



United Nations
Educational, Scientific and
Cultural Organization

NOKIA



FIRST UNESCO
MOBILE LEARNING
WEEK

UNESCO Mobile Learning Week Report

“New learning cultures need to be created to respond to the opportunities and challenges of the digital world.” – L.Ledesma



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1. Overview of the Week

UNESCO held its first Mobile Learning Week (MLW), organized in partnership with Nokia¹, at its headquarters in Paris to discuss how mobile technologies can be used to help achieve Education for All (EFA) goals². The week was comprised of an international experts' meeting (12-14 December) and an open symposium (15-16 December). This report is intended to capture some of the ideas and suggestions that emerged from the MLW and is, by no means, a comprehensive overview of what took place. It is intended to be read in conjunction with the presentations given at the event and the forthcoming working paper series on mobile learning. Please note that the use of “we” and “our” in the notes indicates the perspective of UNESCO MLW participants rather than the organization itself.

Objectives of the MLW

- To present the initial findings of the regional reviews of mobile learning in the Middle East and Africa, Asia, Europe, North America, and Latin America, while paying special attention to policies that promote mobile learning as well as effective ways in which mobile technologies can be utilized for teacher support and professional development.
- To discuss the opportunity for a set of policy guidelines that could help countries develop their own approaches to mobile learning.
- To conceptualize sustainable and scalable modalities of using mobile technologies to support teaching and the professional development of teachers, particularly those working under severe conditions.
- To share the latest developments of mobile technologies and their implications for education, and envision innovative ways in which mobile technologies can be used to enhance the quality of education and transform learning processes.

Participants

The experts' meeting – an invitation only event – involved approximately 30 experts in mobile learning from around the world, including the authors of the regional reviews of mobile learning. The symposium on mobile learning – an open event – gathered approximately 100 participants including officials from Ministries of Education, international experts and practitioners in mobile learning, academics, and representatives from technology companies.

Walking gallery

During the symposium a central hallway was transformed into a “walking gallery.” In this space exhibitions showcased recent developments in mobile technologies and mobile learning. Between programmed events, symposium delegates visited the walking gallery and met with exhibitors from a wide range of companies and organizations. Exhibiting companies and organizations included Nokia, Commonwealth of Learning, Intuition, iLearn4Free, ICTP (International Centre for Theoretical Physics), SK Telecom, ISTE, mEducation Alliance, Alcatel-Lucent and France Telecom (Orange). A brief description of what each organization exhibited can be found at the end of this report.

Links

The following MLW documents are available on the UNESCO [Mobile Learning](#) website³:

- [MLW programme](#)
- [Concept note prepared for participants of the MLW](#)
- [Experts' biographies](#) and [keynote speakers' biographies](#)
- [Presentations](#)

Building on the mobile learning week

In the coming weeks and months UNESCO plans to:

- Use input from the MLW to develop a set of guidelines to help national governments and educators create environments in which mobile learning can flourish. The guidelines will be published in late 2012 and will contain recommendations on how different stakeholders can use rapidly changing mobile technologies to enhance learning and improve education systems.
- Draw on the ideas and experiences exchanged during the MLW to design and launch pilot projects in four countries (Mexico, Pakistan, Nigeria and Senegal). These projects, slated to commence in 2012, will support and develop teachers using mobile technologies.
- Publish the working papers presented at the MLW. Final versions of the papers will reflect input provided during the MLW.
- Draw on the robust network of experts and practitioners assembled at the MLW to help the organization function as an “idea factory” for mobile learning. UNESCO will work to grow a global community of educators and leaders that can be mobilized to leverage mobile technologies to help meet the EFA goals.

90% of world's population is covered by a mobile network, including 80% of the population living in rural areas.⁴

2. Framing the Discussions at the Mobile Learning Week

UNESCO frames its education programmes and initiatives within the parameters of the EFA goals. Therefore, the underlying purpose of the MLW was to discuss how mobile phones can extend the reach of quality and equitable education. To help further frame the discussions and activities of the MLW, additional context is provided below.

Education for All and mobiles

The following is taken from the concept note prepared for participants of the MLW:

The UNESCO Education for All Global Monitoring Report of 2010⁵ suggests that while real progress has been made in education, challenges remain. On the positive side, in the past decade enrolment rates in sub-Saharan Africa increased five times faster than they did in the 1990s, and on the whole, gender disparities in primary schools are narrowing. However, many of the advances are in danger of reversing because of rising poverty and anemic economic growth. The recent economic crisis has strained government budgets, increased financial volatility, and caused a spike in unemployment. These challenges both frame and give urgency to UNESCO efforts to build on past gains and expand the delivery of education to all students, especially women and girls.

The EFA challenge coincides with an unprecedented growth in access to mobile phones, particularly in developing countries. The International Telecommunication Union estimated that in 2010 there were 5.3 billion mobile phone subscribers worldwide, over double the number in 2005. Impressively, most of this growth came from developing countries. Access to mobile networks is now available to 90% of the world population and 80% of the population living in rural areas. Prepaid mobile subscriptions, the declining price of handsets, efforts to deregulate the telecom sector, and rapidly expanding access to powerful 3G data transmission platforms are sure to continue fuelling this growth.

Working definition of mobile technologies

Because mobile learning is emergent and fast-changing in nature, because the learning is highly situated, and because there are a number of stakeholders with varying world views involved, it is challenging to offer universal definitions of relevant concepts and terminology. However, in an attempt to define the parameters of the on-going discussions on these topics, UNESCO offers the following working definition of mobile technologies (taken from the concept note prepared for participants of the MLW):

For UNESCO mobile technologies refer to a combination of hardware, operating systems, networking and software including content, learning platforms, and applications. Mobile technology devices range from basic mobile phones to tablet PCs, and include PDAs, MP3 players, memory sticks, e-readers, and smartphones. For the purposes of its current engagement, UNESCO proposes to confine the conversation around mobile technologies to the mobile phone. UNESCO recognizes, however, that the mobile phone itself is evolving rapidly and it intends to take cognizance of how this evolution will develop over the coming decade. UNESCO also acknowledges that the integration of mobile phones into education carries a potential to disrupt traditional paradigms. Mobile phones are different to traditional educational tools such as books, chalk and pencils because they enable instantaneous access to vast and growing reservoirs of information, and because they provide a growing array of permutations to communicate and share knowledge between individuals and groups independent of time and physical location. Mobile phones are

almost universally accessible. For these reasons UNESCO is interested in their potential to support learning, teaching and education transformation.

Many pilot projects have explored how mobile phones can improve education. So far, these have shown that mobile phones can enable literacy development, promote student motivation, enhance access to teacher development opportunities, and improve communication between parents, teachers and principals. Evidence from the Arab Spring further suggests that mobile phones can enable a stronger sense of agency especially among youth and women.

The following related points were made at the MLW:

- Contrary to other information and communication technologies (ICT), mobile phones are already in the hands of students and teachers. This can represent less cost than equipping schools with computers. Mobile phones need to be seen as an opportunity to leverage existing technological uptake.
- Mobiles are part of our culture and society. There is no “technology free” society now, so why would we strive for a “technology free” education?
- It is productive to frame these conversations about learning and not about technology; the technology exists only to benefit the learning. Learning deserves center stage, the actual technologies out date quickly.
- While the number of mobile phone users is rising dramatically, the bigger trend is the number of people using broadband. The network might become more important than the devices used for accessing it.
- It is necessary to take into account that mobile technology is not a neutral tool: users act differently with different technologies.
- Connectivity has become a new human right. If you deny a child connectivity, you might be denying him or her access to the textbook of the 21st century.
- Ten years ago only specialists were ICT literate; today we all need to be.
- Smartphone use doesn't differ widely by economic group. Rich and poor alike are buying and using smartphones. (But there will always be a technological divide.)
- On average, Africans spend 17% of their disposable income on mobile connectivity. This shows that mobile is a technology that people around the planet have already “bought into.” It also shows that mobile costs are far too high for most Africans.
- Many developing countries may be textbook poor, but they are mobile technology rich.
- Mobile technology needs to bridge equity divides, not exacerbate them. We need to know what knowledge is of value, has worth, will make society better and how mobile learning projects can place this knowledge front and center. UNESCO will not support projects/programmes that further broaden the digital divide.
- It is also important to include all voices in the conversation about mobile learning and EFA, not only the evangelists, but also the skeptics.
- It is a necessity to also question our collective assumptions about mobile learning. For example, is there an assumption that only smartphones are useful for educational content and

applications? Is there an assumption that basic or feature phones have no role to play? Is there an assumption that mobile phones will replace teachers?

Mobile learning versus elearning

A key question that arose was whether mobile learning was really just an extension of traditional elearning, or whether it was something wholly different.

- According to some experts, mobile learning is not “elearning gone for a walk” and unfortunately mobile learning has too often been shorthand for mobile elearning. This has made institutional (e)learning sexy, instead of creating a whole new technology permeated learning society (a large part of mobile learning is happening outside of the formal education system).
- The technologies for elearning were scarce, fragile and expensive. They were only affordable by institutions. Mobiles are cheap, reliable, pervasive and owned by individuals. It is a different situation to 10 years ago when debating elearning.
- In the discussions around mobile learning, it is important to clarify collective understandings of the shifting boundaries between formal, non-formal, and informal learning and where mobile learning fits (or should/can fit).
- The World Education Forum (Dakar, 2000), which is where the EFA goals were launched, focused strongly on schooling as a formal, industrial age-style activity. It is often through this lens that we examine mobile learning. Perhaps a more expansive view (a more panoramic lens) is necessary. The reality is that mobile technologies in collaboration with other tools and technologies may be nudging us towards entirely new paradigms of teaching and learning.
- EFA needs to support learning outside of schools; so far the focus has been almost exclusively on formal schooling.

From the discussion it was clear that mobile phones have a disruptive nature. There is a surface disruption – students texting each other in class while they should be listening to the teacher – and a deeper disruption. This is about what mobile learning does to education and to the teacher/student dynamic.

- Mobiles are used to create identities, ideas, content. Massive social networking is possible via mobile phones.
- Information is accessible and in abundance (not scarce) – and this disrupts the role of the teacher from bank of knowledge to facilitator of learning.
- The lines between formal and informal learning are being blurred. Mobile learning is creating more and more space for informal learning and challenging formal learning. It becomes important to understand how the boundaries are shifting and what the implications are, as well as to clarify our assumptions about 21st century learning.
- Devices are not procured and distributed by government (the usual top down elearning ICT in education approach) but acquired, used and maintained by the teachers and students themselves (bottom-up approach).
- There are low levels of mobile learning initiatives in education, but outside the school walls there is massive, and ever increasing, uptake. Mobile phones are touching peoples’ lives in many ways: communication, entertainment, socialising, health, etc. But education is struggling to make sense of this change. Does this reflect the bigger challenge of education, that it is

struggling to respond to a rapidly changing world and workplace? The mobile phone is almost the poster child of this tension.

Within the next five years more people will access the web through mobile devices than through fixed desktop computers.⁶

The developing world is increasing its share of mobile subscriptions. In 2005 people in the developing world represented 53% of all mobile subscriptions. At the end of 2010 they represented 73% of the world's mobile subscriptions.⁷

3. Policy Guidelines for Mobile Learning

As part of the UNESCO-Nokia partnership the focus for 2012 will be on mobile learning policies and teacher development supported by mobiles. UNESCO will release a set of guidelines for mobile learning policies at the end of 2012. It will also run four projects to explore the use of mobile technologies for teacher professional development and support in Mexico, Pakistan, Nigeria and Senegal.

As an initial input into the policy guidelines and teacher development projects, UNESCO commissioned a set of ten working papers: five looking at policies related to mobile learning in the five major regions of the world (Asia, Africa and the Middle East, Europe, Latin America, and North America), and five papers looking at how mobile technologies are currently supporting teacher development and teacher support (explored in chapter 4).

It is important to note that the policy papers are not a comprehensive regional review, but a regional scan to identify and review illustrative cases where mobiles relate to policies. At the expert group meeting each author presented his or her draft findings from their initial regional review (the final papers will be released in early 2012). In the discussion that followed the group collectively identified cross-regional lessons, similarities and differences, as well as questioned or validated the draft findings.

The following themes about the current mobile policy environment emerged from the five policy related presentations:

- *While there are common elements across the regions, as well as differences, overall there is a mobile learning policy vacuum. (It was noted that just because there is little policy it does not mean there is not a need for it, or that there is no interest for it.)*
- *There is a tension between the few existing policies (direct or indirect) that usually restrict/prevent mobile learning, e.g. by banning mobiles at schools, and the documented intention to use mobile technologies to support learning, e.g. in school district strategies.*
- *Sometimes there is governmental support for mobile learning through funding sources and initiatives. At school level mobile learning is often driven by enthusiast /champion teachers.*

Overall there are three official responses to the emergence of mobile technologies: ignore, ban or engage. Many countries are ignoring them, some are banning, but eventually they all need to engage. It was highlighted that there is an enormous opportunity for education to leverage the massive uptake of mobile phones and the vast mobile network coverage, including:

- *Reaching previously unreached students and communities.*
- *Extending support for students, both in and outside classrooms, e.g. tutoring provided in the evenings via mobile chat and collaborative learning between students.*
- *Self-directed learning, including the potential for more personalised instruction and student-centred learning.*
- *Generating up-to-date information about school systems in places where good data about systems is hard to come by, e.g. mobile phones can be used by teachers in rural villages to track attendance.*

Another recurrent theme was that mobile learning has significant (although currently unrealized) potential. “Potential” was a word that came up again and again. While mobile learning is not new, its widespread adoption was, in the 1990s and 2000s, handicapped by prohibitively expensive technology and the limited functionality of typically small headsets with low-resolution screens and processors that were weak compared to computers. Tablets were virtually unknown before the launch of the iPad in 2010. Recently however, the mass of adoption of mobile technologies, coupled with piquing interest in mobile learning, means that there is now a real possibility of governments beginning to engage with mobile learning on a large scale. There is currently a window of opportunity to try to understand and capitalise on this potential to benefit students and educators around the world. It is therefore important to develop policies that can leverage mobile technologies to facilitate learning and scale-up existing mobile learning pilot projects in order to assist more people.

General considerations

Below are some of the considerations, insights, and questions related to mobile learning policies that arose during the various discussions.

- There is an ecosystem around mobile learning. Policies need to include the perspectives of a number of stakeholders, not only the national departments of education but additional voices too, including communications legislators, mobile network operators, content providers, parents, and students. What are the key issues influencing policies from different stakeholder perspectives, e.g. from mobile network operators, departments of education, etc.?
- In policy formulation it is critical to engage the full range of stakeholders, including economically poor people who represent billions of mobile users worldwide. What approaches will position poor people as leaders in the adoption of mobile technology? In the case of mobile phones, poor people are themselves innovative users right now and we want to tap the unique creativities and perspectives they bring to these technologies. Poor people are indeed experts in how to leverage mobile technologies in their communities. However, as seen below, cost is a major inhibitor to their full use of the technologies.
- Building on the idea of the disruptive nature of mobile phones, a question raised was whether mobile learning needs to fit into existing ICT in education policies, or whether there is a need for a whole new education paradigm, along with new policies, that disrupts traditional education approaches?
- When putting mobile learning onto the policy agenda, it is important to provide evidence of its benefits to policy decision-makers. While there is currently sufficient evidence to make the case for mobile learning, there is certainly room for more. Many valuable projects have not been researched and documented, and others have not been scaled up enough to be of interest to national governments. There are also challenges to formulating evidence. It is difficult to provide evidence of a paradigm shift. Proving the educational effects and impact of mobile learning is difficult because much of it happens outside of the classroom. Furthermore, sometimes the effects can only be seen many years after a particular intervention. Lastly, we should beware of policy-based evidence formulation – which often amounts to evidence that substantiates existing policies. Evidence needs to be interrogated. Overall it was felt that while evidence is critical, and while there is much more of it to be developed, it is not necessary to build a complete body of evidence before asking governments to engage with mobile learning. The field is growing and changing rapidly and needs to be engaged with now.

- There is no one-size-fits-all solution; policy guidelines have to be broad enough to allow for their adaptation to a particular local context. When it comes to scaling initiatives it is important to be aware that initiatives have contexts and are often community- and country-specific, and so one mobile solution cannot always be implemented as is in another context. For example, while the Mxit mobile instant messaging service was often cited as an educational tool in South Africa, most mobile learning initiatives in Niger use SMS only. Each country has its own combination of forces and drivers. Policy guidelines should help to illustrate the possibilities of mobile learning in different contexts to support decision makers.
- While it is important to understand the success factors behind mobile learning initiatives, we should look for similarities in failing systems as well as in successful systems and supposed best practices. Sometimes we learn more from failures than successes, yet academic literature and policy conversations tend to highlight successes, not failures (despite the fact that there are many failures).
- Level of government involvement: How much or how little control should policy makers exercise when it comes to mobile learning? On some levels, governments just need to get out of the way to allow space for innovation and organic growth, to provide for an enabling environment as opposed to a highly regulated one. Mobile learning policy guidelines should offer recommendations on how governments can create an enabling environment for mobile learning.
- Building on the point that mobile learning is not about the device, it was pointed out that policies need to be “device agnostic” – they should not prioritize a particular brand or type of device. Furthermore, one participant believes that the most strategic decision a government can make from a policy perspective is to enable universal internet access. With a single network, the issue of which device accesses it is no longer important.
- We need to be careful that Policy guidelines do not become a barrier to start a project in some countries. Guidelines are not an end in themselves but should be seen as enablers; they should open up possibilities, not constrain them.
- It is important to note that this is an emergent field with more questions than answers. Even mobile learning experts informing policy are constantly learning and sense-making in this field.

Essential conditions for successful mobile learning initiatives

The essential conditions for successful mobile learning initiatives were discussed at MLW and some of the ideas voiced are listed below. Several participants emphasized that because context is so vital in education, there is no one-size-fits-all approach. Some conditions can thus be offered, but these will ultimately vary from context to context. This again makes the point that guidelines must be adapted to local needs. While we do not yet know all the factors necessary for successful mobile initiatives (and probably never will), it is possible to begin identifying conditions essential for success.

- Mobile learning essential conditions need to be systemic, including issues such as affordability, leadership, a shared vision for implementation, teacher training, partnerships, and related policies.
- Some of the conditions are easier and faster to enable than others, e.g. training a group of pilot project teachers versus reducing mobile costs and changing communication legislation.
- Educational mobile content is critical for the widespread uptake of mobile learning.

- Winning support (and open minds) from principals, teachers and parents is a crucial first step to implementing new ideas and approaches. These stakeholders need to be convinced about the value of mobile learning.
- When discussing successful mobile learning initiatives, what does “success” mean? For educational success: is it whether educational goals are attained? For financial success: is it about achieving more with existing or reduced budgets?
- While mobile learning provides opportunities to discuss new skills and their assessment, it must at the least align with existing educational needs.
- In the connected age, the line between formal and informal learning is becoming blurred. Policy needs to make space for, and recognise, informal learning (and, at the same time, avoid the danger of formalizing it).
- It is important to understand and define – as much as possible – the target users of mobile learning. All learning is not happening in the classroom.
- One participant recommended that UNESCO helps to develop a set of ISTE-like essential conditions⁸ for mobile learning, with a caveat that it is a work in progress.

Challenges/barriers to mobile learning

Efforts to leverage mobile technologies for learning are fraught with social, technical, and economic challenges. Perhaps due to the intellectually-light and entertainment-heavy content that has been optimized for mobile devices over the past decade, the primary social challenge is convincing people that phones are NOT a barrier to learning. It is probably not an exaggeration to say that a majority of people on Earth believe mobile phones, beyond not being conducive to learning are in fact antithetical to it. The technical problems while certainly not as prominent as they were just a few years ago, are still considerable. Mobile phones are not particularly conducive to creating content due to small screens and awkward keyboards. And even viewing and sharing content is often frustrating: apps crash, batteries die, reception is poor. Users of the most cutting-edge smart phones recognize that the devices, despite their dizzying utility and power, still have non-trivial limitations. We have not yet abandoned our paper, pencils, and desktop computers, nor do we appear likely to do so in the next few years. On the economic front mobile phone ownership and usage is still prohibitively expensive in many parts of the world. A commonly referenced data point is that globally there were 5.3 billion mobile subscribers in 2010. As impressive as this number is—and it is impressive—it glosses over what is in reality a highly uneven and deeply inequitable landscape. To be clear, not all people have mobile phones and far fewer have access to smart phones and the broadband connections that make them so useful. Across and within countries, inequity exists—in terms of types of handsets, purchasing power of users, literacy levels of users, and mobile infrastructure. How to create a world in which all students have equal opportunities is a central goal of UNESCO and underlies many of the EFA Goals. These challenges and barriers to mobile learning were discussed at the MLW.

- The mobile landscape is changing all the time, in terms of technologies (GPRS versus 3G, feature phones versus smartphones, etc.) as well as around usage patterns. It is challenging to leverage such a dynamic field for educational purposes.

- There is hype around mobile phones and what they can do. Unsubstantiated claims about the transformational nature and ubiquity of mobile phones undermines genuine efforts to engage with policy-makers in a balanced and serious way.
- The fact that there is no equitable access of phones (ownership versus access, types of handsets, usage abilities based on affordability, etc.) makes using mobiles in formal education based on a bring-your-own-technology (BYOT) model very challenging.
- Research shared from Canada describes the following challenges for mobile learning: small screen and keyboards; teachers not knowing how to design and develop mobile learning materials; negative teacher perceptions of mobile learning; not enough mobile learning materials; and no standard for mobile learning materials. It could be argued that most of these barriers do not only apply to Canada but are universally applicable.
- There is some concern that in the media saturated world of young people there is too much “screen time” – TV, PCs, video games and now mobile phones.
- There is a distraction factor with mobile phones. Many teachers have experienced the frustration of students texting on their phones during class.
- There is a concern that online social networking, including via mobile phones, is leading to anti-social behavior. (On the other hand, there is the question of whether social networks and mobile phones actually create more social behaviour, just not all face-to-face?)
- The majority of mobile learning projects have failed to scale up. While scaling is not necessary or even appropriate for all projects, it is often a requirement by governments for investing in a new educational approach.
- Online safety and security: there have been reported cases of kidnapping and rape after victims friended perpetrators on mobile social networks.
- Cyber-bullying or harassment via mobile phones, “sexting” (sexual harassment via SMS), etc.
- Risk of radiation from mobile phones. While more research needs to happen around this some countries, such as France, have banned mobile phones at schools because of the potential cancer risk of using mobile phones.
- Cost of access is a major inhibitor to use. This includes not only the cost of the handset but also of usage and maintenance of the handsets or related equipment. In some countries mobile phones are categorized as luxury devices and thus incur “luxury goods” taxation. In other countries there are taxes on mobile phone data usage. Cost is influenced by a number of factors, such as communications regulation, lack of competition, level of mobile infrastructure, etc. Because mobile learning touches other areas, not only education, and because of technology convergence, mobile learning policies cannot be formulated in isolation within the education domain. It was noted that high costs can be reduced. Restrictive legislation can be reformed. Much work is needed in this space.
- It is challenging to develop policy guidelines for a global audience in which the education levels and policy landscapes are so uneven. Some countries have been experimenting with mobile learning since the early 2000s, while others have done nothing in this space. Some countries have master ICT plans, e.g. Singapore is on its third master plan (2009-14, with a focus on developing 21st century skills amongst students such as collaborative learning and self-directed learning skills). How do we provide guidelines for such a diverse landscape? How do we provide

guidelines that are useful to countries with and without ICT master plans or ICT in education policies?

Suggestions for creating mobile learning policy guidelines

Throughout the MLW, participants voiced their ideas about how UNESCO can create a set of mobile learning policy guidelines capable of helping the organization's member States effectively leverage mobile technologies to benefit teachers and students.

- Keep the actual guidelines lean (10-15 pages). The guidelines need to be relatively high-level in nature and more process-oriented than detailed.
- Policy guidelines can function as a conversation toolkit; rather than dictate statutes from up high, guidelines can simply frame and give structure and direction to conversations. Perhaps what is needed is a kit capable of showcasing what mobile technologies can do and how they can support learning.
- Taking a diagnostic approach there is a need to analyse an existing education system and make suggestions based on the local context. It is thus important to provide a set of resources to complement the guidelines. These should help the reader to articulate their own needs and conditions for which tailored solutions can be developed. Example resources include: a conversation toolkit in which readers work through key mobile policy related questions; a self-review framework or checklist to help readers analyse their own country or local context and readiness for mobile learning; and an online bank of case studies, research papers, links to online resources e.g. child safety guidelines. For any of these the materials could be in various media, e.g. paper, video or images.
- The guidelines should be a living document that should be reviewed from time to time.

Approximately, 200,000 text messages are sent every second worldwide.⁹

There were more than 450 million mobile Internet users worldwide in 2009. This number is expected to pass the 1 billion by 2013.¹⁰

4. Teacher Support and Professional Development through Mobile Technologies

In 2012 UNESCO plans to launch four pilot projects to explore how mobile technologies can be used to support and develop teachers in Mexico, Pakistan, Nigeria and Senegal. To inform these projects, UNESCO commissioned five papers which examine how mobile technologies are currently being used, if at all, for teacher development in the five regions of the world. From UNESCO's perspective, there are two important areas to consider: 1) professional development that instructs teachers how to use mobile phones to improve teaching and learning; and 2) professional development that is delivered through mobile phones. Additionally, because UNESCO seeks to understand how mobile technologies interact with other educational tools and resources, the reviews consider mobile devices in holistic contexts, sometimes working in isolation but, more often, working in conjunction with other technologies.

The need to train and develop teachers is urgent. According to the 2011 Education for All Report¹¹, the world is facing a massive teacher supply problem. The planet needs approximately two million new teachers by 2015, and 5.4 million if attrition is considered. Many countries must double or triple their teaching forces. Another hurdle is that many practicing teachers, particularly those from developing countries, lack ICT skills and are therefore unqualified to help students access and manipulate information in electronic mediums, a skill that will become increasingly vital in the 21st century.

Mobile technologies, especially mobile phones, carry a potential to help alleviate some of these problems. Even in areas where computers and effective teacher training institutions are scarce, mobile phones are common, and, more often than not, teachers understand the basics of how to use them. For these reasons, UNESCO is committed to exploring how mobile technologies might be used to develop teachers, improve their ICT skills, and prepare them to teach others how to leverage technology for learning. Unfortunately, to date, there are very few examples of teacher support and professional development programmes that employ mobile phones. And research on the few programmes and initiatives that do exist is emergent at best. The five papers that UNESCO commissioned seek to consolidate the organization's understanding of how mobile devices are being used to assist teachers, and, beyond this, how they might be used in the future.

As with the policy reviews, the papers do not seek to inventory and analyze all the mobile learning projects unfolding around the world. Rather, the reviews aim to selectively identify and review illustrative cases of mobile learning programmes that support and develop teachers in particular regions and contexts.

At the expert group meeting, the lead author of each paper presented key findings from an early draft of his or her review. In discussions that followed the presentations, participants identified issues that cut across the different regions as well as issues that appear to be unique to particular settings. The MLW allowed participants opportunities to contribute insights, challenge findings, and articulate lessons learned from experience. This input will inform both the regional review papers and UNESCO's effort to design and implement pilot projects. Final drafts of the reviews will be released in early 2012 and, following additional discussions, so will plans for UNESCO's pilot projects.

General findings and observations from experience

Participants from around the world brought their unique experiences to the table at the UNESCO MLW. Many spoke directly to efforts to use mobile technologies to support and develop teachers.

- Anecdotally, it seems that many mobile learning projects happen in isolation, disconnected from teacher development programmes or broader ICT for education initiatives and goals.
- Most mobile learning initiatives are project funded and professional development is seen as a by-product rather than a central area of concern.
- Many projects are informal or have not been written up in reports or researched. It is difficult to get a sense of all the undocumented projects and their diversity.
- In the best cases, a single professional development seminar might dedicate two hours to demonstrating how teachers can use mobile phones to facilitate teaching and learning. However, there are almost no examples of professional development being delivered through mobile devices.
- Professional development for teachers should be re-conceptualized as ongoing and job embedded. It doesn't have to follow the classic trainer-trainee model. Mobile technologies offer opportunities to expand professional development and push it out of traditional molds which are often insufficient.
- While there is excitement about using mobile technologies for professional development, teachers require face-to-face support to really change their behavior. No one is going to change a teacher's educational outlook or philosophy with a few text messages. Face-to-face instruction must remain a component of teacher training.
- Because so many teachers already have and know how to use mobile phones, using them for educational and professional development purposes does not require a great leap nor does it require an enormous amount of capital (if employing the BYOT model).
- In education, a mobile device is one tool among others. To be useful professional development should show teachers how to integrate mobile technologies with other tools.
- When it comes to using mobile technology for professional development, it should not be a case of less or faster training, but more and better training. If mobile technologies only provide quick and shallow training, then mobile learning runs the risk of undermining the prestige and professionalism of teaching. Already, many teacher training programmes are ridiculed for low quality; mobile learning for professional development risks increasing that ridicule.
- Different grade levels require different teacher training. The same is true when it comes to training instructors to incorporate mobile technologies in classrooms. What works for a primary school teacher may be entirely different to what works for a secondary school teacher. Also, training should be differentiated according to academic discipline.
- Because mobile phones can strip authority away from teachers and teacher trainers, some educators may be resistant to adopting them for education. Some teachers are still unfamiliar and perhaps uncomfortable with the student-centered learning that mobile technologies can facilitate. For these reasons teachers might be reluctant to use them for educational purposes.
- While many people recognize that there are dangers implicit in moving learning to online environments, the focus is typically on dangers posed to students. Students might be subjected to bullying or access inappropriate content. Less discussed is that there are also serious risks for teachers.
- Teachers are so busy as it is, they are understandably hesitant to change their habits and approach to education, especially when those habits and approaches are yielding successful (or

at least passable) results. Convincing teachers to change their practice to make room for mobile technologies is likely to be an uphill battle. Teachers will need to see clear evidence that teaching and learning with mobile phones is better (and perhaps easier) than other available alternatives.

- By increasing opportunities for collaboration and communication, mobile technologies can support teachers by making more students teachers themselves. When less instructional burden is on a teacher, he or she has more time for coaching, tutoring, and mentoring students. Students also are capable of evaluating the achievement and growth of other students with mobile technologies; this is not simply the domain of a credentialed instructor. For example students can easily annotate and peer-review the writing of another student, using tools that are similar to (or even identical to) those employed by professional editors writers.
- Sylvia Ortega, chancellor of the largest teacher training institute in Mexico, said her country offers a case study of some of the obstacles and challenges involved in using technology, including mobile technology, to improve teaching and learning:
 - The country has made huge investments in education but they have yielded very poor results.
 - Students often do not receive textbooks, but only CDs yet students don't have devices to play CDs.
 - Many teachers did not know how to use new technological materials and as a result technology did not promote learning; instead it became a source of destruction. Ultimately the investment (which was massive) represented a tremendous waste due to low user skills, especially at the teacher-level.
 - Schools often just replicate inequality instead of correct it. For example, low income and high need students are put in front of teachers with very little training, especially in technology.

Essential conditions for successful programmes

Participants at the conference floated numerous ideas about the ingredients necessary for designing workable programmes. They also highlighted areas and questions that programme designers would be wise to consider.

- A training programme for making teachers effective mobile learning facilitators should have two pillars: 1) promoting ICT literacy for teachers; and 2) training teachers to use ICT to facilitate learning.
- A mobile learning professional development programme needs to be held to high standards; it needs to be as good, if not better, than other modes of professional development.
- The first step to building a successful programme is taking stock of needs. For example, do teachers need content knowledge, pedagogical knowledge, or both? Also, do teachers need basic ICT skills or are they tech savvy enough that they just need to see examples of how mobile technologies can enrich the skills and content they are already teaching to students?
- For a mobile learning community to enable rich professional development, teachers need to TRUST their community. Virtual communities represent a new way to belong to a group; virtual spaces constitute part of their identity.
- The promise of mobile devices for professional development is that it can unhinge teacher training from schools and universities. Teachers can build their skills and knowledge wherever they are. Projects have to leverage this unique opportunity.

- For good (and obvious) reasons, teachers want to have a degree of control over their professional development. Sustainable communities are those in which people have control over the materials they use and their design. Teachers must be involved in the design and piloting of mobile learning initiatives for teacher professional development.
- Teachers should be involved in curriculum content creation, not simply consumers of it. As professionals, teachers are not mere implementers; rather they take the liberty to alter curriculum and innovate in classrooms. When it comes to mobile learning how can we ensure that teachers work with curriculum and content developers? Their voices should be central.
- Teacher training programmes employing mobile devices should align with the curriculum in schools. They have to show how mobile technologies can help teachers do the jobs they are being asked to do (usually by a government).
- Teachers in many countries are struggling. Some of them are forced to work two jobs. Some classes have 80 or more students. Whatever mobile learning technologies are developed or employed, teachers won't use them unless they make their lives easier or better and not harder.
- Programmes should train teachers to be creative and innovative. They should be able to adapt to the ever-changing profile of "students." Teachers should also be able to develop their own digital content; the content on mobile phones should be changeable, not one-size-fits-all. What mediums will invite and encourage teachers to create and tailor learning experiences?
- What sort of programme might "certify" a teacher to use mobile technologies for teaching and learning?
- There are different tiers of teachers that can benefit from mobile technologies: teacher trainers, working teachers, novice teachers, and teachers working outside of formal classroom settings. When designing professional development programmes, it is necessary to consider these different profiles and design appropriately.
- A mobile learning project that is new and not integrated into an existing structure or organization runs a greater risk of failure.
- What are the system strengthening capabilities of mobile technologies? UNESCO should not ignore some of the less "sexy" uses of mobile technologies like tracking attendance.
- How can technology make teachers agents of change rather than the objects of change?
- It is important that any UNESCO programme looks at teachers holistically, as human being with needs that extend beyond the classroom.

Pedagogy

Conference participants acknowledged that mobile devices are, by themselves, shells. In order to be educationally useful they must allow users to interact with information and collaborate in ways that advance learning. How this is best accomplished is an open question. Given the unique, powerful, and ever-growing functionalities of mobile devices (and mobile phones in particular), conference participants discussed how these devices can help students and teachers build understanding.

- The content on mobile phones needs to be more than drills for it to be educationally relevant in an information society.

- There is a difference between communicating and learning on a mobile device. While online communication is a skill of the 21st century, communication alone does not represent learning on mobile devices.
- Immediate feedback is useful and mobile technology makes it easier to provide.
- For a mobile learning programme, service, or application to be effective it needs “stickiness”— something to keep users coming back again and again.
- Mobile learning seems to offer opportunities to embed questions in a particular culture, to contextualize them in a local community. For instance, a math question might be more interesting to a student in the UK if couched in the terms of “How does quickly does milk cool tea and how can this be measured?” Authenticity and context can make learning relevant and exciting.
- Content should lead and technology follow, not the other way around.
- Surprisingly, research suggests that students learn better when using mobile technologies in a group. According to Stanford researcher, Paul Kim, a three-students-to-one-device model may be not only cheaper but more effective than a one-to-one model.
- When it comes to mobile technologies, we need to ask: Who is developing the content? Who are the people who are going to change how we learn? Alarmingly, they’re usually not educators.
- Mobile learning doesn’t necessarily need traditional instructors. Paul Kim, of Stanford University, has built mobile software that guides students without any input from adults. When he wants to teach, he simply hands mobile devices to students without instructions.
- Future innovations will be around mobile learning pedagogies; the technology is here, now we need pedagogies to realize its potential for learning.
- Remember that technology doesn’t teach. Teachers teach and people teach. The pedagogies that steer mobile learning will only be as good as the pedagogies of the best educators.
- When it comes to integrating mobile technologies into the learning process, students might be more advanced than their teachers. This is a unique instance where the teaching and learning cannot be easily dissociated. Teachers can turn students into teachers and teachers into students.
- Teaching with mobile devices will and should move beyond schools. How can mobile technologies facilitate learning outside classrooms? Because some teachers don’t see themselves as being able to teach also outside of classrooms, we need to help them get there.
- While a lot of learning has become collaborative in the past decade, assessment has not. How might mobile devices invite new and more authentic methods of assessment?

Specific ideas for UNESCO’s pilot mobile learning projects

Because UNESCO plans to launch on-the-ground mobile learning projects to support and develop teachers in Mexico, Nigeria, Pakistan, and Senegal, the conference organizers invited specific input from participants. What guidelines and understandings should steer the projects? What does the organization need to do, address, and keep in mind to best ensure the projects it launches are successful? Participants addressed these questions in earnest.

- UNESCO needs to be realistic about what it can achieve. Nothing is going to be a silver bullet and this needs to be articulated from the beginning. Incremental change and gradual improvement is the goal.
- All plans need to contend with big picture questions such as: What is a country's long-term vision? And how does a particular initiative fit into a master plan?
- The projects present an opportunity to build the capacity of teacher training institutions.
- Teacher training institutions are the right place to deliver information to teachers on the ground. Teacher education institutions are well placed to deliver ideas to teachers in the field and they allow UNESCO to build from an existing foundation. That said, in the developing world, there are not always robust or even loose networks of teacher training institutions. Also, the institutions that provide continuing education for practicing teachers are sometimes isolated from those training new teachers.
- A project should be driven by local actors. One approach is to give disseminate tools to local developers and allow them to tailor products to meet particular needs and desires.
- Some principles that should form the design of UNESCO mobile learning teacher support initiatives include:
 - Simplicity, simplicity, simplicity. If it's not easy to use, teachers won't use it.
 - Programmes need to account for the seriousness of capacity constraints.
 - Ideally the programme will impact not only teachers' practice but teachers' thinking.
 - Programmes should consider and act on the wants and needs of working teachers; UNESCO should take stock of what would help most. For example, many teachers complain about the difficulty of assessing student work. How can mobile technology address this need? Whatever the programme is, it can't just be "another thing" to do. It needs to make the teacher's life easier and better, a tool they can't imagine living without. In short, UNESCO should not prescribe without diagnostic inquiry.
 - UNESCO should not ignore communities outside formal schooling. Who outside the school can help students and how can mobile technology empower these individuals?
 - UNESCO should consider potentials for use, rather than simply directing attention to teaching educators and students "how to use ICT." The end is what's important; the means are less important.
- UNESCO should treat the pilot projects as investment portfolio: take some risks, but also have lower risk ideas and initiatives. For instance, the organization could launch four different action plans and then use each one as a resource for understanding what works and what doesn't for mobile learning to support teacher development.
- UNESCO pilot projects should begin where problems exist. Define a problem and then brainstorm a solution that mobile technologies can address directly.
- If UNESCO is interested in discovering what processes best allow meaningful mobile learning initiatives and projects to take hold, the organization might try to achieve a similar end goal in each of the four countries, but employ four different processes to try and reach this goal.
- If nothing else, the projects should create a sense of community around a group of teachers.

- UNESCO needs to consider the costs of sustaining as well as building projects. For example, data costs are going to be an on-going expense.
- How does UNESCO get government and education leaders on board? Without leadership, projects will stall. What is the plan for winning buy-in from country and local leaders?
- A central objective should be to change perceptions about mobile learning and invite conversations about difficult issues, including on-line safety, with parents, teachers, ministers, students, etc.

The world will need 2 million new teachers by 2015 to keep pace with educational demand.¹²

The average student in Botswana and Ghana stands alongside or below the poorest-performing 10% of students in higher-performing countries.¹³

Madagascar, Mozambique, Sierra Leone and Togo have a severe teacher shortage. On average, there are 80 pupils to 1 trained teacher in these countries.¹⁴

5. Global Issues

Throughout the MLW participants weighed in on what sort of ecosystems and partnerships are necessary to build, expand, and sustain meaningful mobile learning projects. Participants agreed that most mobile learning projects require cooperation from a wide but identifiable range of stakeholders. Pushing projects that benefit different stakeholders and highlighting overlapping interests can help facilitate their successful implementation. Related to ecosystems is the question of cost and cost is, of course, a pillar of sustainability. Crudely said, expensive projects in education are more likely to stall and fail than less expensive projects, particularly in a global economic climate defined by debt-burdened governments and pull-backs in funding to public services, education chief among them. For mobile learning to help a large number of teachers and students, costs, participants agreed, must be a central consideration.

Ecosystems, partnerships, costs, and sustainability

Participants shared their experiences and perspectives to help illuminate what a mobile learning ecosystem is and how successful partnerships can be forged. While no universal understandings emerged, participants vigorously debated what stakeholders are involved and offered advice about how to best get them to work together.

- In one of the expert group sessions, panelists were asked to represent and “role-play” the views of various stakeholders. The session helped highlight some of the, at times, conflicting and, at other times, overlapping priorities of different parties central to efforts to expand and better utilize mobile learning.

Government official perspective:

-“Mobile learning sounds like more work for me. The case for mobile learning needs to be made. Why should I adopt it? And how much is it going to cost? If it’s expensive, it needs to be superior to other available alternatives.”

-Wants solid evidence of effectiveness.

-Sceptical about the place of phones in education, because the public often sees phones as antithetical to learning.

-There is a cost attached to formulating policy, and risks in experimenting and early adoption. We need to be sure about mobile learning before formulating policy around it.

Sceptical teacher perspective:

-“I don’t have time for this. I have a whole curriculum to get through in this year. I am responsible to parents and the government to deliver the best education possible in a very limited time period.”

-Mobiles are creating anxiety for teachers, because it is hard to control how and when students use them. They distract from more educationally relevant activities that can be more easily monitored.

-Takes a serious leap of faith to relinquish control of the teaching and learning process.

-Fearful that the private sector will buy and own the education process and gradually squeeze teachers out.

-Genuine concerns about the pedagogy and quality of content delivered or created on mobile devices.

-Serious technological barriers.

Mobile network operator perspective:

-Largely profit driven. They need to know that there is a “market” for mobile learning. Or that it is beneficial for corporate social investment.

-Because the public is skeptical about using mobile technology for education, even telecom providers are worried that their images would be impacted if they support mobile learning.

Ecosystems:

- What is the role mobile learning can play in the larger education and even social ecosystem?
- While it is wise to look for common interests among stakeholders, it is also useful to be frank about conflicting interests.
- Universal access to mobile networks is different from universal ownership of those networks. Right now education is for the most part controlled by the State. Moving learning on to networks owned by private operators might be tantamount to selling a school building.
- When it comes to working in communities it is important to position average and poor people (and young people in particular) as experts. They adopted mobile technologies on their own and, in many instances, are already using them creatively for their own purposes. We should get out of their way and let them use mobile technology to empower themselves.
- How mobile learning can help address educational problems will vary from community to community.
- How can mobile technologies help cultivate creativity and build a social conscience?
- Should the private sector be leading innovation in mobile learning as they currently are?
- For a mobile learning initiative to be successful it must involve educational leaders at the school level: deans and principals.
- The success rate in ICT projects is often lower than other projects in education, partly because the technological landscape is changing so fast. The stakeholders shift constantly and it is impossible for parties, particularly profit driven technology companies, to get comfortable.
- Content should be created by teachers, not for teachers. How can a partnership facilitate building rather than just delivery.
- Making a mobile learning project work in a particular area requires taking stock of what is locally available.
- Because the government is such a big player in any public school mobile learning initiative, they need to be involved from the beginning.

Public Private Partnerships:

- PPPs work when there are identifiable benefits for each stakeholder involved.
- If a PPP is the model mobile learning projects are going to use, how does ownership gradually transition to the public over time?

- There is a perception that it is hard for small players and companies to enter markets and get involved in PPPs precisely BECAUSE of policy guidelines; they often function as disincentives, making projects more expensive than necessary.
- A Public/Private Partnership (PPP) is not an end in itself; often it's just a euphemism for "donation".

Costs:

- While the general trend for the cost and usage of mobile technologies is downward, for too many people the costs are still too high and impose a stranglehold on mobile usage for educational purposes. It is essential that partnerships and agreements are entered into to help to reduce or subsidize the cost for the end users of the technology.
- Affordability is relative. Cost is also related to alternatives; everything has a cost attached; in many instances, the mobile data costs are cheaper than say paper and ink alternatives.
- Costs are not always immediately apparent. For example when expenses are incurred when replacing and repairing devices; and what are the costs of e-waste?
- Don't tax mobile phones or air time; it is a necessity not a luxury.
- UNESCO should look at "comparative value" – for mobile learning to be worthy of investment it must be significantly cheaper, or more effective, or more efficient, etc. than alternatives.
- With the price of smartphones declining so quickly is it not feasible to develop projects that employ them in extremely poor areas?

In 2010 there were an estimated 5.3 billion mobile cellular subscriptions worldwide, including 940 million subscriptions to 3G services.¹⁵

Africa has the second largest and fastest growing mobile market in the world. Currently, more than 50% of Africans are mobile subscribers.¹⁶

6. Feedback from Participants

Inge de Waard “live” blogged some of the sessions from the symposium. Her posts are at http://ignatiawebs.blogspot.com/search?q=+%23unesco_mlw.

Below is a list of popular tweets from the symposium:

- [@gavindk](#) Gavin Dykes: need to build smart multi-stakeholder partnerships if we want to scale projects (F G-Perkins)
- [@gavindk](#): Need to build sustainable business models in from the start of projects for mobile supported learning
- [@carlosjmedina](#) Carlos J. Medina: "Si se puede imprimir no es un material digital" María Teresa Lugo.
- [@leadingleo](#) Ronda Zelezny-Green: We need to define learning. We can't imagine that we're all talking about the same thing. M. T. Lugo via interpreter
- [@stevevosloo](#) Steve Vosloo: Riitta Vanska: you don't need smartphones for mobile learning. What is important is affordability and scalability.
- [@UNESCOICTs](#) UNESCO ICT in Ed: Moving from localising the products to localising the processes - J. Traxler
- [@leadingleo](#): Empowering the community to be a part of the m4d app creation process @ MIT w/E. Klopfer
- [@click4ESOL](#) Joanna Norton: The lack of teachers in Africa is a silent emergency - S. Isaacs #mobile learning
- [@eklopfer](#) Eric Klopfer: catalyzing learning instead of delivering learning via mobile. well said
- [@UNESCOICTs](#): How can you connect the leaning inside and outside the classroom? - M. Sharples
- [@UNESCOICTs](#): Context, a central topic of research in mobile learning - M. Sharples
- [@UNESCOICTs](#): The emphasis shifts from access to what kind of learning do you want to achieve - M. Sharples
- [@johntraxler](#) John Traxler: @UNESCOICTs the purpose of education is not to service the economy of a society but the epistemology of a culture
- [@stevevosloo](#): For UNESCO mobile learning is about supporting Education for All. Real, tangible problems, like 5.6m new teachers needed. How can mobile help?
- [@UNESCOICTs](#): The role of teachers will change but we can't go around them, we need them - S. Vosloo
- [@stevevosloo](#): Barbara Reynolds: The speed of today's technological change is unprecedented. It is both fascinating and confounding us

- [@eklofer](#): I think the future isn't a specific mobile device, but a way to teach/learn. That is what we should be preparing teachers for
- [@UNESCOICTs](#): Connectivity is a new human right of the 21st century - P. Kim
- [@steveosloo](#): All mobile learning initiatives should start with a deep understanding of the ecosystem where they will be implemented - Dr Kim
- [@oysteinj](#) oysteinj: Paul Kim: Content and well developed pedagogy must go along with technology
- [@shafikai](#) Shafika Isaacs: equity matters - who is left behind in this mobile revolution? Barbara Reynolds, UNICEF
- [@Kristen_TALIS](#) Kristen Weatherby: How do we make icts enhance what we know to be good and diminish what is bad? B. Reynolds, unicef
- [@jacqui_batch](#) Jacqueline Batchelor: don't design a system but rather design an ecosystem to empower all actors and maximise incentives but minimise change
- [@steveosloo](#): Boyera: Mobiles are a revolution, but we should not see the world through mobile eyes only. Use complementary tech
- [@UNESCOICTs](#): "Don't design a system, design an ecosystem" S. Boyera
- [@shafikai](#): let's keep in mind that mobile phone is just a tool, the goal is Education For ALL - S Boyera
- [@UNESCOICTs](#): Mobile learning is not just e-learning gone for a walk- J. Traxler
- [@UNESCOICTs](#): Mobile phones as additional access points for teachers' professional dvpt
- [@UNESCOICTs](#): It is about going further and deeper and reaching new communities not just the ones that are already reached
- [@stephanls](#) stephanis: Sub-Sahara Africa needs 350,000 primary level teachers per year until 2015
- [@UNESCOICTs](#): Mobiles are part of our culture, society... There is no technology free society so why would we keep a technology free education? – J. traxler
- [@UNESCOICTs](#): The question is not "should we" but "how can we" use mobile technologies to enable learning?
- [@UNESCOICTs](#): The world is not on track to achieve the EFA targets set for 2015... most of the goals will be missed by a wide margin.
- [@UNESCOICTs](#): Importance of positioning the poors as leaders in Mobile Learning
- [@UNESCOICTs](#): Mobile Learning is creating more and more space for informal learning and challenging formal learning.
- [@UNESCOICTs](#): Let's locate Mobile Learning within a conversation on reaching Education for All

Participants attending the MLW, as well as those following it on Twitter, were asked to make suggestions for how to improve future events. The three main suggestions were:

- Reduce the number of presentations and panels and make the conference more interactive and hands-on.
- Future MLW conferences should begin by framing problems in education and then examining how mobile technologies might be able to address these problems.
- UNESCO should develop or facilitate the development of a digital library to highlight findings from mobile learning case studies and identify best practices.

7. Walking Gallery Exhibitors

Nokia

Nokia presented mobile learning programmes and services; Nokia Mobile Mathematics, Nokia Education Delivery, Nokia Data Gathering and FlashCard application for literacy. These solutions can be used in both informal and formal learning environments to bring better access and better quality content to classrooms and outside school learning. These services offer interactive learning experience for students and a possibility to use students' social network for peer-support by combining social media application and learning. Nokia also presented EFA Crowdsourcing Challenge. The whole crowdsourcing challenge is about "how mobile communication can support achieving EFA goals."

Commonwealth of Learning

Commonwealth of Learning presented LIVES, an interactive mobile-based application that enables a student anywhere to connect to a learning support system. It uses voice messaging to overcome the text display challenges in low-cost mobile phones. LIVES enables a teacher-facilitator to upload his/her lessons as learning objects or granules in voice, add multiple-choice questions that can be responded to by pressing a number on the user's keypad. The backend is linked to a learning management system that can help the facilitator keep track of student's progress. This is being tested on a medium scale with about 5000 rural students in India.

Intuition

Intuition presented the Microsoft Technology Literacy Curriculum, which is 40 hours of online educator professional development aligned with the ICT Competency Framework for Teachers Technology Literacy strand and Intuition Mobile Learning. Intuition has broadened device support to include Windows Mobile, Apple iOS and Android mobile phones and tablets, winning many awards and best-of-industry accolades in the process.

iLearn4Free

iLearn4Free presented M4Read, which is a mobile application to teach children how to read using interactive games. Currently, the app is running as a pilot for iOS in English, and is under development in several other languages. The app has been designed with a global international approach, so that it can be adapted at minimum cost to any alphabetical language. The stories—which give the context to each educational challenge—integrate cultural diversity, making universal design a reality. iLearn4Free intends to serve the needs of non-native English speakers, who account for 95% of the world population.

ICTP (International Centre for Theoretical Physics)

ICTP presented openEyA (*Enhance your Audience*) which is a Linux-based automated lecture capture system developed by the ICTP Science Dissemination Unit (SDU). OpenEyA integrates different technologies under Linux O.S. (Ubuntu) to synchronize: video in Flash format, slides from screen captures or any USB webcam and classroom audio.

SK Telecom

SK Telecom presented T Smart Learning, which is world's first tablet-based education platform that offers optimized service for each user; supports interactive learning anywhere, anytime through an online support community that enables students to share study tips via a knowledge sharing system; provides core functions for learning; and creates an effective learning environment by offering constant motivation. In case a student falls behind the learning schedule, it provides constant motivation for the student through diverse measures including text messages. It is equipped with support tools like a dictionary, vocabulary boxes, review notes, smart notes, and educational games.

ISTE

ISTE presented the Special Interest Group for Mobile Learning (SIG ML), which involves over 3,500 members and provides a wealth of resources and communities for educators related to mobile learning.

mEducation Alliance

In the area of mobile learning the mEducation Alliance focuses on knowledge sharing, reducing duplicative efforts, promoting partnerships and coordination, and improving research. The mEducation Alliance presented materials on past events, seminar series, research roundtables, and its international symposium on mobile learning.

Alcatel-Lucent

Alcatel-Lucent presented augmented tech-cards, immersive communication, and a social book.

France Telecom (Orange)

Orange presented an on-going mobile learning project that it is implementing in partnership with UNICEF.

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About UNESCO's ICT in Education Programme

UNESCO believes that ICT can contribute to achieving universal education worldwide, through the delivery of education and training of teachers, improved professional skills, better conditions for lifelong learning, and the potential to reach people outside the formal education process.

UNESCO takes a holistic and comprehensive approach to promoting ICT and enriching learning so that it is used and adapted to serve educational goals. Access, inclusion and quality are leading challenges for ICT in Education.

UNESCO's mission is to promote education as a fundamental human right, to improve the quality of education and to facilitate policy dialogue, knowledge sharing and capacity building.



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UNESCO ICTs in Education

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<http://groups.google.com/group/unesco-mobile-learning?hl=en>