FLORE
Repository istituzionale dell'Università degli Studi di Firenze

Mobile learning per promuovere l'inclusione sociale

Questa è la Versione finale referata (Post print/Accepted manuscript) della seguente pubblicazione:

Original Citation:

Mobile learning per promuovere l'inclusione sociale / G. Bonaiuti, M. Ranieri, P. Ravotto. - STAMPA. - (2010), pp. 1-64.

Availability:

The webpage https://hdl.handle.net/2158/405947 of the repository was last updated on

Terms of use:

Open Access

La pubblicazione è resa disponibile sotto le norme e i termini della licenza di deposito, secondo quanto stabilito dalla Policy per l'accesso aperto dell'Università degli Studi di Firenze (https://www.sba.unifi.it/upload/policy-oa-2016-1.pdf)

Publisher copyright claim:

La data sopra indicata si riferisce all'ultimo aggiornamento della scheda del Repository FloRe - The above-mentioned date refers to the last update of the record in the Institutional Repository FloRe

(Article begins on next page)

17 November 2026

Education and Culture DG

Lifelong Learning Programme

Ensemble Project

Ensemble
Mobile Learning
to Promote Social Inclusion

www.ensembleproject.eu

Ensemble
Mobile Learning
to Promote Social Inclusion

Edited by
Giovanni Bonaiuti
Maria Ranieri
Pierfranco Ravotto

Authors
Giovanni Bonaiuti, Paolo Boscolo, Bertrand Bouchereau,
Antonio Calvani, Brigitte Cayla, Fabrizio Giorgini,
Alexandra Mounier, Sylvain Parnalland,
Maria Ranieri, Pierfranco Ravotto

Editors
Giovanni Bonaiuti
Maria Ranieri
Pierfranco Ravotto

Translator
Maria Grech

Available online
www.ensembleproject.eu

Creative Commons,
Attribution, Non commercial, No derivatives

Education and Culture DG
Lifelong Learning Programme

This project has been funded with support of the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.
Agreement Number 2008-4276/001-001
Project Number 143427-LLP-1-2008-1-IT-KA3-KA3MP

INDEX

INTRODUCTION 7

THE STATE OF MOBILE LEARNING 9
- Current approaches to mobile learning 9
- Pedagogical affordances of mobile learning 14
- Critical issues in mobile learning 16
- Mobile learning and e-inclusion 17
- Possibilities and limitations of mobile technologies 21
- Pedagogical and didactic models for mobile learning 25
- Netbooks in the classroom 26

THE ENSEMBLE PROJECT 28
- Project and partnership 28
- Background and aims of the project 28
- The target group of the educational initiative 29
- The educational contents delivered 30
- Ensemble's technological choices 31
- Didactic models of the Ensemble project 34
- The Ensemble model for the transmission of MMSs 35
- The Ensemble model for podcasting 37
- Technological infrastructure of the Ensemble project 40
- The experimentation in Prato 41
- The experimentation in Yvelines 42

EVALUATION OF THE EXPERIENCE **44**
Tecnologies 44
Communication 45
Learning 46
Participation 47

EXPECTED DEVELOPMENTS & CONCLUSIONS **49**
Future developments in Prato 49
Future developments in Yvelines 49
Conclusions 50

APPENDIX 1: Presentations and papers **54**

APPENDIX 2: MMS examples **56**

APPENDIX 3: References **58**

Research and Development Team University of Florence
Scientific Direction: Antonio Calvani
Project Manager: Pierfranco Ravotto
Scientific Coordinators: Giovanni Bonaiuti & Maria Ranieri
Consultans: Fabio Ballor, Isabella Bruni,
Leonardo Cardini, Antonio Fini, Chiara Paganuzzi

Acknowledgements
We would like to address special thanks to the headmasters, the teachers and the students of the Junior Secondary School in Prato "Ser Lapo Mazzei", the Collège Gassicourt (special thanks to M. Bonsergent, Headmaster), in Mantes-la-Jolie, and the Collège Paul-Verlaine, in Les Mureaux. We recognize that without their collaboration and support, this project would not have been possible.
We would like to thank Rosetta Margiotta for her support in managing relationship with teachers and parents in Prato, and Fabio Scarselli for his help in cultural mediation with Chinese parents.
We are grateful to all the University students who collaborated to the research, especially Annalisa Mini and Sara Tozzetti.
We also would like to thank the Councillors of Prato Municipality, Rita Pieri and Giorgio Silli, for their support during the project and the President of Yvelines General Council, Alain Schmitz, for his engagement in the Project.

INTRODUCTION

New technologies give us a glimpse of emerging new settings and possibilities for the future society, suggesting new affordances, which however have to be adequately adapted and geared towards goals that are ethically significant.

At the end of the '90s, by virtue of the possibilities offered by the Net, the future of technology became directly linked to the idea of "knowledge society", an idea that has been a great driving force for enormous quantities of human resources and economies during the whole first ten years of the new millennium.

Today (2010), while we are still making a first evaluation of the actual feasibility of such an ideal and acknowledging the resistance and difficulties that have slowed down the expected pace, technologies are prompting new connotations and tendencies though still within the scope of this more general inspiring and still upheld ideal. For some years, particularly since the advent of Web 2.0, and since the almost contemporaneous publication of the famous work by Jenkins, *Confronting the Challenges of Participatory Culture: Media Education for the 21st Century* (2006), we have been speaking widely of "participatory culture".

At the basis of this new scenario there are mainly two phenomena that are overwhelmingly characterizing technology evolution. There is an explosive development of social relationships (creation of friendship communities through social networks) and an equally rapid evolution of ubiquitous technology (mobile). Everybody can see how social networks (Facebook, Twitter, MySpace etc.) at this point represent a common aspect of everyday life, and how rapidly new mobile devices (game consoles, e-book readers, tablet PCs, smartphones, etc.) are being produced.

In a "participatory society" a particularly original element that did not characterize previous scenarios (not even "knowledge society") emerges. In this new context, the participatory, cognitive, ethical and emotional dimensions represent more strongly integrated components. Knowled-

ge, even informal knowledge, is acquired during participatory activities and at the same time identity, private space and cultural context are redefined.
The new affordance (but also the new challenge) that technologies present to educational institutions can be summed up in this question: can the new participatory technologies also become inclusion technologies favouring cultural contamination and sense of belonging?
As new generations from any cultural background are equally attracted and they all easily get possession of these new technologies, can't these same technologies provide a sort of "no man's land" for new forms of intercultural dialogue (and therefore also of e-inclusion) which can be extended from youths to the family and the respective cultures?
The ENSEMBLE project has attempted to answer this question by experimenting such technologies in particularly difficult contexts to accomplish intercultural integration.
The results were encouraging and have helped to initiate a reflection that has gradually involved pupils, families, schools and local authorities. The initiative, as all those involved in the project agree, deserves to be taken up again and improved.
Apart from the specific methodological outcomes, it seems important to point out that significant results could be prefigured in terms of cohesion and inclusion. In the light of the experience here presented, the development of a systemic and integrated context of use of technologies (e-learning, e-government, e-health), directly involving users at various levels and coordinated by local authorities, could help to face the complex problem of intercultural integration, which is characterizing our society today.

Prof. Antonio Calvani
Scientific Director of the Ensemble project
University of Florence

Current approaches to mobile learning

Mobile learning, or m-learning, is the new term that is gaining ground in the educational technology vocabulary. Over the last years a number of pilot projects have tried to find out how mobile devices could be integrated into learning settings, which testifies the growing interest in the field. However, given the relative novelty of the phenomenon and the scarce theoretical reflection that has gone into the proliferation of mobile learning in these years it is difficult to outline an exhaustive picture of the current trends. We are still looking for, so to speak, a mobile learning theory capable of identifying the unique features of this new way of learning and of distinguishing it from others forms of learning supported by technology.
Generally speaking, if we take up and integrate a classification proposed by Winters (2007), we can distinguish five main approaches to mobile learning.

M-learning as a matter of technology
This is still the dominant view that interprets m-learning as learning based on the use of mobile technologies such as PDAs, mobile phones, iPods, mobile PlayStations etc. Here the focus is on technologies and the adjective 'mobile' refers to the portability of the learning device. This has a number of consequences in the way in which learning activities with technology are conceived and implemented. In fact, the device is seen here as a vehicle of contents accessible at anytime and anywhere, and thus learning simply seems to mean accessing these contents. This vision involves a view of learning as transmission of knowledge. What is important is not so much the context within which the learning activity takes place, an aspect which is undoubtedly important in the case of m-learning, but the content that becomes always accessible from anywhere, thanks to a portable tool.

M-learning as an evolution of e-learning

In this approach, m-learning is considered as an extension of e-learning, that is, as a form of e-learning based on the use of mobile technologies and wireless transmission. For example, Stone (2004) defines m-learning as a *"special type of e-learning, bound by a number of special properties and the capability of devices, bandwidth and other characteristics of the network technologies being used"*. Milrad (2003) defines m-learning as *"e-learning using mobile devices and wireless transmission"*. Quinn (2005) defines m-learning as the intersection of mobile computing (the application of small, portable, and wireless computing and communication devices) and e-learning. In other words, here, mobile technologies are used to support approaches and solutions already used in e-learning, or to integrate mobile functions in traditional learning environments or to access e-learning platforms (e.g. MOMO - Mobile Moodle Experience, an add-on Moodle extension installed on mobile phones to access courses). In this sense we speak of Mobile Learning Management System (mLMS) (Keegan 2005).

M-learning as complementary to formal learning

In the literature on m-learning, formal education is often identified with traditional learning, i.e. with a type of learning which happens in a specific space and time and in an institution which also provides a final certification. On the contrary, informal learning would be a form of learning which happens anywhere at any time. As m-learning can take place anywhere at any time, it is considered as a kind of informal learning (Cavus and Ibrahim, 2009). Although it might be true that mobile devices can give rise to informal learning experiences more than other tools, this is not enough to differentiate m-learning from other forms of distance education, which, by definition, are based on the possibility of placing a learning relationship in a setting free from space-time constraints. In fact, we also speak of informal e-learning to indicate forms of learning that are supported by technology in informal contexts or of 2.0 e-

learning and informal learning in social networks. Therefore, even if there are strong and obvious relationships between m-learning and informal learning, this characteristic is not enough to characterize m-learning.

M-learning for mobile learners

Another line of research has gradually shifted its focus from the mobility of the devices to the student's mobility (Sharples, 2005), leading to more elaborate reflection on the concept of mobile learning and to the following definition: *"Any sort of learning that happens when the learner is not at a fixed, predetermined location, or learning that happens when the learner takes advantage of learning opportunities offered by mobile technologies"* (O'Malley et al., 2003). The emphasis, here, is not so much on the possibility of consulting resources, but on the fact that this can be done within a life "context" potentially interwoven with the learning subject itself, and by using the potentialities of interpersonal communication. This approach is based on theories such as the *Activity Theory by Engeström* (2001) and the *Conversational Framework* by Laurillard (2002).

M-learning for mobile cultures and societies

This perspective is very close to the one described above, but it differs because of the ecological footprint that characterizes it. We are referring to the ecological socio-cultural approach developed by the London Mobile Learning Group[1]. The following aspects characterize this ecological approach (Pachler, Bachmair, Cook, 2010).

- Agency: young people increasingly display new habits of learning where their everyday life becomes a potential resource for learning with expertise which is individually appropriated in relation to personal definitions of relevance;
- Cultural practices: mobile devices are used more and more as social tools to communicate with others; learning

---

1) The London Mobile Learning Group website is at this address: http://www.londonmobilelearning.net

is a cultural process of meaning-making and media use in everyday life have achieved cultural significance;
• Structure: young people are growing up in a society where individuals are at risk with new social stratifications and the proliferation of highly complex technological infrastructure.

In order to conclude this quick review on current tendencies in the field of mobile learning, we shall mention some ongoing projects and initiatives. There are now several pilot experiments. Let us try to group them in the following categories:

M-learning and K-12 education
A series of pilot experiences have been carried out in compulsory education contexts to enrich traditional classroom-based learning environments and to create stronger ties between formal and informal learning contexts. In some cases, projects play on the use of mobile devices to support collaborative learning and to explore places and environments outside the classroom (see, for example, the MoULe project, *Mobile and Ubiquitous Learning*[2]). In others, mobile technology is used to motivate students and to create a link between the school and the students' everyday life, by integrating mobile phones with other technologies in the classroom such as the interactive whiteboard (see *MyMobile*[3]).

M-learning and higher education
A number of experiments are also in progress at university level. Most of the initiatives are based on integrating e-learning and m-learning in various ways, as, for example:
• Using SMS text messages to inform students (e.g. administrative information about closing dates for registration or exam dates), for organization purposes (closing dates

---

2) http://www.moule.pa.itd.cnr.it/
3) http://www.medienundbildung.com/index.php?id=464

for presentation of projects, papers etc.) or as a didactic-formative support, encouragement or reminder (see the initiative at the Open University of Malaysia or the initiative at the University of Bath: BathSMS[4]);
• Distribution of material, usually audio or audiovisual contents, through mobile devices: these could be lectures recorded as podcasts and listened to on MP3 players or specific audio lectures (see for example the Federica Project at the University of Naples[5], or the IMPALA- Informal Mobile Podcasting and Learning Adaptation project, University of Leicester, 2008).

M-learning in the workplace
M-learning experiences and research in the professional field are not many. As Günther et al. (2009) observes: *"The potential of information and communication technologies to support lifelong learning processes independently of time and place still remains an under-explored area"*. Usually, in the vocational training context mobile learning is considered mostly as a performance support system: technologies are used to increase the productivity and efficiency of mobile employees through the distribution of just-in-time information and support and in relation to instant priorities.

M-learning and informal contexts
Other experiences can be found in completely informal contexts. We are referring, for example, to local or government authorities aiming at enhancing citizens' cultural life by facilitating active participation in the organized initiatives. An example is The Bletchley Park project[6]. This is an information service for visitors to Bletchley Park, a museum about the history of modern communication. When visitors want information about an object that interests them, they

---

4) http://www.bath.ac.uk/education
5) http://www.federica.unina.it
6) http://www.bletchleypark.org.uk/text

can send an text message with the key words found on the object's label. Thanks to this service they can receive a series of relevant information organized in the form of a personalized website for visitors which can be explored when they get back home.
More commonly such services aim at offering users personalized information based on the need of the moment and the geographical position of the individual.

M-Learning and Developing Countries
Several initiatives have been promoted in rural areas or in developing countries, where internet connections are less available than mobile phones. In these contexts access to a traditional e-learning platform can be more difficult than using a mobile device. The main projects launched in this field are:
• use of mobile phones to support literacy programmes: here the mobile phone is used as a tool through which simple material can be sent and tests with feedback can be proposed, or else to involve students in collaborative writing experiences (see, for example, the M4LIT project, funded by the *Shuttleworth Foundation in South Africa*[7]);
• use of mobile devices, particularly mobile phones, to favour and support community development in remote locations with lack of infrastructures for physical mobility.

Pedagogical affordances of mobile learning

In literature we find some dissatisfaction about the present theoretical reflection on mobile learning. On one hand, it is pointed out that despite the wide range of projects, the concept of mobile learning is still not very clear. Taxler (2007) adds that it is not even easy to formulate a theory because *"mobile learning is inherently a 'noisy' phenomenon where context is everything"*. On the other hand, if we look at the strictly pedagogical-didactic dimension,

7) http://m4lit.wordpress.com/

we have to understand what specific innovative contribution m-learning can give compared to previous learning technologies.

Klopfer, Squire, Holland and Jenkins (2002) maintain that mobile devices *"produce unique educational affordances"*, which are: portability; social interaction; context sensitivity; possibility of obtaining data related to position, environment, time, including both simulated and real data; connectivity both for information and networking; individuality and personalization.

Laurillard (2007), however, stresses that the innovative character of m-learning should be sought not so much in aspects such as spatial-temporal flexibility or the constructivist nature of the learning experiences, but rather in the fact that mobile technologies make digitally-facilitated site-specific learning possible. Laurillard's thesis is based on Price's and Winter's reflections. Price (2007) maintains that the crucial difference between mobile technologies and other digital technologies lies in their capacity to give digital representations of the physical objects present where the student is: the reality of the physical objects is thus augmented through their digital projection (augmented reality). Winters (2007) has, on the other hand, suggested distinguishing between three types of mobility in m-learning related to students, technological objects and information, and considering the fact that objects can differ on the basis of their location in three different types of spaces:

- regional space, that is, three dimensional physical space;
- network space, that is, participants' and technologies' social space;
- fluid space, that is, students, essays and learning objects.

Within this perspective, the object has to adapt to the context in which it is placed, that is, it has to be variable in the regional and network spaces, and fixed in the fluid space. According to Laurillard, both proposals allow us to recognize the specific pedagogical characteristic of m-learning, which, we can say, are the opportunities it offers to get to know the world while experiencing it contextually.

Another aspect which Laurillard (2007) points out as prom-

ising lies in the fact that m-learning has a positive impact on motivation for different reasons than those related to other technologies. In particular, m-learning gives a greater degree of control on learning, it is based on the possession of the device, it enables forms of learning within the context and facilitates continuity between contexts.

Critical issues in mobile learning

Literature generally gives a positive picture of the use of mobile tools in education. Nonetheless, we are still at the beginning and we can say that mobile learning is in its first generation. This explains why a lot of scholars anticipate great potential in the use of mobile tools, but there are still few successful experiences (Cavus and Ibrahim, 2009). In particular, there are various restrictions which could have an impact on decisions during the planning phase.

For example, mobile devices like mobile phones have small screens. This affects the amount of content that can be viewed as well as the time spent viewing (e.g. viewing an object on a very small screen can be tiring, thus reducing willingness to watch for a long time). The content must, therefore, be short and direct. These characteristics, in turn, may condition choices related to the type of content that can be dealt with, which, typically, is information, facts, essential concepts, concrete examples, rather than theories, explanations and so on.

Another problematic element regards hardware and software usability and compatibility. Mobile device interfaces are quite simple but every company has its own interfaces. Moreover, tools change all the time and new models are always substituting old ones.

At the same time people use different instruments and compatibility and interoperability problems can crop up between devices of different companies.

There are also restrictions related to hardware as, for example, the need to continuously recharge devices, which sometimes renders communication unreliable and unstable. Interactions are very often interrupted and fragmen-

tary, they can take place in noisy places or in places that are inadequate for activities that require concentration.
Another critical aspects that can have an impact on the methodology choices are the costs. Sending messages involves costs, which, if paid by the participants, particularly the ones in a disadvantaged position, can became an obstacle to intense interactions. There are also ethical problems related to privacy and management of personal data like mobile phone numbers.

Mobile learning and e-inclusion

The Age of Access

We live in what Jeremy Rifkin (2006) defines the Age of Access. In our society of connections, the word "access" is a key to enter into the everyday life and not to be excluded, to be protagonists in a world where "access" is getting more important than property. Changes are clear in many sectors. In a market economy a good is sold and bought, in the "cyber-space" economy goods are no longer sold as much, but instead services and experiences are rented. This change brings consequences, especially on knowledge that becomes more precious than goods: intelligence and ideas are the first to be "rented", inserted in marketing, in profitability of the new market.
In this scenario, distinction is not anymore between who possesses and who does not, but between who has connection and who has not, between who is in and who is out. "Being in" means taking part in a world that travels at a speed much higher, in which business, cultural, research and training activities are directly involved and receive an acceleration; to "be out" means instead of being excluded from the myriad of relations and connections that are gradually connecting the society, in which from economics to entertainment, becomes increasingly globalised.
It is in this background that enters the problem of digital divide. This is an ethical and social injustice of a form similar to the unequal distribution of wealth and prosperity. As soon as the goods as information, knowledge, and learn-

ing travel to the flow of electronic networks and provide wealth and therefore power, digital exclusion produces forms of social discrimination which undermine the ability of individuals and communities to actively participate in the cultural, social, political and economic life of modern societies.

Digital divide

The Oxford English Dictionary Online[8] registered the first occurrence of the term 'digital divide' in an article published in 1995 in the 'Columbus Dispatch' (Ohio), giving the following definition: *"the gulf between those who have ready access to current digital technology (esp. computers and the Internet) and those who do not; (also) the perceived social or educational inequality resulting from this"*.

From the mid '90s till today, the expression has increasingly become of common use, gaining ground in the international debate both on the institutional and academic levels.

Generally, we can distinguish between three main meanings of the concept of digital divide:

- *digital divide as technological devise*: this is the approach that characterized the initial studies on the problem; the accent was placed on technological equipment, and digital divide was conceived as a form of exclusion of those who did not have access to the Information and Communication Technologies (ICTs);
- *digital divide as both technological and social devise*: this is a wider perspective enriching the meaning of the term. Here the focus is not only on having or not having of the ICTs, but on the effective ability to use them. From this point of view, the digital gap appears as a consequence of pre-existing inequalities and refers to a separation between those who use ICTs and those who do not. In other words, two levels of divide can be distinguished, the first one refers to inequalities in access, the second to inequali-

---

8) http://dictionary.oed.com

ties in use. Such a distinction was first introduced by Kling (1998), who spoke of inequalities in accessing ICTs (technical access) and inequalities in terms of technical skills necessary to benefit from ICTs (social access).

• *digital divide as disparity in access to contents*: a third approach focuses on contents (knowledge, information, expertise) and the services to which the ICTs give access, independently from the technologies. Digital divide is therefore defined as the gap between those who have access to contents and services offered by the Internet and those who do not.

The definition proposed by the OECD and to which the most part of studies refer, includes the various elements highlighted up to now: *"the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard to both to their opportunities to access ICTs and to their use of the Internet for a wide variety of activities. The digital divide reflects various differences among and within countries. The ability of individuals and businesses to take advantage of the Internet varies significantly across the OECD area as well as between OECD and non-member countries"* (2001).

In synthesis, according to this last definition the concept of digital divide is applied on a universal level, goes back to various geographic dimensions (international and intranational) and includes two distinct problems, that of access and use of the ICTs, and is ultimately conditioned by access to the resource infrastructures.

Digital inclusion

In the last decade the issue of digital divide has received particular attention from international bodies like the UN, UNESCO, OECD etc. These organizations acknowledge that the effort to bridge the gap between "information haves" and "information have nots" is one of the main challenges of society today.

In particular, over the last years the European Commission have stressed the role of ICTs in promoting citizenship and

increasing individuals' participation in the "information society". Throughout several documents and communications, the Commission highlighted that providing equal access to ICTs, by bridging the accessibility, broadband and competences gaps, was a fundamental condition for everyone to take part in contemporary societies, especially for groups at risk of exclusion. The underlying idea is that if ICTs are used within projects that take into account the ethical and social implications of technologies, they can increase participation and integration opportunities for disadvantaged citizens.

This theme, which in European institutional lexicon is referred to as e-inclusion (electronic inclusion), was the subject of the 2006 Riga Ministerial Declaration on "ICTs for an inclusive information society"[9] and of the "i2010" initiative – Participation in the Information Society" (European Commission, 2007). Generally speaking, these declarations solicit to support everybody's participation in the information society, even in situations of social or personal disadvantage. Digital inclusion is considered as a necessary condition for guaranteeing equity and social justice, because, today, the impossibility to access digital information resources constitutes a strong discriminatory factor.

The various initiatives promoted on an international level regarding the digital divide (Warschauer, 2003), also fall within the e-inclusion perspective. They derive from the idea that improving technical and social access to ICTs is a necessary condition for guaranteeing a cognitive citizenship essential today to live in a knowledge society. Such aspects have been also emphasized on several occasions by UNESCO, particularly during the first World Summit on the Information Society (Geneva 2003 and Tunis 2005).

M-learning and e-inclusion

What benefits can m-learning offer for the training of subjects at risk of exclusion? Are there any? Or are we faced

---

9) Cfr. in the Internet: http://www.pubbliaccesso.it/notizie/2006/riga.htm.

with another utopia in the world of technology applied to education?

It is certainly still early to come to conclusions about the matter. It is, however, true that the proliferation of devices, such as mobile phones and MP3 players, has reached very high percentages in a few years exceeding the proliferation of the Internet. For example, ITU (2009) states: *"Mobile cellular has been the most rapidly adopted technology in history. Today it is the most popular and widespread personal technology on the planet, with an estimated 4.6 billion subscriptions globally by the end of 2009"*.

The steadily increasing availability of these devices, their versatility and mobility are heightening interest towards the use of such instruments in disadvantaged contexts (Kim, 2009), where there is no Internet, but there are mobile phones. Today low-cost mobile devices can hold and send great quantities of information, thus offering opportunities for reducing inequalities on a global level. For example, as mobile phones are cheaper and easier to access than traditional Internet connections, they are used as learning tools in Africa.[10] Moreover, m-learning can also reach isolated populations. For example, nurses and health workers in Kenya, trained by the African Medical and Research Foundation (AMREF), can download tests and reference material or exam dates on their mobile phones. Health workers in remote areas can also post difficult cases on a website, thus starting a forum that is moderated from AMREF and summarised by experts in the field.[11]

Possibilities and limitations of mobile technologies

As we have seen, mobile communication tools are creating new perspectives even in education. Several devices are now available to do this. Thanks to the miniaturization

10) Cfr. infoDEv: http://www.infodev.org/en/Article.551.html
11) Cfr. infoDEv: http://www.infodev.org/en/Article.551.html

of microprocessors, small technological devices, able to perform functions that only a few decades ago required the use of enormous calculators (mainframe) have been developed. In this sense, after the transient predominance of personal computers, today there is great competition among various devices of different types, all having the same main objective: enhancing information, communication and entertainment.

Bolter and Grusin (2000) propose the concept of "remediation" to describe the tendency of various media to include and transform the typical modes of communication of other media (not necessarily previous ones). As we all know, the press, cinema, and radio co-exist without any problems in the era of the Internet, satellite television and digital video games.
What is happening is a continuous metamorphosis of tools, in a progressive renewal of forms and functions. On the market there are different mobile devices such as netbooks, smartphones, handheld game consoles (e.g. Nintendo DS or Sony PSP), MP3 and MP4 players, e-book readers and various tablet PCs (e.g. Apple iPad or Google Tablet). Though of different shapes and sizes, most of these devices can perform the same functions, for example, play a video or read an e-book.
In such a setting possibilities mingle with problems resulting from lack of standards and of format and version stability. In other words this wide technological offer risks giving educational institutions great trouble when choosing the right device. Which device should they choose? Which media format (audio, text, video)? Which file format? Which network access technology (wifi, gprs)? At what cost (both regarding the technology itself and learning to use it)?

Multimedia Message System
MMS is a messaging system created to send and receive multimedia messages, that is, messages that contain text, pictures, audio and video. MMS messages can be sent from a mobile phone to another or from a mobile phone to

other messaging systems as, for example, electronic mail. MMS appeared after the changeover from analogue telephone systems to digital ones and the consequent spread of second-generation (2G) and third-generation (3G) mobile telecommunication systems. The main 2G and 3G mobile telephone standards are shown in the table below.

Standard	Generat.	Functions	Digital transfer rate
GSM	2G	Low volume voice and data transmission	Up to 9,6 kbps
GPRS	2,5G	Average volume voice and data transmission	Up to 171,2 kbps
EDGE	2,75G	Simultaneous voice and data transmission	Up to 473 kbps
UMTS	3G	Simultaneous voice and data transmission	Up to 2 Mbps

MMS messages are generally considered as the natural evolution of SMS text-messages because the "store and forward" function principle they are based on, is similar. In both cases the messaging service requires a central server controlled by the telephone operator, which receives the message from the sender and transmits it to the receiver as soon as possible. The real difference between SMS and MMS is:

- the bigger volume of MMSs,
- the mode of transmission used for MMSs, whose standards, 3GPP, 3GPP2 and OMA, are based on an IP protocol.

The IP protocol guarantees the connection between different networks and integrates existing messaging systems, and can be illustrated by *figure 1*.
At the centre of the system there is an MMSC server – MMS Centre – controlled by the respective telephone operators, which are responsible of the correct reception and forwarding of messages to recipients (if they are part of the same network) or to another MMSC (when recipients belong to different networks). Apart from keeping and re-addressing outgoing messages to their recipients, MMSC centres also adapt messages to the characteristics of the

device owed by the user. For example, if a high resolution colour image is sent from a latest generation device to an obsolete device with a low resolution monochrome screen, the recipient's MMSC will convert the image in the message to monochrome.
Such a function is applied to all types of formats: video, pictures and audio. In reality, as producers of mobile devices have not, up until today, established a common and shared list of supported formats, MMSC functions are controlled and managed by each single telephone operator autonomously according to its own specifications. This fact, together with the variety of mobile devices used, can lead to the conversion of supported formats or to the elimination of unsupported formats.

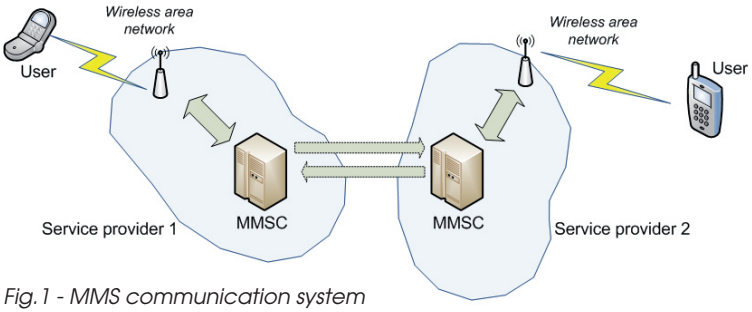

Fig. 1 - MMS communication system

Recovery of messages from the MMSC can be automatic or manual. In the first case, delivery to the device takes place without the user's intervention. In the second case the user receives a notification text message and he can decide whether to download the message or not. While in the first case the message is downloaded without any added costs to the user who receives the message, in the second case (download by the user) there could be a charge for the transmission of data.

Podcast

By podcast we mean a recording (audio or audio-video) which a user can download from the Internet and listen to at any time (offline) both on his computer and on other mobile devices (MP3 players, mobile phones, PDAs, etc.).

A podcast is different from a simple audio file uploaded on the Web because:

- There is a series of episodes. A podcast, just like a radio broadcast, follows a schedule and is made up of a number of files usually following a sequence. A single audio file uploaded on the Net is not a podcast.
- The RSS protocol is used to let users know the title of the podcast and to allow them to find each episode. Information about the podcast, memorised in an XML file according to RSS specifications, permits publication of the resource on the Net.
- A detailed description of the file itself (metadata) is contained in each audio file. The content of the podcast episode can be identified from such a description.
- Episodes can be received automatically. Users who choose to "subscribe" to a podcasting service, thanks to RSS feeds, will be automatically kept updated on new episodes, which can be downloaded directly (in the background) on the computer or other device.
- It can be used asynchronously. Podcasting, as opposed to streaming, uses a system that memorizes the single episodes on the computer or other device and consequently permits listening at different moments and in different places.

Pedagogical and didactic models for mobile learning

The availability of different types of mobile tools provides the opportunity to develop many different teaching experiences. The relationship which, particularly, young generations have with technological devices like MP3 players, smartphones, netbooks and game consoles offers possibilities of various modes of intervention. Most of these devices can be used to play, take photos, download videos, share personal interests and create one's own identity.

The wide diversity of tools, the rapid technological evolution added to the fact that pedagogy has been working in this field for only a few years, make it difficult to find effective pedagogical and didactic models that have been proven scientifically.

After the initial pioneering experiences, which were primarily aimed at solving technical problems (e.g. adapting content to small displays, solving compatibility and standard problems, reducing costs), it is only now that methodological and didactic considerations are beginning to be made.
Mobile technology is considered as an instrument which favours access to information resources, but also as a device for collaborative learning and group work. In the first case, while technological research is concerned about verifying how far it is possible to exploit georeferential data, that is, the user's location in the world in order to provide him, for example, with contextual information, pedagogical research rediscovers two important theoretical models: the cognitive load theory (Sweller, 1988) and the multimedia learning theory (Mayer 2001).
Both theories highlight the importance of knowing and respecting the characteristics of the human cognitive system in order to plan effective teaching material.

Netbooks in the classroom

Among mobile learning tools, netbooks are gaining ground. They are small portables, designed specifically to surf the Net, low-priced and light-weight which can be easily carried in a briefcase, or better still in a school bag.
Students can use it to take notes, to write texts, to do research, to access online learning environments, to participate in discussions on forums, to save and exchange information.
Owing to their characteristics netbooks are suitable to be used in class, in a lab, but also at the student's house or at her/his classmate's house, as well as on the way to school if students travel by bus or on the train by commuting students.
It is therefore an exceptional tool to enhance ubiquitous learning. This is why its use is being experimented widely.
Acer promoted a project on a European level in collaboration with the Schoolnet European network made up of 31

European Ministries of Education. In its initial phase, which was concluded in June 2010, the Acer project for Education[12] involved sixty middle and secondary school classes; 10 from each of the following countries: Italy, France, Spain, U.K., Germany and Turkey.
In Italy, during "The ECDL family grows" conference, organized in Milan by AICA on 21 Septenber 2010, Dr. Colosio, the Lombardy School Director, announced a project intending to provide 100,000 Lombardy students with netbooks in the coming years[13]. Several Italian schools have already started experimenting the use of netbooks in class: Pascoli school in Crema, Tosi school in Busto Arsizio, ITSOS Marie Curie in Cernusco sul Naviglio. Lussana school in Bergamo is experimenting the use of iPADs. In Borgaro Torinese, the local council has initiated a free distribution plan of netbooks to all the teachers and to all the 900 pupils at elementary and middle school within 2013.
In France, together with some experimentations about pedagogical uses of mobile computers, the Yvelines General Council began to test netbook uses in 5 Junior High Schools (in classroom and at home as well) since June 2009. And many more are the on-going experiences in Europe.

---

12) http://www.acer.com/education/eng/home.html; http://www.netbooks.eun.org/web/acer
13) http://aicanet.net/eventicontestuali/2010/subscribableevent.2010-07-05.9490408756/video/04_Colosio.swf/video

THE ENSEMBLE PROJECT

Project and partnership

The ENSEMBLE project, *European citizeNShip lifElong MoBile Learning*, is a two-year project (December 2008 – November 2010) funded by the European Union within the Lifelong Learning Programme.

The project was developed by a partnership that included three countries - Italy, France and the UK - and organizations having different characteristics and specializations:

- The Department of Education of the University of Florence *(promoter)*,
- GiuntiLabs UK, a company specialized in designing and developing advanced technological solutions for e-learning and knowledge management,
- the Comune di Prato, close to Florence, which included the teachers of the "Ser Lapo Mazzei" middle school,
- the Conseil Général des Yvelines, close to Paris (CG78),
- the C.R.D.P. (Regional Centre of Pedagogical Documentation) of the Versailles Accademy, in the Yvelines department, which included the Collège "Gassicourt" and the Collège "Paul Verlain".

Background and aims of the project

The Ensemble Project set out to develop a strategy for the use of ICTs aimed at fostering cultural and social integration of immigrant citizens. In other words, it aimed at working to achieve social inclusion and social cohesion goals, so often expressed by the European Union, and it responded to the suggestion regarding the *"potential of new technologies to enable innovative services and empower people in particular young people at risk of exclusion, migrants and cultural minorities, notably through multilingual and adapted content"* (European i2010 initiative on e-inclusion – To be part of the information society, Commission of the European Communities, 2007).

The Ensemble Project, therefore, intended to test how ICTs can enhance the opportunities of participation and integration of disadvantaged citizens.
In fact among the partners in the project there are two local authorities, which deal with big groups of first and second generation migrants and are very concerned with the integration question: the *Conseil Général des Yvelines* and the *Comune di Prato*.
The project was based on two experiments that had already started:
• The use of podcasts for teaching by teachers in District no.78, Yvelines;
• The use of text messages by the *Comune di Prato* to inform citizens.

The idea was to take advantage of widely used technologies, like MP3 players and mobile phones, and test out teaching methods and communication formats suitable for these instruments and for the addressed target: students from classes with a high percentage of immigrants and their parents. During the project it was also decided to test the use of netbooks because of their potential in fostering ubiquitous and inclusive learning.

The target group of the educational initiative

While developing the project, two types of target groups were identified:
• adults, first generation migrants,
• young people, second generation migrants.

Subsequently, as it is easier to work with young people within the school, the young target group chosen were students between the age of 13 and 15 in classes of only migrants (Yvelines) or a majority of migrants (Prato). It was thought appropriate to have their parents as the adult target group, because this could
• promote generation interactions between young people and adults,

• enhance relationships between migrant parents and the school, with an immediate integration effect.

The educational activity for the students was based on podcasts, while the one for the adults was a series of images, sent through MMS in Prato, and viewed primarily on their children's netbooks in Yvelines.

The educational contents delivered

The educational activity revolved around four main themes, giving preference to topics related to:
• citizenship education in an intercultural and European perspective,
• life and problems of preadolescents in school and outside school, both from the students' and the parents' points of view.
The aim is twofold: promote awareness of the rights and duties implicit in the life of multicultural societies and, at the same time, encourage communication between school, parents and students through a deeper knowledge of the respective responsibilities.
The educational contents were organized in four teaching modules – each structured in four units.

Module 1 – European citizenship

Unit 1 - European Union. An Introduction
Unit 2 - The European Citizenship.
Rights and obligations
Unit 3 - Work in the Europe
Unit 4 - The Euro and financial affairs

Module 2 – Intercultural Education

Unit 1 - One country, many cultures
Unit 2 - Sport
Unit 3 - Body language and cultures
Unit 4 - Internet as a tool for intercultural dialogue

Module 3 - To be parent, to be children and student

Unit 1 - Convention on the Rights of Child

Unit 2 - The European Programme
for the Mobility of Students
Unit 3 - The French School System/The Italian
School System
Unit 4 - Rules and community school life

Module 4 - Old and new addictions

Unit 1 - Health food and nutrition
Unit 2 - Videogames: addiction or creative game?
Unit 3 - Alcool and Teenagers
Unit 4 - Drugs and Teenagers

Each module was developed in two versions:
• one for the parents, based on a total of 160 MMSs, transformed also in flash video files, with audio, to be watched on netbooks;
• one for the students, based on a website, 16 learning objects and 64 podcasts.

All the digital resources produced, in an Open Educational Resources (OER) perspective, are released under a CreativeCommons Attribution, Non Commercial, Share alike licence: anyone is free to use, change and distribute them, only for non-commercial purposes, provided that authorship is attributed to the Ensemble project and an identical licence is maintained on any derivative works.

They are accessible:
• on the project's Moodle platform within the two online courses, one in Italian and one in French: http//moodle.ensembleproject.org/. The courses are open to whoever logs in on the platform, but also to "guests".
• in the "Ensemble products" section on the project's website: http://www.ensembleproject.eu

Ensemble's technological choices

The Ensemble project has tried to experiment the use of mobile technology after making some basic choices, which

could, at least in principle, get around the main problems resulting from a still unstable scenario, where the most innovative products are often expensive and use their own formats that are often incompatible with other systems.
We started off from our conviction that technology can reach its utmost potential only when it is easy to use and it easily integrates with the user's normal habits. The underlying idea is using technological devices that are already possessed and used by the people to be involved in the project. An activity requiring new devices for the participants would have been economically unsustainable and would have rendered transferability of the activity to other contexts very difficult. Moreover, the introduction of new devices for the participants' activities would have created uncertainties regarding their acceptance to participate.
The use of sophisticated, complex and expensive devices would have been unreasonable, all the more so, within the perspective of fostering the integration of disadvantaged social groups such as migrants.
In this particular case technological devices widely used by the addressed population were chosen: mobile phones (second-generation) and MP3 players in Italy and netbooks in France.

MMS

The Italian adults who took part in the project used MMS (Multimedia Messaging System) to receive daily short learning messages and SMS text messages to interact with the tutor.
Participants in the projects were not meant to incur any expenses, so measures were taken to avoid the need of an Internet connection to view messages. To avoid automatic connection it was made sure that all the participants' mobile phones were correctly configured and that the contents produced had the adequate characteristics.
In fact, one of the cases in which the user is asked to download the message is when there are format problems. When formats are "incompatible" or "unknown" to the user's MMSC, this will probably activate the Wireless Ap-

plication Protocol – WAP – that will send the receiver a text message asking him to access the MMS message at a WAP server address on the Internet. So, the so-called WAP Push receiving mode was disabled on the user's mobiles in order to avoid expenses incurred by them.
Receiving MMS messages is one of the fundamental elements in the projects. The pilot test that was carried out before the teaching experience identified the MMS formats that were mostly supported by the participants' devices. Forwarding of various sets of multimedia messages in different formats were tested. At the end of the pilot test it was decided to adopt an MMS format made up of only two different files: an animated image with a .gif extension and an audio file with a .mp3 file extension. Both these types of file are compliant with the standards developed by ISO/IEC Movie Picture Experts Group (MPEG) to encode audio and video signals and are used in audio and video applications for CD-ROM drives, mobile phones, digital TV and on the Internet (ISO/IEC 14496). These formats were chosen because they are the ones that are most commonly used. Notwithstanding this, only 62% of the participants' mobiles could receive the messages correctly and could therefore participate in the experiment.

Podcasts

During the project, the adolescents in Prato used MP3 players to listen to the educational podcasts. In Yvelines they used netbooks.

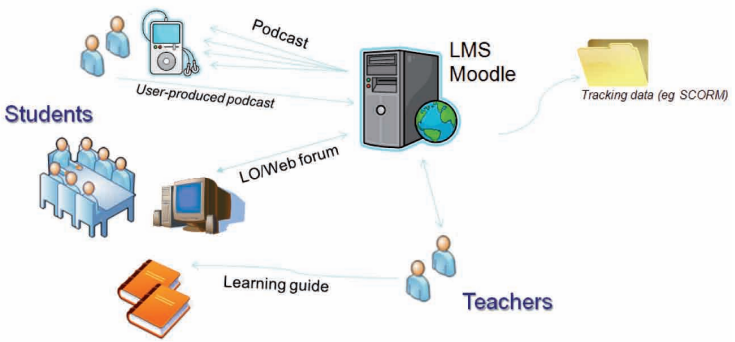

Fig. 2 - Learning environment

From a technological point of view the project decided to aim at maximum compatibility even for the podcasts. The episodes were therefore created using the MP3 format which, up until today, is the only format supported by all the devices available on the market. More sophisticated formats like OGG Vorbis, VQF, WMA , AAC are not widespread enough and using them would have meant precluding most users from the service.
The choice of using only audio podcasts rather than audio-video ones was the result of pedagogical and functional considerations. From a pedagogical point of view it is presumed that using one sensory channel, hearing, can favour concentration and can be adequately integrated with other types of incentives (books, notes, etc.) given in other moments during the day.
From a functional point of view audio podcasts can be listened to more freely and productively, precisely because they do not require sight. In fact, with hand-held players and earphones, contents can be listened to in various moments and various ways: on the bus, while walking in the street, at the gym and even while doing other simple activities.

Didactic models of the Ensemble project

As we have already highlighted, when designing teaching material, it is important to know and respect the characteristics of the human cognitive system.
In the Ensemble project this coincided with finding a balancing point between the characteristics of the medium (affordance) and the potentials of the human mind.
The general framework focused on some basic elements which recur in the various instructional design theories: capturing the learners' interest in the new contents through questions, triggering and bringing out their previous knowledge, developing the contents gradually (from simple to more complex issues), consolidating knowledge through questions that can verify the transferability of the new knowledge to the learners' lives and actions.

Three main principles guided the development of the teaching plan:
1. Repetition and variation: brief messages that give information about one same subject following a cyclical and gradual process. Interest is raised by evoking curiosity, amazement, fun and after by adding new knowledge always focusing on the learner's role.
2. Openness and interactivity: the cycle ends with open questions for the learners who can develop and discuss the information (in class, but also at home).
3. Context and control: learners can choose when, where and how to use the received didactic material.

Moreover, frequent references to the learners' lifestyle were made to try and involve them, and in this particular case, to encourage exchange of ideas between people. Particularly, the two groups, parents and their children, had the opportunity – probably for the first time in their life – to learn the same things at the same time. This gave rise to occasions for discussion on these topics at home, which was one of the intentions of the project.

The Ensemble model for the transmission of MMSs

Mobile phones are the devices used to contact the group of adults involved in the project and the chosen format is MMS (multimedia messaging system).
As we have already mentioned, they are types of mes-

sages that can contain text, images and sound. Sound is not so important in this type of media because the mobile is not held to the ear, but in hand or before the eyes. So the prime channel is visual communication. Consequently the choices made on the didactic-communicative level were:

- emphasis on images and reduction of written text;
- research for graphic and symbolic systems that can be interpreted correctly by users from different countries and cultures;
- essential information (small screen displays limit the amount of content that can be viewed and viewing time);
- compliance with visual design rules and multimedia learning principles (e.g. principles of proximity, alignment, repetition and contrast)
- compliance with the cognitive load theory (e.g. consideration of target group, coherence between the various messages, reduction of external components, reduction of the intrinsic load: chunking, sequencing, pacing).

The transmission of messages at weekly intervals is based on these concepts and develops the principles of instructional design which inspired the whole project. Two sets of multiple messages were sent every week on the same subject, each set containing four MMSs, plus a reply SMS text message from the user *(see Fig 3)*. The aim of the first MMS was to evoke the user's interest for an unusual and strange topic, which is however linked to his everyday life. The second message had the task of giving initial information, which was integrated and expanded by the third message. The last message in the set, after going over the discussed topics, had the task of fostering reflection and personal questions and answers. The table below illustrates the sequence of activities.

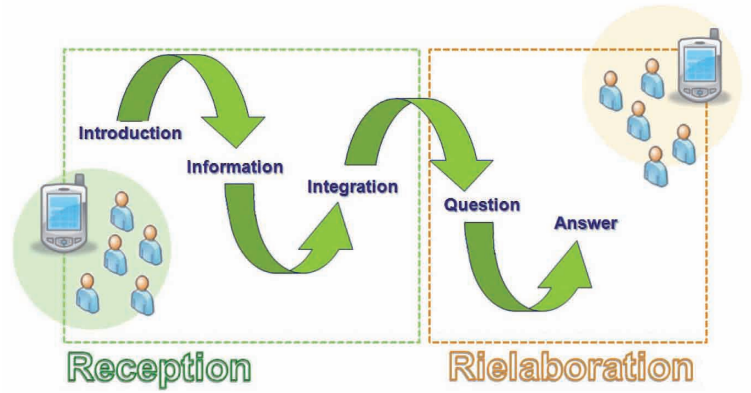

Fig. 3 - MMS model

The Ensemble model for podcasting

MP3 players are the devices used to reach the group of adolescents involved in the project and the chosen media format is podcasting.
Learning through spoken language is a very natural way of learning: everybody experiences it from birth onwards. Speech influences knowledge because intonation makes comprehension easier, apart from favouring motivation. Speech can convey emotions and create an intimate atmosphere. This means of communication can help dyslexic students or students with other particular difficulties.
The driving forces we tried to work on while designing the project contents are:

- Capturing and maintaining the students' interest in listening and learning by creating varied episodes, which are at the same time part of a precise structure. The regularity of daily episodes aimed at fostering the creation of a kind of listening ritual and the development of a consequent personal re-elaboration.
- Encouraging ways of listening and individual study: episodes can be listened to in different ways, at different times and in different places (on the bus or train, at the gym). This meets the growing need of integrating learning in everyday life.
- Using a tool that is capable of communicating in a dif-

ferent, informal and spontaneous language, and meeting the need to personalize learning.
• Relieving students, at least for this activity, of the need to learn by reading a book or a monitor.
• Enhancing the educational programmes through the proposal of additional teaching activities carried out collaboratively after listening.

The following criteria were followed while creating the single episodes:
• Being concise. Each episode lasted from 3 to 6 minutes, like songs, so as not to exceed attention span.
• Simple and clear language. Short sentences with no subordinate clauses were used in the episodes to facilitate young listeners, most of whom were not Italian natives.
• Careful use of intonation and sound emphasis strategies. For instance, bullet point sounds, that is, sounds at the beginning of a list of concepts were inserted, and sound effects in the narrated stories (home, airport, games room, etc.) or jingles were used;
• Structure. Contents are offered gradually and systematically to encourage the creation of a «listening ritual»;
• Trying to engage students through different pretexts such as ironic or strange situations, which are however linked to the students' everyday life.
• Use of texts developed in conformity with the cognitive load theory, which therefore do not uselessly put to work multiple sensory channels (this is why only the audio podcasting format/mode was used) and do not distract, overtire, stress or bore.
• Convergence. The use of podcasts is completely integrated in the educational programme and the learning activity takes place in class, online (platform) and through mobile devices (MP3 players)
• Reusability. The project podcasts can be reused in other schools and experiences (there are no direct references to specific situations or information related to the pilot project).

Further solutions were made for easy access and retrieval of the single episodes, especially on mobile devices. For every single episode contained in a file, metadata (information about the file itself) necessary for choosing and later retrieving it was used. In fact, MP3 players can play podcasts anywhere and at any time.
Students also have the possibility of listening to the lessons more than once. This is a particular advantage for students with difficulties in understanding spoken Italian, such as the immigrant adolescents in our experiment. However, a system for choosing the different episodes is necessary to facilitate such actions. For every episode, the metadata used gave information about the title, the general topic of the series of episodes and the episode's progressive number in the series. Moreover, the whole text transcription of the message was contained in the metadata.

The standard order of the podcasts during the week was the following:
A first "introductory" podcast to present the topic and evoke interest. This result was modelled on the typical short Radio Drama "format": dramatization of situations (at home, at the station, at the gym, etc.) where some characters talk and present the topics. The pedagogical-didactic function is setting into motion pre-existing knowledge.
A second "informative" podcast has the task of presenting the key problems of the unit with basic information about the topic. A third "additional" podcast follows, giving additional, more specific information and eliciting questions, which students could later discuss in class or on the web forum. The fourth "summary" podcast summarized the previously given concepts and information, which allowed the students to focus their attention on the main problems of the unit. The last episode of the week, the fifth one, is the one produced by the students themselves inspired by the input given in the episodes and after discussing and work-

ing in small groups.
The whole scheme of work is illustrated in *Fig. 4*.

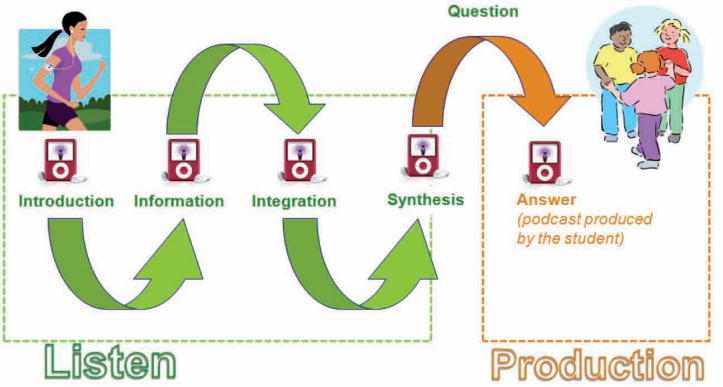

Fig. 4 - Podcasts model

Technological infrastructure of the Ensemble project

Fig. 5 shows the technological infrastructure used in the experiment.
The students in Prato were given MP3 players on which, every week, they downloaded the podcasts they had to listen to individually from the Moodle platform created for the project. The Moodle platform was also used to view some learning objects, to do the relevant tests, and to upload and share the various products of the work groups.
Their parents received an MMS message at predetermined intervals, usually once a week, from the dedicated platform managed by the *Comune di Prato* (as were the project website and the Moodle platform).

In Yvelines, students were each given a netbook on which they could download both the podcasts and videos (based on the MMS images) for their parents. The parents received a text message asking them to watch the videos.

A special extension of the platform, already available at the *Comune di Prato* for sending text messages, was in-

stalled to send the MMS messages.

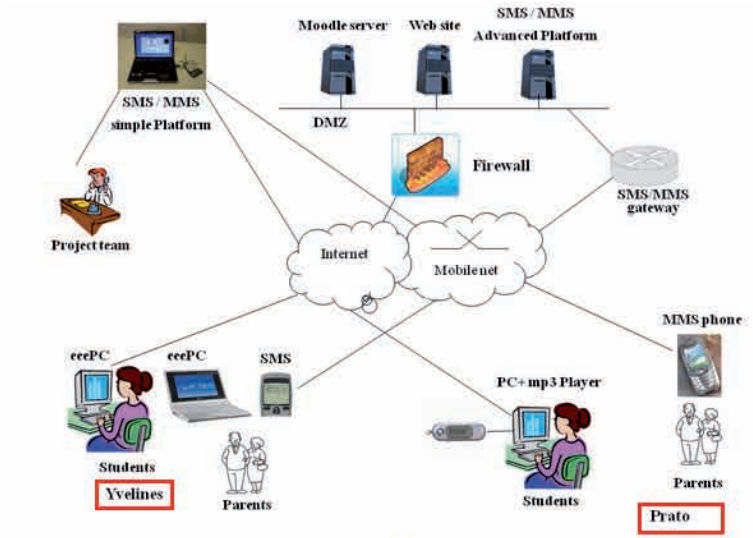

Fig. 5 - Communication model & technical infrastructure

In order to verify the transferability of the project to other contexts where such a platform is not available, sending MMS messages "manually" was also experimented. For this purpose free computer software, provided by mobile phone producers, was used to send (and receive) MMS messages from computers to mobile phones. In this way MMS messages can be created on computer, or the whole set of MMS messages that has to be used (for example, those already created for the Ensemble project) can be saved and then sent when required.
The platform, obviously, provides many other functions among which the possibility to programme all the transmissions and then send them automatically.

The experimentation in Prato

The experimentation in Prato was carried out between January and May 2010, with 66 students from three third-year classes of the "Ser Lapo Mazzei" Middle School and their parents. In all three classes there was a majority of teenagers of non-Italian origin, mostly Chinese.

As regards the students, the programme of the weekly units was as follows:
- download of the 4 podcasts in the unit,
- individual listening at home,
- discussion in class with the teacher,
- watching the learning object online,
- group work aimed at the development of an end product on the topic.

At the end of each module, the students produced their own podcast, a power-point presentation or a video in groups.
The adults were involved in the project both through the school and the Comune di Prato, which also provided a linguistic mediator because of the high number of Chinese parents and their difficulty to speak Italian.
The technical department of the Comune was responsible of sending the MMS messages. The parents could send a text message asking for clarifications and they could phone or meet the mediator directly. At the beginning of the project, halfway through and at the end the parents were invited to take part in meetings at school with the teachers and students. At the last meeting the students showed the work they had produced during the project. Town councillors Pieri and Silli were also present at this meeting.

The experimentation in Yvelines

Experimentation in the district of Yvelines was made between January and June 2010 by the Collège "Gassicourt", in Mantes-la-Jolie, and by the Collège "Paul-Verlaine", in Les Mureaux, Priority Education Zone (ZEP in french).
The Collège Gassincourt was involved in two classes for a total of 52 students, 15 of which were not French speakers, and 12 teachers. The Collège Verlaine was involved in 3 classes for a total of 43 students and 10 teachers.
The Conseil Général des Yvelines provided 60 netbooks to the Collége Gassicourt and 53 to the Collége Verlain. All the students and teachers involved in the piloting were

equipped with a netbook.
The experiment was preceded by three days of training for the teachers on the use of netbooks: technical training on notebook and on the installed softwares, meeting with colleagues who have already participated in projects podclass and netclass, exchanges of ideas on the pedagogical use of netbooks.
Students downloaded podcasts on their netbooks and listened to them in class, answering then a questionnaire on the topics faced. They could also surf on the Internet looking for more information, motivated by listening to the podcasts or discussions with the teachers and their peers.
Parents participating in the experiment were forty. 20 SMS were sent to inform them about the project, and inform them of the availability of each of the 16 units on their children's netbooks, and invite them to attend meetings at the school.

EVALUATION OF THE EXPERIENCE

Let us now summarize the results of the experience by referring to other works for further information[14]. We shall consider four main dimensions related to technologies, communication, learning and participation, taking into account three different points of view: students, teachers and parents.

Tecnologies

Prato

• More than half (65%) of the students found it easy to download podcasts from the platform and listen to them on an MP3 player.

• Teachers expressed different views about this issue. Both during the focus groups and in the questionnaire, they claimed that they did not consider their students' computer skills adequate to deal with the tools in the projects.

• As regards the parents, technical constraints related to the use of the mobile devices were one of the crucial points of the experiment because of the need to identify the most compliant format suitable for the participants' various types of models and operators. Notwithstanding this, MMS messages proved to be a simple and direct medium that was easily approved by the users: almost all the parents who answered the questionnaire (81%) consider them a useful way to receive information both from the school and the local government.

Yvelines

• Students did not encounter any particular difficulties in using the proposed technologies. Half of the students believe that the activities carried out during the project were helpful to solve personal difficulties related to the use of

---

14) See the web site of the project at the following Internet Address: http://www.ensembleproject.org.

computers.
• The teachers could use the technologies easily and they greatly appreciated the initial phase of training in the use of the chosen technology.
• Most of the parents were already familiar with the system of SMS and MMS message sending. However, one third of the participants had to reconfigure their mobile phones in order to view the contents.

Communication

Prato
• Almost 70% of the students claimed they found the contents of the podcasts simple and clear. One third of the students, however, complained that some were too long and they had difficulties understanding some vocabulary.
• Most of the teachers appreciated the quality of the communicative format used, highlighting the positive effects on the students' participation and motivation. The others considered some parts of the listening activity too difficult for some students.
• On the whole, parents liked the pleasant messages - 26 users (70%) and their brevity - 24 users (64%), but not their frequency, which was considered excessive by 27 users (72%).
Yvelines
• The students enjoyed listening to the podcasts, which they considered clear and stimulating. Still, some pointed out that some pictures would have been helpful.
• Most of the teachers pointed out that the listening activity was particularly useful and appreciated by the students. Teachers also noted another phenomenon related to the use of hand-held devices: cooperation among students. They never leave a classmate alone to sort out problems, particularly technical problems. Very often those who finish first help the others.
• 70% of the parents claimed that sometimes the MMS messages were too long, while 50% claimed that they were too frequent. 70% liked the pictures and one third de-

clared that the combination of audio with images helped comprehension.

Learning

Prato

• Almost 70% of the students declared that the work done helped them to enhance their knowledge in an enjoyable way, by substituting textbooks with new learning instruments and by having the opportunity to successfully experiment the use of technologies not only for entertainment but also for other aims. For example, one student commented: "I learnt things in a different way and I learnt something new about technology".

• The teachers assessed the students' results in a less compact way: assessments on learning and on the students' personal contributions in the group work are equally distributed from unsatisfactory to excellent.

• Half of the parents answered the short questionnaire, administered at the end of the experiment, on the contents of the project correctly.

Yvelines

• Students admitted that both podcasts and netbooks have helped them to better understand the topics discussed during the courses. They manage to deal with the writing stumbling block and to immediately look for extra information or missing definitions. All the more so they can work at their own pace, in a calm atmosphere and have a privileged contact with the teacher like in a private lesson.

• In their activity, the French teachers realized that the students were very focused when they were listening to the podcasts with their headphones and they carried out the task of answering the relative questionnaires very seriously. They noticed that this way of working rendered students more responsible and more autonomous and introduced a calmer atmosphere in class. In this way, they could move from one student to another and provide individual feedback.

• Few were the parents who answered the short questionnaire, administered at the end of the experiment, on the contents of the four modules. Those who answered it declared they already knew something about the topic.

Participation

Prato

• Half of the students claimed they had collaborated actively in the group activities, giving their own contribution and helping their classmates when necessary. Moreover, 70% of the students pointed out a better understanding of cultures that are different from theirs. However, during a public meeting some students complained about some students' insufficient contribution which was detrimental to the group work.

• Most teachers claimed that technology-based group work did not reduce cases of exclusion. However, they attributed such cases to the students' choice, in some cases due to "particular disciplinary problems", and in others because some students' language problems.

• On the whole, as the teachers pointed out, involvement of the parents in their children's school activities and in scholastic life was marginal. Among the parents who filled in and handed in the satisfaction questionnaire: 21 (56%) participated in the meetings organized by the school, 22 (59%) helped their children at home to do the Ensemble project activities, 19 (51%) discussed the proposed topics with their children.

Yvelines

• Most of the students judged the group work positively and their own participation as quite active. Moreover, they believe that the topics dealt with in the modules have improved their understanding of different cultures.

• Teachers who have students with difficulties in reading and writing (the project was mainly aimed at immigrants), realized that the use of podcasts made learning easier because it gets around the written text obstacle. In this way,

these students, who very often feel left out, feel part of the class and they participate more willingly in the class activities. As regards relationships with parents, teachers have not noticed significant changes.

• Few parents took part in the meetings organized by the school. Although contacts have improved, overall, parents do not think that relationships between school and families have improved as regards communication and participation.

As can be deduced from the above results, the opinions of the people involved are not always the same. The students, perhaps, are more enthusiastic, the teachers are more cautious and parents are relatively interested. Although difficulties cropped up at various levels, it should be highlighted that all the participants, both in Prato and Yvelines, claimed that they considered the experiment useful and that they therefore want to repeat it in the near future.

EXPECTED DEVELOPMENTS & CONCLUSIONS

The European Commission rightly highlights the importance of dissemination and exploitation of project results.
Appendix 1 illustrates the main occasions of results dissemination and pubblication. The two paragraphs below show how in the two locations, Prato and Yvelines, where the piloting took place, the experience has taken root and will be developed, once this project is concluded.

Future developments in Prato

The teachers who participated in the experiment have appreciated the project's teaching model and material and intend to re-use the Ensemble educational contents, podcasts and learning objects and transfer the pedagogical model also to other subjects by sharing it with to their colleagues.
The Comune di Prato considers Ensemble an excellent project and intends to re-use it in two contexts: communication with the population through MMSs and in schools.

As regards schools, the Comune wants to propose to other school institutes both the use of the Ensemble project material for multicultural education and education about the EU, as well as the transfer of the teaching model to other contexts, and is looking for funds to support such a project.

Future developments in Yvelines

As for the two partners in Yvelines, participation in the Ensemble project was part of an on-going programme based on the use of new teaching methods.
At the Gassicourt Junior High School, netbooks have been provided to each student of the class taking part in the piloting phase to be used at school and at home as well, while other netbooks are available to build up a laptop mobile class. The teachers have decided to use

all the themes developed in the Ensemble project. These themes are available on CRDP blog and may be used by any teacher. The items concerning Europe are recommended by the History-Geography academic inspection in Versailles. After testing pedagogical uses of MP3 players, the Conseil Général des Yvelines has recently added the podcasting system to its financial plan, so that each High School may be equipped on demand. In some Junior High Schools, the Information and Documentation Centre (CDI in French) are proposing "digital schoolbags": a dozen of laptop computers available to pupils on demand. Besides, the use of six iPad type tables has been planned in 5 or 6 High Schools. A further idea is the creation of a "Working Digital Space" - such as a Learning Platform or a Virtual learning environment – in the 115 Junior High Schools ruled by the Conseil Général des Yvelines. This platform will allow access to pedagogical information through the Internet and it will promote the cooperation between the High School and the students at home anytime and anywhere. This will complete the activities carried out by netbooks. In a CRDP document, written at the end of the Ensemble pilot experience, they wrote:

"The use of netbooks in the classroom requires great effort on the teachers' and students' part, but they both derive an advantage. Teachers notice that students listen much more, they are more attentive and more autonomous. Students feel they have an active role in their own learning process".

Conclusions

When a project comes to an end, very often we think that if it could be started all over again, it would be done in a totally different manner.
This is because during the process we learnt a lot of things and we changed as the project developed. Also because, in the meantime, the world did not stop: new technological tools have been developed, some perspectives have

changed, new experiments offer new ideas and reflections.
When a project has a research approach, developed with a desire for innovation and a critical attitude, at the end the desire to go beyond the achieved results is even greater.

So, what shall we repeat and what shall we change?

Surely the choice of dealing with the use of mobile technologies proved to be positive. They are becoming more and more widespread. The number of people who, in some way or another, are always connected is continuously increasing.
Similarly, the importance of working for cultural integration and social inclusion is always being confirmed. The relentless immigration trends in Europe, which are also necessary in some respects for our societies, are a source of dangerous social tensions.
Therefore, attempting to use mobile technologies to intervene in favour of integration and inclusion was an idea of the project, which is still interesting.

The idea that mobile phones are the most widespread mobile tools among all the social classes of the population, including migrants, was right. The possibility of multimedia communication through mobile phones proved to be lower than our expectations. The MMS messages, which at the time of the presentation of the project seemed so rich of possibilities, still have not been confirmed. Communication by mobile phones is still vocal and through text messaging (SMS).
We intentionally discarded the easy shortcut of supplying the adults participating in the experiment with latest generation mobiles that were all the same, in order to study the possibility of communication via MMS which can reach everyone (or almost everyone). By sticking to short sequences of images, we believe we have defined an effective format for the transmission of graphic messages

(see examples in Appendix 2). But, with such tools, it is very difficult to go beyond the idea of transmission.
In order to explore the possibilities of creating real learning environments based on communication through mobile phones, we have to refer to latest generation mobile phones, or maybe even smartphones, and exploit their possibility of connecting to the Internet. Not everybody can afford such a solution, but in the near future this possibility will surely be more widespread, and so it is worth investing in research.

Choosing podcasts to communicate with the students proved to be a positive experience, which was enhanced during the experiment. The podcasts were only a starting point for class work and a stimulus for the production of other podcasts, on the same topics, by the students. But the students did not just produce podcasts; they also used images.
The choice of using only audio podcasts was determined by a preference for a "poor" tool that could be used by all the students. Who doesn't have an MP3 reader?
Then, during the project, in France it was decided that students would be able to use netbooks provided by the Conseil General of Yvelines. Such netbooks were not to be used just for listening to the podcasts but also for doing research and taking notes.
The idea of using netbooks in class is a real possibility, which well fits the mobile learning sphere. A netbook is definitely more "mobile" than any laptop. Students can always carry it with them without any weight problems and also without fear of breaking it or having it stolen. They can use it to take notes, study a text, listen to a podcast, watch a video, connect to the net and look for information, do homework, chat with a classmate for suggestions, send homework to a teacher, do interviews recording audio and video.

One of the project's choices was to prepare different materials on the same topics for parents and students in order to encourage interaction between them.

The French solution of parents viewing MMS contents on their children's netbooks, because of difficulties to have a provider to send MMS messages, which in France seem to be less popular than in Italy, can increase communication if it is the children who show their parents the materials and so they view them together.

If today we were to start the project rather than conclude it, we would probably focus more on netbooks and therefore on a greater variety of materials to offer the students, but especially on making them produce a variety of materials involving their parents (as was done in some cases in Ensemble, for example with interviews). At the same time we would aim at an active use of mobile phones – not only as receivers of the project's MMS messages – to integrate that of netbooks: to communicate but also to record audio and video and to take pictures.
It would not mean shifting the emphasis from the integration theme to that of new didactic forms, thus abandoning the aims of Ensemble. It would mean developing the choice, already made during Ensemble, of placing, at the core of the integration action, the school and the activities of the students (Italians and immigrants) who involve their parents (not only the immigrants).
And it would mean identifying specific educational interventions by the school for the immigrant parents, first of all language education, as this is one of the most imminent necessities.

However, today we are not starting the project but concluding it. The results achieved are a good basis to start another one.

APPENDIX 1: Presentations and papers

The Ensemble project has been disseminated on several occasions.
Here are some:

- Intertice, Parigi, 26 March 2009.
- TiceMed 2009 "Ubiqitous learning", Milan, 28 and 29 May 2009

"Mobile Learning ed inclusione sociale. Il caso Ensemble"

- VI Congresso Sie-L, Salerno, 16–18 September 2009

"Mobile learning per l'integrazione di gruppi a rischio di marginalizzazione"

- N° 2/2009 of Je-LKS, Journal of e-Learning and Knowledge Society

"Mobile learning per l'integrazione di gruppi a rischio di marginalizzazione"(in Italian and in english), July 2009

- EuroMeduc, *"Congrès européen de l'éducation aux médias"*, Bellaria Igea Marina, 21-24 October 2009

"Electronic and Social Inclusion through Mobile Learning. The challenges of the ENSEMBLE project"

- MissionTice: Honfleur, 16 September 2009
- GEP meeting, Versailles, 30 September 2009
- Meeting with students and parents to start the piloting, Prato, 14 December 2009
- Press conference, Prato, 14 December 2009
- Meeting with students and parents to start the piloting at College Gassincourt, in Mantes-la-Jolie and at College Paul-Verlaine, in Mureaux, January 2010
- 2nd SIREM meeting, Florence, 25 and 26 March 2010

"Un podcast per l'integrazione e la cittadinanza attiva"

- Didamatica 2010, Rome, 21-23 April 2010

"Telefonia mobile per l'apprendimento ubiquitario. Indagine esplorativa sull'uso di MMS"

- Education 2.0, Florence, 23 April 2010

"Insegnare e apprendere con il podcast. Un'esperienza di mobile learning per favorire l'integrazione"

- Salon Intertice, Paris, La Dèfense, 10-12 May 2010
- 2nd Annual ADL S&T Workshop: *"Focus on Mobile Learningfor the Military"*, il 20 May 2010

"EuropeanUnion (EU) m-LearningPrograms"

- Final meeting with students and èarents who participated in the experimentation, Prato, 31 May 2010
- Conference *"Mobile learning"* organized by Collaborative Knowledge Building Group, Centro Qua_Si of Università degli Studi di Milano-Bicocca & eXactLearning solutions, Sestri Levante, 16 September 2010
- Meeting on Mobile learning with Ben Bachmair, University of Florence, 6 October 2010
- Final Ensemble Workshop in Italy, Prato, 6 October 2010
- Final project seminar in UK, introduced by Mike Sharples, University of Nottingham, 9 November 2010

The Ensemble project has been included among the "best practices" in *mobile learning* by the Motill Project - www.motill.eu.

"An abused child today ...

... will be a violent adult tomorrow"

What do you think about this statement?

Children cannot wait

We must safeguard and protect their childhood

Leonardo da Vinci programme: do you think it is impossible?

In 2007 a young cook from Bordeaux

receives funds from Leonardo da Vinci programme

to work in an agritouristic resort in the Chianti area for three months

and to learn the Toscany cooking tradition.

In 2009 the young cook opens a reastaurant in Bordeaux

combining the Italian and French cooking tradition.

Do you want more information on this programme?

Go to http://www.programmaleonardo.net/llp

APPENDIX 3: References

Ally M. (ed) (2009), Mobile Learning. Transforming the Delivery of Education and Training, AU Press, Athabasca University.

Arrigo M., Di Giuseppe O., Fulantelli G., Gentile M., Seta L., Taibi D. (2008), L'esperienza MoULe, TD -Tecnologie didattiche, 44 (2), pp. 34-43

Arrigo M., Di Giuseppe O., Fulantelli G., Gentile M., Seta L., Taibi D. (2010), Mobile technologies in lifelong learning. Best practices, Motill.

Bolter J. D., Grusin R. (2000), Remediating: Understanding New Media, Cambridge, MIT Press.

Cavus N., Ibrahim D. (2009), m-Learning: An experiment in using SMS to support learning new English language words, British Journal of Educational Technology, 40, 1, 78-91.

Engeström Y. (2001), Expansive learning at work: Toward an activity theoretical reconceptualization, Journal of Education and Work, 14, 1, 133-156.

Günther S., Feldner B., Schulz-Salveter G. (2009), Mobile Learning as a means for training - health care workers at the tertiary level, Pachler N. & Seipold J. (ed), Mobile learning cultures across education, work and leisure, 3rd WLE Mobile Learning Symposium, London, 27th March 2009, 35-37.

ITU (2009), The world in 2009: ICT facts and figures, Ginevra, ITU.

Jenkins (Confronting the Challenges of Participatory Culture: Media Education for the 21st Century, 2006

Keegan D. (2005), Mobile Learning: The Next Generation Of Learning, Dublin, Distance Education International.

Kim P. (2009), Action research approach on mobile learning design for the underserved, Education Tech Research Dev, 57, 415–435.

Kling R. (1998), Technological and Social Access on Computing, Information and Communication Technologies, White Paper for Presidential Advisory Committee on High Performance Computing and Communications, Infor-

mation Technology, and the Next Generation Internet, July.
Klopfer E., Squire K., Jenkins H.(2002), Environmental detectives PDAs as a window into a virtual simulated world. Paper presented at International Workshop on Wireless and Mobile Technologies in Education.
Laurillard D. (2002), Rethinking university teaching: a conversational framework for the effective use of learning technologies (2nd ed.), London, RoutledgeFalmer.
Laurillard D. (2007), Pedagogical forms for mobile learning: framing research question, in: N. Pachler (ed.), Mobile learning: towards a research agenda. Occasional papers in work-based learning 1, WLE Centre for Excellence, London, 152-176.
Mayer R.E. (2001), Multimedia Learning, Cambridge UK, Cambridge University Press.
Milrad L. (2003), Mobile learning: challenges, perspectives, and reality, in: K. Nyiri (ed.), Mobile learning: essays on philosophy, psychology and education, Passagen Verlag Vienna, Austria, 151-164.
OECD (2001), Understanding the Digital Divide, Paris, OECD.
O'Malley C., Vavoula G., Glew J., Taylor J., Sharples M. & Lefrere P. (2003), Guidelines for learning/teaching/tutoring in a mobile environment, Mobilearn project deliverable.
Quinn C. (2000), mLearning: mobile, wireless, in-your-pocket learning, in Linezine; e-paper: http://www.linezine.com/2.1/features/cqmmwiyp.htm (Retrieved from the Internet on 30th October 2010).
Pachler N. (ed) (2007), Mobile learning: towards a research agenda. Occasional papers in work-based learning 1, WLE Centre for Excellence, London.
Pachler N., Bachmair B., Cook J. (2010), Mobile learning: structures, agency, practices, New York, Springer.
Pieri M., Diamanti D. (2008), Il mobile learning, Milano, Edizioni Guerini e Associati.
Price S. (2007), Ubiquitous computing: digital augmentation and learning, in N. Pachler (ed), op. cit., 15–24.

Ranieri M., Bonaiuti G., Fini A., Ravotto P. (2009), Mobile learning for the integration of groups that risk being marginalized, in Je-LKS 2-2009
Rheingold H. (2003), Smart Mobs: The Next Social Revolution, Basic Books.
Rifkin J. (2000), L'era dell'Accesso. La rivoluzione della New Economy, Milano, Mondadori.
Salmon G., Edirisingha P. (2008), Podcasting for Learning in Universities, Open University Press.
Sharples M. (2005), Learning as conversation: Transforming education in the mobile age, Proceedings of Conference on Seeing, Understanding, Learning in the Mobile Age, Budapest, Ungary, 147–152.
Sharples M. (ed) (2007), Big issues in mobile learning, LSRI University of Nottingham.
Stone A. (2004), Designing scalable, effective mobile learning for multiple technologies, in: J. Attwell & C. Savill-Smith (eds), Learning with mobile devices, Learning and Skills development Agency, London.
Sweller J. (1988), Cognitive load during problem solving: Effects on learning, Cognitive Science, 12, 257-285.
Traxler J. (2007), Defining, Discussing and Evaluating Mobile Learning: the moving finger writes and having writ . . ., The International Review of Research in Open and Distance Learning, 8, 2, online: http://www.irrodl.org/index.php/irrodl/article/view/346/875 (Retrieved from the Internet on 30th October 2010).
Warschauer M. (2003), Technology and social inclusion: Rethinking the digital divide, Cambridge, MIT Press.
Winters N. (2007), What is mobile learning?, in: M. Sharples (ed), op. cit., 7-11.