Harppi-Tec, an m-Learning project in Mexico City for Elementary Schools, led by the Tecnólogico de Monterrey.

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mLearning

A POWERFUL TOOL FOR ADDRESSING MDGS

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BROADBAND HAS BEEN increasingly considered as a major enabler for economic and social development. In the words of ITU Secretary-General, Dr Hamadoun Touré, *"Broadband will revolutionize the lives of everyone, everywhere. It will help deliver radical improvements in healthcare, education, transportation, utility supplies and government services"*. The World Bank indicated in 2009 that for low- and middle-income countries, a 10-percentage rise in broadband penetration adds a 1.38 percentage rise in economic growth. Since then, numerous studies have been published purporting even higher numbers, especially when taking into consideration the new applications and services being implemented on these broadband networks. The Broadband Commission, launched by ITU and UNESCO in May 2010 has helped in increasing awareness on just how impactful broadband can be on the Millennium Development Goals (MDGs).

From these new broadband enabled services, ironically, the most profound long-term socio-economic benefit of broadband and mobile technology may well be its affect on education. Often still considered a disruptive nuisance in the classroom, the mobile phone is now being reassessed as a valuable teaching aid.

The mobile phone represents the fastest growing technology innovation in history. Introduced roughly 25 years ago, there are now more than 6.6 billion connections in use (with an 80% penetration in the developing world) – serving a global population of seven billion. And of course, referring to these devices as "phones" is like calling a Formula One racer a "car": Today's mobile phones have the computing power of a mid-1990s personal computer, yet they consume one one-hundredth of the power. Even the most rudimentary voice phones have more processing power than the computers that guided the first lunar landing in 1969[1]. Although, not all phones are data enabled handsets today, the penetration rates in emerging markets (8 out of 10 phones being sold in Kenya today are smart phones) promises great potential for delivering rich content on these devices.

Whereas much attention has been paid to Mobile Health, Mobile Payments and Mobile Agriculture applications, Mobile Learning or mLearning is still in its infancy. Yet, no measurable variable from 1900 onward better explains economic success than national investment in education.[1] In fact, one report concludes that one additional year of school can be directly associated with a 30 percent increase in per capita income.[2]

mLearning could have a profound effect on tackling many MDGs. It could have a clear impact, of course, helping achieve universal primary education (MDG2) and promoting gender equality (MDG3) by enabling further access to education by all children and eliminating gender discrimination in education. It can have a long-term sustainable positive impact on MDG1 to attain decent and productive work for all. mLearning can also help address the health-related MDGs by enabling people and health workers to have access to information necessary for preventing diseases and making informed health decisions. AMREF, one of the largest and oldest health NGO's in Africa and expert in training health workers has been successfully deploying e-learning to upgrade nurses' skills in Kenya. This resulted in an increase from roughly 100 registered nurses trained per year under traditional learning to over 1,300 per year in a short period of time. However, only 20% of the nurses surveyed had easy access to a computer, whereas all of them had a mobile device. With an estimated global shortage of 3.4 million health workers[3], mLearning seems like the logical solution.

In reality, providing increased access to education via mLearning can have an impact on all MDGs and contribute to long-term sustainable human development for everyone, everywhere.

Current figures show that even with the Millennium Development Goal of an Education for all by 2015, 69 million children still remain out of formal education.[4] Additionally, 774 million adults cannot read or write[5], the majority of these living in developing countries. Beyond the quantitative metrics, it is widely acknowledged that many of the young people considered "educated" have significant gaps in the quality of education received. This is especially true for the poor who have attended schools with low teaching standard and inadequate written resources.

mLearning is especially meaningful in developing countries and in rural areas where infrastructure is poor and access to the resources needed to face the rising demand for education can seem insurmountable. Rural areas constitute nearly 70% of India's 1.2 billion people; roughly 1/3 of Africa's population lives in rural areas.

WHAT IS mLEARNING?

mLearning provides anytime, anywhere educational and life enhancing content delivered via mobile technology. Mobile phones are truly unique in their ubiquity, accessibility and affordability and mLearning differentiates itself from e-learning in the sense that it is independent from any fixed infrastructure.

mLearning can range from simple SMS messaging, MMS live classroom sessions, web and podcasting to audio-to-text or text-to-audio applications. It can provide enriched learning experiences via educational video, logical reasoning and problem solving aptitude games, and even mobile whiteboards for interactive discussions.

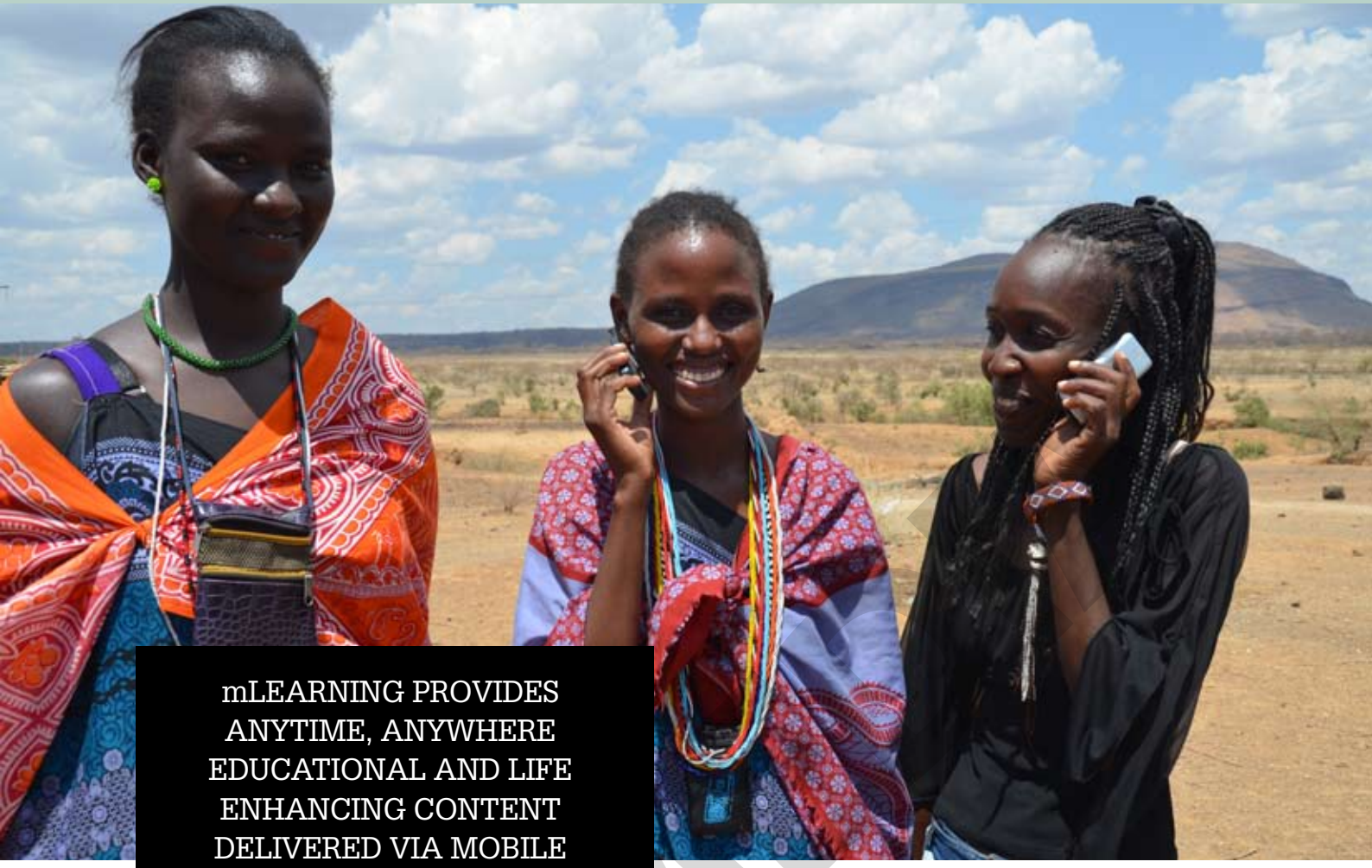
OFTEN STILL CONSIDERED A DISRUPTIVE NUISANCE IN THE CLASSROOM, THE MOBILE PHONE IS NOW BEING REASSESSED AS A VALUABLE TEACHING AID

mLearning provides a level of reach, scope and an immediacy of learning that are largely unattainable through traditional classroom environments. In developing countries, only 25%[6] of homes have computers, so perhaps the most important benefit of mLearning is its inherent capability of reaching people through devices which before long, will be in the pockets of every human being on the planet.

The most up-to-date content can be accessible immediately and from anywhere and can be repeatedly reviewed for better comprehension and understanding and this via permutation of video, audio and textual applications. Individualized instruction can be easily achieved through mobiles thereby overcoming challenges posed by varied degrees of learner competencies. This can build student confidence and empower their interest in learning.

Dr. David Ngaruiya, a faculty member with the NIST in Kenya, observes that *"the [typical] mLearning student saves 86.7% of the cost spent by students taking the same training through a traditional classroom."*[7] Much of this was due to the elimination of the cost and inconvenience

Nokia Mobile Learning for Mathematics project in South Africa. Image © Nokia



mLEARNING PROVIDES ANYTIME, ANYWHERE EDUCATIONAL AND LIFE ENHANCING CONTENT DELIVERED VIA MOBILE TECHNOLOGY

Image © Dirkje Jansen (AMREF) 2011- Kenya

of travelling to attend courses. This is especially relevant for workers taking vocational, professional or continuing education courses as mLearning can enable them to continue their professional activity.

There are a number of successful mLearning projects and initiatives underway. A few examples follow.

BBC World Service Trust in Bangladesh - Janala. Ground breaking multi-platform project using mobile phones, Internet and television to provide English lessons to millions of people in Bangladesh. Students dial 3000 to access hundreds of 3 minute audio lessons and can then assess their progress with interactive audio quizzes. Nine months after its launch, this service had attracted almost 3 million calls with a high rate of repeat users.

Ayala Foundation - Text2Teach in the Philippines - complementary classroom based learning and teacher support. It allows teachers to download short videos to a mobile device and screen them in the classroom. Over 57,000 students already benefit from this program.[8]

MoMaths (Mobile Learning for Mathematics Project) in South Africa. Nokia partnered with several global and South African organizations so teenagers can access short math courses and practice from a database of 10,000 questions. Students received immediate feedback on multiple choice practice tests. In 2010, this service had reached over 4,000 students.

The Jokko initiative in Senegal (collaboration between UNICEF and Tostan, an NGO in West Africa) is a post-literacy mobile education program which aims to build literacy skills, primarily for women and girls in rural communities through text messaging. In just 4 months, the number of participants that could send or receive text messages on a phone went from 8% to 65%.

Tunisia mEnglish - The U.S. Department of State partnered with Tunisiana – the largest mobile network operator in Tunisia – and Edupartage – a local education software affiliate – to respond to a rising demand in English language training. Over the first 90 days of the project, more than 535,000 unique users accessed the system. As of February 16, 2012, the system reverted to a pay for model (at half a Tunisian Dinar per day). Tunisiana reports that +1000 unique users continue to use the system on a daily basis.

mLEARNING LANDSCAPE

Until recently, mLearning has been concentrated in a few industrialized countries, but it is gradually spreading to the developing world. Yet, most agree that a majority of projects present the characteristics of being either small-scale pilots, isolated initiatives and often not built with scale and sustainability in mind.

A combination of factors is setting the scene for mLearning's success to accelerate in the next few years. The extraordinary growth of mobile broadband adoption and surprisingly high penetration rate of smart phones in developing countries, the growth in 3G/4G latest wireless technologies, increased OER (Open Education Resources), the advent of competitively priced tablets (the Aakash tablet in India costs $60), reduction in mobile usage prices (ITU states that between 2008 and 2009, 125 countries saw reduction, some as much as 80%[9]) are all strong enablers to mLearning. The tablet, which still presents most of the advantages of mobility, stands to be revolutionary for mLearning because of the pedagogical implications of being able to deliver more

Harppi-Tec, an m-Learning project in Mexico City for Elementary Schools, led by the Tecnólogico de Monterrey.

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PROVIDING INCREASED ACCESS TO EDUCATION VIA mLEARNING CAN HAVE AN IMPACT ON ALL MDGS AND CONTRIBUTE TO LONG-TERM SUSTAINABLE HUMAN DEVELOPMENT FOR EVERYONE, EVERYWHERE

content on a larger screen. Many also predict tablet computers are poised to become the fastest growing category of mobile device in history.

The commercial mLearning market remains nascent. The key players required to catalyse the uptake of mobile learning are often working at odds with each other. The educationists, academics and researchers have a greater understanding on which mLearning methods are most effective, but not necessarily the experience to transform them into sustainable or commercial projects. Over the past 12 months, there has been some great progress made in terms of closing industry fragmentation. USAID has launched the mEducation Alliance, bringing together key players to help support and catalyse the industry. UNESCO has hosted the first Mobile Learning week and is expanding its mLearning department and actions. The GSMA Development Fund is supporting the growth of the industry and has released an early stage landscaping report in December 2010, with a follow-up to be launched in May of this year. The WEF released a report on mLearning in February 2012. As well, mLearning conferences are gaining stature and there has been a clear increase of literature, articles, blogs and journals on the subject.

CHALLENGES

There are many challenges to overcome for mLearning to scale and develop: increasing awareness in all circles, developing enabling policies, further constructing the mLearning eco-system to create economies of scale, and increasing ICT literacy as well as teacher training.

Most agree that cost of access and data packages, as well as insufficient connectivity, are still the single biggest factor in limiting mLearning. Although there has been much progress, the digital divide remains a reality with only 4% of mobile-broadband penetration in Africa compared to over 90% in Korea for example. The ITU reports in 2011 that in many developed countries, broadband connection costs are equivalent to 1% of average monthly income, while in the 19 least developed countries the price is still over 100% of monthly income.[10]

There remains debate over the optimal business model for mLearning programmes. While eBooks, tablets and apps have taken off in the developed world and show promise for richer learning experiences and continued sustainability, it will require more creativity to develop a robust business case for mLearning in developing countries where lower-end handsets and lesser incomes prevail.

RECOMMENDATIONS

The more successful examples of mLearning have been developed to meet the specific needs of a community or were in response to a

Boys Sharing Handset. Image © GSMA

government request. For example, BBC WST's Janala programme was developed to roll out English lessons in Bangladesh after the government identified the need for improved English skills. In South Africa, the project Yoza which delivers short mNovels to teens was developed after it was identified that only 7% of libraries in South Africa were functional. A study of mLearning projects in emerging markets shows that the most common projects focus on developing the skills of the end user to enable them to lift themselves from the burdens of poverty. Vocational training, English lessons, health education and literacy/ numeracy services are the most popular projects seen in mLearning today which falls in line with the theory that where content is seen of value to either raise living standards or employment opportunities, end users will be eager to uptake the learning service

Although it makes good business sense to reproduce content whenever feasible, keeping it local and relevant is essential for success.

It is apparent that the adoption of mLearning is not directly related to technical readiness, but rather to user readiness. Therefore solutions should ideally be device agnostic in order to reach as many people as possible.

mLearning is much more than a technology innovation. It requires coordinated, large-scale, complex social change and broad, cross-sector involvement if it is to have collective impact. And that collective impact cannot happen without the joint efforts of the private sector, non-profits, governments, and the public. Besides the shorter-term wins that will arise from the natural growth of mLearning, the telecom industry and the private sector at large should also embark, with the rest of the ecosystem, on a long-term approach, joining social good to commercial mindset.

The ecosystem must ensure that mLearning helps close the digital divide instead of widening it. Making mLearning accessible to the underprivileged and those less likely to access education should be developed as a top priority. A purely economic approach without integrating a "shared value" approach with governments and citizen sector organizations could potentially undermine the effort to close the divide.

Although we must remember that mLearning will never replace traditional education or the role of teachers, it is a tool that can have tremendous impact on making education more accessible, more efficient, more cost-effective, and more enjoyable. *"Remember: 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."*[11]

FOOTNOTES

[1]Edward L. Glaeser, Fred and Eleanor Glimp Professor of Economics at Harvard, New York Times, October 6, 2009
[2]"Education Last Century, and Economic Growth Today" by EDWARD L. GLAESER, October 20, 2009-http://economix.blogs.nytimes.com/2009/10/20/education-last-century-and-economic-growth-today/.
[3]UN Secretary-General Ban Ki-moon (2010) Global Strategy for Women's and Children's Health, page 12
[4]Global Campaign for Education
[5]Ibid
[6]ITU Facts and Figures 2011
[7]Dr. David Ngaruiya. Kenyan Faculty member of NIST, in an interview with David Rogers, University of Central Florida.
[8]Text2Teach connects students to a more interactive learning environment, Sunstar-Manilla, March 15, 2012
[9]UNICEF "Mobile4Dev Report-October 2010 http://www.mobileactive.org/files/file_uploads/UNICEF%20Mobiles4Dev%20Report.pdf
[10]The ITU 2011 ICT facts and figures reports: In 31 countries — all of them highly industrialized economies — an entry-level broadband connection costs on average the equivalent of 1% or less of average monthly GNI per capita, while in 19 countries — most of them least developed countries — a broadband connection costs on average more than 100% of monthly GNI per capita.
[11]Unesco Mobile Learning Week Report- December 2011- http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/ED/ICT/pdf/UNESCO%20MLW%20report%20final%2019jan.pdf

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