ón Nuatheicneolaíocht / Learning through new Technologies) emerged from the results of the projects investigation. It aims to provide the student with an opportunity to practice their spoken Irish and to encourage positive attitude to speaking the Irish language.

2. Technologies and media utilized

Mobile phones were used to communicate with a web based inter face to make recordings of oral responses to questions in Irish and a facility for the pairing of students from different schools for the purpose of engaging with each other in conversational Irish on a given topic. SMS were also used to support the learning of Irish though the provision of questions and answers.

3. Stakeholder and Agency

The project is run and managed by the NCCA with technical support from Learnosity, Foras na Gaeilge provided support in making this an all island of Ireland initiative and the NCTE provided support for the effective use of technologies in education. As the practice is a school based activity the initiative would originate from the classroom teacher. However the extent to which the Fón system is used is up to the individual learner. This Fón project is a jointly managed by the schools in which the project took place and the NCCA.

4. Organizational support

The project was initiated by the NCCA, the technology was developed by an Educational ICT company called Learnosity. The implementation of the project was conducted by the NCCA with the support and help of the schools and teachers involved.

5. Risk Assessment

NA

6. Supporting transitions

NA

7. Achievement of economic goals

NA

8. Quality Assurance

The project was investigated at all stages. Pre and post questionnaires were completed by both the teachers and learners involved. The recordings were analysed for evidence of the improvements in the quality of the spoken Irish of the learners.

In Sept 2009 the Fón project won a European Award for Languages which is coordinated by the European Commission. This award creative ways to improve the quality of language teaching, motivate students, and make the best of available resources.

↘ PEDAGOGY

9. Pedagogical support

The project incorporated various pedagogical approaches thought the various learning activities supported. The learners engaged in peer-peer learning, cognitive apprenticeship, and just in time and anytime anywhere learning. The learners were supported by the provision of audio recordings of the Irish language by Irish celebrities. The development of their vocabulary and their grammar skills were enhanced thought the sending of SMS tips and questions and answers. An increase in learner motivation was reported as a direct result from the project. There were increased opportunities for students to engage in conversational Irish. The student engaged in self directed learning and peer to peer learning. The learners engaged in self assessment as they were able to compare their language skills with other participants. The technologies were also employed to provide a differenctated learning experience as the content pitched to the learner and the evaluation of their work was based upon their level of experience and ability.

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10. Impact on subjects being learnt

The Irish language as a subject in schools has been fraught with difficulties the biggest of which is the perception of young people of it as a dead and irrelevant language. This project saw an increased interest in the language and willingness to engage in conversations in Irish on the part of the learners.

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11. Learning behaviours, activities and processes

Learners used the mobile phones for three different learning activities:

- ↘ the learner was presented with a selection of conversational learning questions to which they recorded a response which could then be evaluated by their teacher;
- ↘ the learners were paired with other learners from other schools to engage in a conversation in Irish on a given topic. These conversations were made available to their teachers for evaluation;
- ↘ the learners were sent Irish questions covering vocabulary and grammar via SMS which were answered via SMS.

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12. Development of competences

The learner's skill and competence in spoken Irish is the main learning focus of the project. A growth in confidence in the use of spoken Irish was identified as an outcome of the project.

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13. Achievement of educational goals

This project is a cross-border initiative and as such addressed the political issue of promoting the Irish language on the whole island of Ireland as part of the Good Friday agreement and in fulfilment of the European Charter for Regional and Minority Languages. The conducting of oral examinations in schools represent logistical problems to schools as they require the raking of language teachers out of schools in order to conduct the examinations thus leaving their classes suffering due to their absence. Due to these issues the teaching unions in Ireland have objected to the adoption of the Irish Oral exam at Junior Certificate level. This project presents a possible solution.

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14. Support for learning across contexts

The technology facilitated the engagement with the learning experience anytime and anywhere. The learners reported a vast range of physical contexts in which they used the mobile phone to participate in the project.

↘ POLICY

15. Achievement of political and social goals
The ability to converse in Irish is valued at both a political and social level. The Irish language has been allocated a special status in the Irish constitution. Any initiative to promote the use of the Irish language fulfils these goals.

16. Evidence of transferability
The company Learnosity which provide the technological backbone of this project have deployed a similar initiative in Australia to support language learning for new comers to the country.

17. Significance for policy-makers
This project represents the tackling of an old problem the perception of Irish in a new and innovative way using mobile technologies and provides evidence of altering attitudes.

18. Supporting lifelong-learning
Language is a key factor in incorporation in to a new society and this project represents an initiative which can support the learning of conversational language which could be applied to other arenas beyond that of formal education.

↘ ETHICAL CONSIDERATIONS

In order to support quality of access to the Fón system students were supplied with mobile phones for the course of the project. The cost of calls for both teachers and students were covered by the NCCA.
The schools in which the project was run had a no mobile phones policy so therefore in order to not undermine the ethos of the schools the only phones allowed were those for the project. The phones were very basic models so that they would not have camera facilities and the phones could not text. The only number the phone could ring was that of the project interface. The learners, their parents and the teachers all were fully informed about the nature of the project and the data that would be recorded through the use of the mobile phones and consent from all parties was obtained. A mobile phone usage policy was developed and participation in the project was dependent upon its acceptance.

MOBILE MOOD DIARY

www.scss.tcd.ie/misc/TMH/

'Mood monitoring' is an important component of many intervention approaches, including Cognitive Behavioural Therapy (CBT). This involves people recording their mood at regular intervals, to help them to recognize the factors which may be impacting on their mood and how they have managed at times when they have felt depressed. 'Mood monitoring' is traditionally done as a pen and paper exercise, using a mood chart supplied by the therapist. Young people are notoriously poor at completing these charts or remembering to bring them to the next session. In this project a mobile phone version of a paper diary was developed.

↘ MANAGEMENT

1. Rationale

Mobile Mood Diary was introduced to support Mood monitoring to support young people undergoing Cognitive Behavioral Therapy (CBT) for mental health issues. The use of mobile technologies was introduced because it has been established that young people were not engaging with the paper based mood monitoring via a chart which is traditionally employed by CBT therapists. It was employed in the treatment of 12 young people aging from 9 – 18 years of age receiving CBT from a CBT therapist in a public HSE clinic over a period of a year.

2. Technologies and media utilized

Mobile Mood Diary utilizes a mobile phone application created using Java ME and a web based desktop interface. It is designed to work on any mobile phone. The patient's mobile phones are equipped with the software which enables them to record their moods via text, images and voice recordings. The patients can also engage with the mood diary via a web based desktop interface. SMS messages are sent automatically to the patients mobile phones in order to remind them to fulfill the required entries as agreed with the therapist. The protocols and exemplars for using the Mood diary are accessible to the therapist via a desktop interface, they are not given access to the content or statistics of a clients account in order to maintain the privacy of the patient (see ethics).

3. Stakeholder and Agency

This practice was developed though collaboration between Technology in Mental Health research group in the department of Computer Science and Statistics TCD and the department of child and family psychiatry of the Mater Misericorde Hospital Dublin. The practice was offered to a number of therapists working in the department and it was managed by Mark Matthews of TCD who was conducting a PhD on the intervention. The project was then offered to all public counseling centers which offer CBT under the Health Service Executive (HSE).

4. Organizational support

This practice is technically supported by TCD, however it is designed to require a minimal amount of technical support. The technical capacities of CBT therapists and their client were taken into consideration, as well as the need to maintain the privacy of the therapist/patient relationships. Therefore all technical support is provided via the web based interface.

As this project was implemented as research in a public service the mobile application was made available without charge and the message charge was at a very low basic data transfer rate of 1-2 cent per message. Messages could be sent in batches to reduce costs further. During the project money was available to support client's costs for data transfer however this was never called upon. Currently due to advances in mobile technologies the option of incorporating Bluetooth transfer of data is being investigated which would eliminate the costs. The cost of building the application is estimated at between€10,000 – 15,000 which would support as many users as the can be accommodate on the acquired web space. There is no hardware investment required to implement this intervention as it utilizes existing mobile phones and PCs.

5. Risk Assessment
This intervention required a comprehensive implementation protocol, which required that the patients were made aware that the therapist did not access the content of the Mood diary; there were fears that patients may use it as a cry for help. The risk of suicide is high among the participants. The protocol made it clear to the patients that the technology did not monitor their mental health and would not prompt intervention on behalf of the therapist.

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6. Supporting transitions
This is an informal intervention that supports CBT which at its core harnesses the learning theories of behaviourism and cognitivism. This is intended to help support patients with mental health issues in understanding their behaviour, accepting their feelings and changing their thinking processes. It supports a core transition from illness to wellness which enables the learners' to fully participate in society.

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7. Achievement of economic goals
The provision of CBT to clients suffering from mental illness is an economic challenge to the HSE in Ireland. A CBT session costs between €70 - 100, thus the provision of effective therapy is an economic concern. The intervention had to be sustainable under the funding available to the HSE clinics. Therefore it was designed to be utilized by any mobile phone so as to keep the cost of the intervention to a minimum. This intervention has been proven to increase engagement in mood monitoring by clients and therefore increasing the efficacy of the treatment.

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8. Quality Assurance
This practice was being researched and evaluated as part of a PhD study awarded by TCD. The design of the mobile application was developed using an action research Methodology. Subsequently the designs effectiveness in supporting mood monitoring in CBT was evaluated using a clinical trial. It was found that 10-15 % of the participants in the study did not engage with the Mobile Mood Diary for a range of reasons one of which being discomfort with mobile technologies. In a controlled study which compared a paper based system to the mobile mood diary, increased compliancy and a higher level of consistency was found with the mobile mood diary group. Papers reporting the results of this intervention have been published in the realms of guidance and counseling and mobile technology. With the advancing pace of change in the area of mobile technologies the possibilities to enhance the features of the Mood Diary have developed since its first inception. Compatibility with new devices such as the iPhone etc. would also need to be developed. The affordance of making the Mood Diary customizable by both clients and therapists is another possible improvement.

↘ PEDAGOGY

9. Pedagogical support
The origins of this practice are not from a pedagogical background. The approach developed is based upon Psychotherapy and, in particular CBT. At the core of the field of CBT is that it is a learning journey for the patient. Patients must learn to acknowledge their illness, understand the basis for it and what triggers episodes of depression, and develop coping mechanisms. Mood monitoring is a core learning activity in this process.

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10. Impact on subjects being learnt
The most significant contribution of the Mobile Mood Diary is that it has increased the level of engagement with the mood monitoring on behalf of patients.
The relationship between therapist and patient has also been altered. The patients are often more technically literate than their therapist. Therefore the control of the activity rests mostly with them thereby altering the power dynamic in the therapy. This has been reported

as a positive development, aiding to progressing the course of CBT treatment.

11. Learning behaviours, activities and processes
The patients discuss and agree with their therapists a schedule for maintaining their Mood Diary according to their needs. Next, an SMS designed to remind and support the mood monitoring process is composed by the patient in collaboration with their therapist. Following this a schedule for the sending of the SMS is agreed upon. The therapist, via the web based desktop interface, then automates the sending of the message. The patient records an entry in their Mood Diary using their mobile phone or the web based interface which can include text, images or voice recordings. During the therapy sessions the mood diary is analyzed and discussed by the patient and the therapist with the aim of identifying patterns and coping mechanisms. The therapist can only access the content of the patients Mood Diary when the patient present (see ethics).

12. Development of competences
The core competencies developed by this process are to support reflection and mindfulness which is fundamental to CBT. The development of the client's skills in using mobile technologies was found to empower them and improve their relationship with their therapist.

13. Achievement of educational goals
The treatment of the mental health issues of young people is a growing area dealt with by guidance councilors in Irish schools. Although this project was conducted in a clinical arena it would be transferable to school based therapy. A report by the HSE indicated a prevalence of suicidal tendencies as high as 49% among young Irish males living in certain areas of the country. Education was identified as one area in which interventions to encourage positive mental health could be initiated. CBT is a cross-cultural type of informal learning embedded in therapy which is proven to be successful in the treatment of mental health issues with patients of all ages. My Mood Diary increases engagement with mood monitoring which is central to CBT, thereby increasing its efficacy.

14. Support for learning across contexts
The participants made entries into their mobile mood diary in a range of physical contexts. As this is aimed at encouraging personal reflection it was designed as an individual activity. Upon the initiative of the patient the clients and therapists engaged in analyses of the diary entries in therapy sessions. Within their treatment session the mood diary enabled the client to contextualize their everyday emotions and moods.

↘ POLICY

15. Achievement of political and social goals
Mental health illnesses among citizens is an area of huge political and social concern in Ireland, and throughout Europe. Suffering from a mental health illness can lead to stigmatization and discrimination. The provision of support and treatment for mental illness is a challenge faced by all governments. This intervention has the goal of supporting CBT using a cost efficient and accessible mobile technology tool in order to meet this challenge.

16. Evidence of transferability
The practice has been taken up by numerous therapists throughout Ireland. It has been localized and adopted by CBT professionals in Belgium and currently it is being developed for greater European adoption. Currently there an ongoing investigation into the transferability of this innovation to provide interventionist support to people suffering from bi-polar disorder. Its adaption to a range of issues that require increasing personal reflection on behavior such

as alcoholism and eating disorders is also being explored. Issues affecting mental health are a European and world wide concern. Thus, this practice is culturally transferable.

17. Significance for policy-makers

Mental health issues have been highlighted as an area of concern for all European countries by a WHO Report on Mental Health in Europe. Mental health issues impact upon the social, cultural and economic progress of European states. Interventions which can support the treatment of mental health issues in a cost effective way are significant to all policy makers. By using mobile technologies to increase the efficacy of CBT My Mood Diary represents such an intervention.

18. Supporting lifelong-learning

Mental health issues affect individuals throughout their lifespan. A WHO (World Health Organisation Euro/03/03) factsheet on mental health in Europe indicates that "one in five people will suffer form a depressive episode during their lifetime and that Mental health problems account for up to 30% of consultations with general and practitioners and that Depression is a condition that shows a genuine increase." Mental health issues appear to transcend cultural boundaries.

↘ ETHICAL CONSIDERATIONS

In order to promote equal accessibility the mood diary was designed to work on all mobile phones. Thus, the type of phone owned by the patient would not be a barrier to engagement. The provision of mobile phones to the patient was also ruled out as it was considered that the acquisition of a new phone to engage in the therapy would be detrimental for two reasons. Firstly it would raise ethical issues with regard to the patient's motivation to commit to mood monitoring. Secondly, by drawing attention and questions from the peers and family of the patient as to why and where they received the new phone it would compromise the patient's privacy.

Accessibility to the Mood Diary was also supported by providing the clients with a range of methods to access the activity i.e. Mobile phone, web based systems and paper based systems. This was considered important as issues such as mobile coverage, access to Internet and personal preferences could hamper engagement.

In order to protect their privacy all of the clients' accounts were anonymised and the patients set themselves an unidentifiable username and pin. The icon to identify the application on the mobile phone was also designed in such a way as to give no indication of its purpose.

A protocol was developed for implementation to highlight to the patients that their Mood Diary entries were completely private and could only be accessed by them. The rationale behind this was that, based upon the clients' use of the Mood Diary, there were ethical concerns that client might indicate suicidal intent upon the expectation of an intervention on behalf of the therapist. From its inception the privacy of the patients Mood Diary was a core concern of this project. The Mood Diary contents are only accessible by the patient and are password protected. The provision of privacy is a unique affordance of mobile technologies as opposed to a paper based mood monitoring system.

MOBILEDNA

The mobile Digital Narrative Approach (mobileDNA) is a Methodology to support collaborative creativity among a group of distributed participants engaged in the creation of a collective multimedia Digital Narrative (DN) entirely shot on mobile phones. The approach encompasses the entire process from idea generation to final production. It utilizes devices such as mobile phones, laptops, public displays, and interactive whiteboards and proprietary applications such as a concept-mapping tool, the mobile phone's native media capture and transfer tools, a Multimedia Messaging Service (MMS) gateway, a file explorer and a movie editor. While the mobileDNA successfully scaffolds and enables the creation of a DN, in approximately four hours, and brings about collaborative creativity among participants.

↘ MANAGEMENT

1. Rationale

The mobileDNA was designed as a response to the issues faced by educational institutions and teachers when attempting to engage with multimedia production, in particular moving making experiences. Studies in the use of the practice highlighted that moving making provided possibilities to support creativity and collaborative learning. However, the shortage of equipment, lack of skills in the part of the teachers and students in the appropriate use of the tools and huge time demands of media production, meant that these kind of activities were mainly conducted as an after class activity and that mainstreaming was far from being achieve. To this end, the mobileDNA provides an alternative to traditional moving making equipment and practices and reduces the time, expertise and expensive equipment demands.

2. Technologies and media utilized

The mobileDNA utilizes standard mobile phones with a camera and sound recorder; there no need to install any software since the project uses the native applications that come with the phone. In addition, it uses a laptop computer with a mind mapping application and a free movie editor. A data projector is also used to support group collaboration and knowledge sharing.

3. Stakeholder and Agency

This practice is one of the main contributions of Dr. Arnedillo-Sanchez's PhD. An outreach initiative between the Centre for Research in IT in Education (crite) and TAP was the context for running the workshops which allow for the articulation of the approach.

The project was run on a voluntary basis in terms of staffing and the Department of computer science in Trinity college provided the facilities. The phones and other equipment used were donations. In addition to the main role out of the project in the outreach programme in Trinity, the mobileDNA has been implemented in multiple contexts and in collaboration with institutions such as UNICEF.

4. Organizational support

This practice is technically supported by TCD, however it is designed to require a minimal amount of technical support. The technical capacities of facilitators conducting the mobileDNA workshops were taken into consideration. The only technical know-how required is the use of mobile phones to take pictures and send multimedia messages (MMS). In addition to the use of the mobile phones the participants and facilitators should have general user computer skills. As this project was implemented as research the cost of sending MMS was carried by the researcher and TAP. Nonetheless, it is estimated that a maximum cost of €5 would be more than enough to complete a Digital Narrative if media transfer took place through MMS. An alternative to this would be transferring the media through an existing wireless network or Bluetooth in which case there would be no MMS sending cost. No additional hardware cost would be necessary since the project utilises existing mobile phones and PCs.

5. Risk Assessment
This intervention required a comprehensive implementation protocol, which required that the participants were made aware that their participation in the project implied their images could appear in the final movie productions. Also, a code of conduct was drawn and signed by all the participants in the project prior to starting it.

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6. Supporting transitions
This is an intervention that supports core process and skills required to engage in collaborative creativity. To this end, it is fully informed in teaching and learning concepts of creativity and collaboration which in term support the transitions from solo and uncreative work to collaborative creative interactions. At a more organisational level, it supports the transition of this kind of experiences, which are often thought of as extra-curricular, to mainstream education. A further transition supported by the project is that of mobile technologies into educational settings.

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7. Achievement of economic goals
The purchase of sufficient technical equipment to support multimedia creation experiences is a challenge to schools and the parties with often operate with small budgets. The mobileDNA project demonstrates that 'low-cost' already available technologies can be use to support media creation projects and to provide wider access to the same.

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8. Quality Assurance

This practice was being design, developed and evaluated as part of a PhD study awarded by TCD. The design of the mobileDNA was done iteratively utilising a multiple case study approach. Subsequently the effectiveness of the approach to support collaborative creativity was thoroughly evaluated. The findings of the study confirm that the use of mobile technologies in conjunction with the workflow developed for the project support participants engaging in collaborative creativity in moving media production. Furthermore, the findings indicate that the participants' awareness and know-how of media concepts and production process was also improved.

↘ PEDAGOGY

9. Pedagogical support
The mobileDNA was specifically design and developed to support collaborative creativity in collective media creation.

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10. Impact on subjects being learnt
The most significant contribution of the mobileDNA is in terms of the acquisition of collaborative and creative skills which are transferable to any subject area. Although the initial intention of the project was not to teach media production, the participants that engaged in workshops over a extended period of time (6 weeks) become aware of media making concepts and gain media knowledge in the ideation, creation and production phases.

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11. Learning behaviours, activities and processes
Initially the participants, scaffolded by a Scripting Tool and a facilitator, collaboratively create a story. They are then divided into three groups: the Image Group, in charge of creating the visuals and playing the parts; the Sound Group, in charge of creating the audio be it dialogues, narrations sound effects, or tracks; and the Editing Group, in charge of assembling the media created by the other two groups. With the Script in-hand the Image and Sound groups, separately go on location to shoot the story while the Editing group stays in the Editing Station (EdS). As the media is being captured with the mobile phones this is transferred via

Multimedia Messaging Service (MMS) to the editors who can start editing shortly after the Image and Sound groups have arrived on location and started shooting and recording. By the time crew and cast are back in the EdS, the first version of the DN is ready for viewing. While viewing the DN in the making, participants engage in a critical review of their production often leading to: a) additional targeted shooting; for instance upon realising that they have not created sufficient media to convey the full story, or when they identify a mismatch between media created by the two groups; b) instances of grounding; for example repair of common ground, when the Image and Sound groups become aware that their media has been reinterpreted by the editors who have used images and/or sounds intended for one scene in a different one. Once the group is satisfied with their production the DN is ready for screening.

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12. Development of competences

The core competencies developed by this process are to support collaborative and creative abilities and skills in the participants. In addition, media creation, project and time management, and technical competences were developed.

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13. Achievement of educational goals

The need to harness and support collaboration and creativity in people is widely acknowledge. Media production is reported to have much potential in this regard. Nonetheless, limitations in terms of tools, time and know-how are barriers to the wide adoption of movie media production as a teaching and learning tool. The mobileDNA provides a viable alternative to traditional tools and approaches to media production. In addition since it is design upon theories of collaboration and creativity, it tackles the danger of people engaging in mere utilisation of tools to put together 'meaningless' production with little education value.

An important factor in the achievement of the educational goals of the mobileDNA is the understanding of the process and concepts underpinning of the facilitator conducting the workshops and running the project.

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14. Support for learning across contexts

The participants created the storyline in one environment, normally an indoors room. However, the media (images and dialogues and sounds) were created in multiple outdoors contexts where the settings, prompts and sound for their narratives were found. In this regard, moving across contexts made participants became aware and learnt things they would not have considered had they staid always in the same context. Furthermore, the variety of contexts brought rich interactions with third parties found in those contexts as for instance by-passers in the college grounds and so forth.

↘ POLICY

15. Achievement of political and social goals

The integration of technology enhanced teaching and learning in schools and across informal learning settings is of core importance in Ireland. In recent years, initiatives to promote multimedia creation have been supported by the government. However, limitations of equipment, time and know-how have been the main difficulties to mainstream the practice in schools and make it more accessible also in informal learning settings. The objective of the mobileDNA was to create a pedagogically sound alternative to customary practices in media making. To this end, the educational and social goals have been met. The political goal was to provide an approach that could be main stream into schools and would provide a cost efficient solution. Some progress has been made in this regard since a number of in-service course have been run to train teachers in the mobileDNA.

16. Evidence of transferability
The practice has been taken up by numerous teachers in schools and facilitators in informal learning environments. For the most part, the mobileDNA has not been adopted strictly as designed but has been adapted to the needs of the practitioners and participants on the ground. This is an indication of its flexibility and transferability to many contexts and needs.

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17. Significance for policy-makers
The integration of technology in teaching and learning and the need to promote collaborative and creative skills in people are areas of concern for all European countries. In particular European societies call for a society that is capable of collaborates and innovate. These skills have an impact upon the social, cultural and economic progress of European states. Interventions which can support the development of collaboration skills and creativity in a cost effective way are significant to all policy makers.

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18. Supporting lifelong-learning
Being able to collaborate, be creative and innovate are increasingly important facets of the knowledge worker and citizens of the knowledge society. The set of skills that the mobileDNA supports participants to acquire are transferable and in this sense can be used to further support learning in any other context and throughout life.

↘ ETHICAL CONSIDERATIONS

Ethical considerations in this project were concerned with the participation of minors in the production of movies in which their own images were to be used. To this end, the participants and their parents/tutors were informed of what kind of media were to be created and how these were to be used. Once the participants and parents were thoroughly informed their consent was sought prior to the participation in the project.
Other ethical considerations regarded limiting the access of the final productions in order to protect the image and privacy of the participants.

CONTSENS

www.ericsson.com/contsens

The Contsens project, Using Wireless Technologies for Context Sensitive Education and Training, focuses on the development of appropriate training/learning materials for mobile learning enhanced by context sensitive and location based delivery. The Operational and Specific Objectives addressed by this application are the development of innovative ICT-based content, services, pedagogies and practice. The basis for this is that every student in every higher education institution in every one of the 27 EU countries possesses a mobile phone, which they use constantly in every walk of life – except their education and training. This project addresses this lacuna and builds on previous EU funded mobile learning projects by using the latest technological developments to enhance the field of mobile learning and improve its learning content, technical services, pedagogical skills and student practice.

↘ MANAGEMENT

1. Rationale

The idea of Location and Context Sensitive Learning is very novel in Eastern Europe and also in Hungary. This project is one of the first ones in this region, delivering the possibility to introduce this cutting edge learning technology in our educational processes. In order to be competitive on the field of education, implementing the latest technology was vital not only for the Hungarian partner in this consortium, but also all other participants.

2. Technologies and media utilized

Location and Context sensitive technologies have been used. Partners have been experimenting with location aware devices (GPS, cell based location), context aware technologies - using mobile devices as sensors, gathering data about user's context -, like mediascape or in the Corvinno's case an internally developed flashlite application. These applications were connected to traditional learning management systems like Learn Exact.

3. Stakeholder and Agency

In Corvinno's trial learning content was developed for Vocational Education. These materials have been tested with students. The technology, which has been used, pushed the learning content towards the students based on their location and learning path. Teachers had a mentoring role in this scenario, they provided only support for the individual learners. Technical staff has also been involved in order to help learners using the mobile interface. This means, that the delivery of learning content has been either initialized by 1, automatically by the software on the mobile device, based on the context of the learner or 2, by the learner manually. The course has been managed by the lecturers and the technical staff.

4. Organizational support

As it was mentioned before, Corvinno's staff provided the technical and pedagogical support. As the GPS plug-in for the flashlite has some compatibility issues with some mobile platforms, some devices have been provided for the students, but most of them used their own devices. This concept has been funded by the EU Lifelong Learning, Leonardo da Vinci programme. The cost of this trial implementation, which includes software development, staff working hours is around € 54 000 in a 2 years period. Learners had to pay their mobile Internet data traffic. We thought this might also be a risk, as students don't want to pay extra costs for education, but this wasn't a serious issue at the end.

5. Risk Assessment

There were two main risks in this pilot: 1, The reliability of technology. The experience had problems with both the accuracy of the GPS systems in the narrow downtown streets in Budapest, and also with the strength of 3G mobile Internet coverage. Both of them were essential for the test. Because of these difficulties the partnership also prepared a showcase

version of the learning content, which provided limited functionality, but was reliable enough. The project researches believe that these problems are temporary and the quality of these services will definitely improve in the next few years. 2, The other risk was the acceptance of educational technology from the learner and teacher side, which is a novel educational method in Hungary. Luckily both parties adopted this technology fast.

6. Supporting transitions

This experience promoted the transition between the formal and informal context of learning. Students were free to discover the content as they wish, there were no time constraints. This explorative learning method helped them to be more individual by learning, which is a great achievement compared to the traditional face to face education.

7. Achievement of economic goals

Institutions should invest quite a bit into this technology, but once it's up and running both the students and the teaching staff become more flexible. The biggest advantage of this mass customized, self tailored content delivery and learning is that people on both sides of the learning process can exploit their skills better. Engagement is growing, learning efficiency and the interest in learning is also growing. These issues are vital for organisation getting their revenue from the educational market, as competition is getting fierce.

8. Quality Assurance

The project just has been finished, so Corvinus' staff is in the phase of report writing and evaluation. According to the initial results, students were happy about this way of learning, and the vast majority of them would do this kind of educational experience again – what we think is very important feedback quality-wise. If the customer is happy and he wants to come back and do it again, that means we are on the right track. However this type of learning technology here is still in its infancy. There is lot to be done on system's reliability and the inclusion of learning process stakeholders.

↘ PEDAGOGY

9. Pedagogical support

The technology was designed to push content towards students based on their contextual information collected automatically by their mobile device. Besides that, lecturers were supporting students providing mentoring when it was necessary. Face validation was also essential, so before the course Corvinno's staff explained the usage of this system and gave support in case of technical problems.

10. Impact on subjects being learnt

Personal experience and the technology provided contextual content helped students to understand and experience the learning object better.

11. Learning behaviours, activities and processes

Students needed to follow predefined steps: 1, there was a general meeting of students and the technical staff where they got information about the technology in use. 2. their mentor provided a short description of the learning content, explaining them what they should expect from the software and how should they use the contextual features. 3, students were given time to explore the learning content themselves (few days). During this time they had full control over their learning.

12. Development of competences
The most important skill that learners acquired is using location aware technology in education.

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13. Achievement of educational goals
This project as it is has only local relevance at the moment. The challenge is how to introduce mass customized learning content delivery with suitable pedagogical methodologies. Once this challenge will be solved, Corvinus' staff can move on towards a higher level of acknowledgment.

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14. Support for learning across contexts
The learning takes place in the city centre of Budapest, across various contexts depending on the student's learning profile and location. The software tried to identify the change of context and based on this change pushed learning content to the user.

↘ POLICY

15. Achievement of political and social goals
The project staff think that context based learning increases inclusion and involvement in educational processes, improves the quality and efficiency of educational services. The first two are problems at national level, that second two are project local challenges. However a strong commitment of management and/or policy makers are crucial.

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16. Evidence of transferability
There must be a potential. The project staff think the future of education is mobile, context based, mass customized. The project approaches can be further developed and exploited in various vocational and higher educational institutions. Furthermore there is also room for such applications in the field of corporate trainings.

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17. Significance for policy-makers
The practical impact of this experiment at the moment is relatively low, but on the other hand the importance is huge! Locally, on this is a platform we can build on and implement further context aware courses, which may gain awareness of local stakeholders. National wide has less probability of getting attention. However with good international and national examples there might be a chance to raise some awareness.

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18. Supporting lifelong-learning
Mobile technology is widespread enough to build educational services on it. Everyone has a device, meaning that everyone is connected.

↘ ETHICAL CONSIDERATIONS

Accessibility was an issue, as the project staff had to provide equal access to the content for all students. For this reason they provided devices for people not having the appropriate phone for this trial.

LOGOS

www.logosproject.com

As a result, within the LOGOS project, an integral platform for ubiquitous learning will be developed combining the usage of courseware objects from the LOGOS authoring studio with cross-media delivery through Digital Video Broadcasting, the mobile communication and the IP based communication channels. This will imply benefits resulted in enrichment of DVB learning applications in integration with IP-based and mobile technology tools in order to benefit from the evolved functionality of web learning and mobile interactivity. Furthermore the LOGOS approach also profits from using digital object repositories by managing a mixed architecture containing knowledge databases.

↘ MANAGEMENT

1. Rationale

LOGOS provides tools and infrastructure to exploit existing material residing in content archives and digital libraries, reducing production costs and unlocking hidden value by making content available on new channels and devices that cater for a variety of learning styles. The project aims at investigation and development of methods and instruments, allowing wide range of learners to access and to follow courses by web-based tools and Digital Video Broadcast /DVB/ tools at training institution and/or on workplace (typically with Internet protocol based information infrastructure), or at home (with much bigger presence of TV sets than of computer equipment), combined with the practically ubiquitous connectivity of mobile devices.

2. Technologies and media utilized

Results first of all refer to the pre-processing of multimedia archive objects in order to develop semantically enriched and annotated digital objects that are drawn from pre-existing content residing at external archives. This external content is firstly imported into the LOGOS Media Server and is appropriately described with basic metadata thus creating Media Objects. Media Objects are then segmented, annotated and semantically enriched using the Content Description Tool to form Digital Objects. Semantic annotations are created using domain ontologies that are developed with the Ontology Management Tool (COGUI editor). Domain ontologies have been developed capturing the semantics of three of the domains: A Project Management ontology, an ontology for Bulgarian Iconography and an ontology for the Cultural Heritage of Minorities and Indigenous People.

3. Stakeholder and Agency

This practice covers the complete learning cycle, involving all relevant stakeholders: learners, instructors, teachers and administrators. The learners initiate the process depending on its location or personal learning preferences. Teachers assist them with selecting the relevant learning content based on their prior learning assessment. However the main aim of the pilot is to prove that the LOGOS concept is valid and robust enough for future educational applications.

4. Organizational support

The project concentrated on technical developments. Pilots have been organized in order to see the robustness and the capabilities of the system. At this stage it is too early to talk about organizational issues.

5. Risk Assessment

LOGOS developments do not present any direct risk for society/citizens. There is an indirect potential risk associated with the intellectual property of digital archives when their digital objects are used in an uncontrolled manner. This risk is addressed by appropriate exploitation of advancements in digital rights technologies and effective use of audiovisual and eLearning metadata standards to record intellectual property owners' metadata.

6. Supporting transitions

As it was mentioned before the aim of the project was to develop a technical platform for learning. Supporting content reusability and widening the available distribution channels provide great opportunities for practitioners in order to support various transition scenarios. However two of the biggest challenges are:

- ↘ integrating a new cross-media platform for eLearning using the current technologies of Internet, mobile phone and Digital Video Broadcasting (DVB);
- ↘ generating the new cross- media learning context with specially developed authoring studios using existing digital archives.

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7. Achievement of economic goals

The main idea is to provide a powerful tool for content creation and management. With the help of structured content management, learning objects will be exploited more efficiently. The reusability rate of learning objects within this system is expected to grow. Another economic impact is the assurance of quicker and more effective training possibilities of human resources for new jobs.

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8. Quality Assurance

deriving from the LOGOS platform, an accurate study has been performed to a panel of potential users, aiming to identify core items to be respected/followed in the development of the system (like technological limits/constraints by the users, or particular needs related to languages or features to handle disabilities etc.). The assessment of the platform defines very specific experiments that measure, for example, the learning time and place, the degree of retention of information (if the LOGOS system helps a user to learn better this degree will be higher than the one made in traditional learning), the satisfaction level for accessibility, the content personalization. These indicators were identified already in the design phase, and discussed not only within the partnership but also with external organizations involved during the project workshops. Regarding to quality management the coordinating body Antenna Hungaria is ISO 9001 certified, meaning that processes of this process have also been carried out with the compliance of ISO 9001 requirements.

↘ PEDAGOGY

9. Pedagogical support

LOGOS provides a unified platform for e-learning services that can be delivered on mobile phones, PDAs, digital TV and computers. It automatically takes care of learner profiles to personalize the learning experience, and leaves the learner to develop courses based on a wide array of learning materials available in the repository freely. Content Developers use the intuitive Authoring Studio to create learning materials and upload them to the Hierarchical Repository. Course Providers import these learning materials into the Learning Management System and then customize the learning experience with further tasks and activities. Learners use their favorite device to access and interact with course materials, and each other, anytime and anywhere.

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10. Impact on subjects being learnt

The structure of the subject being learnt is clearly defined with the ontologies.

For learners the benefit is, that this interactive online learning gives them more control, increased participation, and setting their own pace in their learning. These functionalities will directly enhance the competitiveness of the users of ubiquitous eLearning services and their job opportunities in the Information society.

11. Learning behaviours, activities and processes

In LOGOS, the partnership agreed, that the system is ready to support not only objectivist (instructional) theories but also constructivist ones. Taking a look at the literature, several systems of usability criteria have been developed on both fields. The following considerations were raised for the practical steps in the real-life experiments:

- content shall be relevant to the project's Selected scenarios;
- learners shall fill in a short pre-course questionnaire on the topic itself and after finishing the course, a post-course assessment to measure their learning efficiency;
- the course shall take into account the different learning styles;
- personalization component may be possible to integrate already in the experimentations.

These considerations have been used for setting evaluation goals related to the personalization component of the platform. Further considerations are related to pedagogical aspects of digital learning materials and useful heuristics for multimedia design in education.

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12. Development of competences

N/A

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13. Achievement of educational goals

Based on the experimentation results, the partners undertook the enhancement of the tools and related underlying repositories. As an outcome of the experimentation process, project partners found that although this idea can be part of a future project only, new methods are needed for evaluating the impact of system in terms of the effects it might have on students' learning experiences, and in particular to see how proposed personalization strategies might have an impact.

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14. Support for learning across contexts

In terms of contextuality, learners were a somewhat skeptical about the added value of being able to access content on the mobile or TV, when compared to printed material. They thought the platform was usable enough and were able to look past some problems. Some were less enthusiastic about it however most were positive about electronic courseware in general. The TV platform was considered a good idea, but they thought that the content should be natively tied to a TV program to make it more appealing, e.g. there could be an educational program (normal or mobile TV) and after watching it, you could proceed to an assessment application related to it. The main improvement suggestions were related to the cooler "look and feel" of the user interface, faster and more optimized access to mobile and TV content, as well as inclusion of video also for mobiles and TV. Learners felt the need of more features in relation to the pictures: to be able to magnify them, have a preview of them within the text as well as using mobiles in case of learning preview or quizzes only.

POLICY

15. Achievement of political and social goals

LOGOS has social impact for socially handicapped group of people to assure the access of eLearning materials using of cross-media channels (especially using existing mobile devices and TV sets with additional set-top boxes). The realistic date of using the cross-media eLearning channels for these social groups is supposed to be within 3 – 5 years after these services are already available in large scale.

This solution also definitely has an economic impact to assure a quicker and more effective and training possibilities of human resources for new jobs and – with it - flexible HR market, when re-structuring of HR is required because larger structural changes in the economy

worldwide and countrywide. The realistic date to utilize these possibilities with real economic impact is supposed to be within 5 – 7 years.

16. Evidence of transferability

There is definitely a potential of enlarging the scope of this project. Project partners are motivated and dedicated to exploit the results and build educational applications on the top of this technology framework both on national and international level. However the expected pick up time of these applications is in around 5 years time.

17. Significance for policy-makers

The gained know-how will promote the transfer of innovative technology to the project market-oriented partners, creating new business opportunities for its industrial members. For example, the techniques to allow providers of learning services to generate personalised services will have the effect to reduce the cost of realizing such advanced applications that today is one of the major barriers preventing a large-scale diffusion. The success of the project is expected to fundamentally change the nature of designing, developing and deploying eLearning personal services and applications. The development of the resulting new tools and end-to-end architecture targeted by the project is envisioned also as a way to help successful developments for integrated mobile, IP, and DVB communication networks. In targeting the development of efficient and cost-effective solutions for realizing eLearning services over these networks, the project clearly aims at contributing to maintaining Europe's competitiveness in the telecommunications area.

18. Supporting lifelong-learning

Traditional classroom-based forms of education are increasingly replaced by distributed, on-demand, personalized lifelong learning. This trend is supported and amplified by rapid technological developments that enable us to communicate and access information anytime and anywhere, and to learn and collaborate more effectively. The most promising objective of the LOGOS Learning Platform is the provision of its learning services in a ubiquitous way, enabling the learners to access their courses from different devices and different personal situations.

↘ ETHICAL CONSIDERATIONS

As a technology project there were no major ethical issues during the system development and validation. One of the goals of the project however is to develop a framework, which is platform independent resulting in supporting the inclusion of handicapped people and people living in rural areas.