



The International Mobile Learning Phenomenon



Far from being a theoretical possibility, mobile learning is an on-the-ground reality: students and teachers from Mozambique to Mongolia are using mobile devices to access rich educational content, converse and share information with other learners, elicit support from peers and instructors, and facilitate productive communication.

- West & Vosloo, 2013. p. 8

International Mobile Technology Adoption

Today there are over six billion mobile phone subscriptions worldwide. In Africa alone, there are a billion. This makes mobile phones the most ubiquitous technology on earth. In developed countries, 4 out of 5 people own and use a mobile phone; in developing countries, only 2 out of 5, or 3.63 billion Short Message Service (SMS) capable phone subscribers are participating in mobile learning experiences. (Raftree & Martin, 2013) Google Chairman Eric Schmidt claims that for every person who currently has access to the Web, there are 2 who do not. But by the end of this decade, Schmidt asserts that by the end of the decade everyone on earth will be connected and most via their phones. (Business Twitter, April 16, 2013) All of these statistics underscore the fact that the opportunity for mobile learning is not just a United States phenomenon, it is global.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) published a series of working papers that explore mobile technology initiatives and policy implications for five regions of the world. The UNESCO researchers focused primarily on investigating the use of mobile phones, either alone or in combination with other technological tools, and their potential to make learning more available and equitable, especially in places where there are few options for formal learning. Because so many people, regardless of economic status, use mobile phones in their daily lives, it's the gateway mobile device for providing access to educational opportunities.

At its recent symposium in Paris—Mobile Learning Week—UNESCO expanded its focus on mobile technologies to include tablets, devices that are increasingly being provisioned by governments to school students. Thailand recently has purchased 900,000 tablets for education from China—860,000 for first graders across the country. Industry experts predict the sales of touch screen tablets are likely to parallel or surpass purchases of personal computers (PCs) as early as 2016 (NPD, 2012). Turkey and Thailand have announced ambitious plans to roll out tablet computers in schools. The United States has many districts purchasing large amounts of tablets to prepare for the online assessments that will be administered next spring to measure students progress in meeting the new Common Core Standards.

The widely shared finding among the established implementations is that mobile learning is poised to blur lines between formal and informal learning, creating bridges between the two. Thus, a panoptic approach—both toward devices and learning—is advisable. (UNESCO, February 2013, p.1) Australia has already made significant progress in achieving this bridge between the two formal and informal learning using mobile devices.

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The education context, economic conditions, and technical infrastructure can vary a great deal among world regions. Actually, there may be large disparities within a single region. Yet, there are common refrains among the drivers and barriers to mobile technology implementation.

One country leading in a concerted effort to effectively move their students into the digital age is Australia. The drive to transform teaching and learning through digital education has been supported by the \$2.1 billion Digital Education Revolution (DER). Officially launched in 2008, this landmark initiative impacts every aspect of education—from teacher training to school infrastructure, curriculum design, assessment and community engagement.

As well as providing computers for Australian schools, the DER is delivering digital learning resources, online diagnostic tools and professional development for teachers to support the new Australian Curriculum. Four years on, the rollout of Australia's National Broadband Network (NBN), combined with a new generation of mobile and personal computing devices, is opening new frontiers in digital education. (DEAG, 2013, p. 5) Schools are expanding their programs to include Bring Your Own Device (BYOD) programs for smartphones and tablets. BYOD programs enable schools across the country to accelerate reaching 1:1 ratios of students to technology devices and as a result, achieve their goal to have every student connected.

A recent report ranks Australian students second among the 19 participating countries in relation to digital literacy. This achievement confirms the value of the concentrated effort and investment of all Australian governments over the past decade. (Acer, 2009)

Literacy

At the recent UNESCO Symposium, participants acknowledged that the world is book poor but mobile device-rich, especially in underdeveloped countries. In poor countries there is, on average, just one book per 19 children. (UNESCO, February 2013, p. 6) Yet the majority of the world's population now has a mobile phone (So, 2012, p. 7), which puts educational opportunities within the reach of the masses.

Mobile devices hold the promise of helping literacy develop.

Astoundingly, there are currently 793 million illiterate adults, almost one fifth of the world's population, and two thirds are women. Mobile devices hold the promise of helping literacy development. They can provide small amounts of information as the learner needs it—anytime, and anywhere—and communication can be enhanced with voice, video, and other tools.

In Nigeria, they are building text and voice applications in five languages—English, Yoruba, Igbo, Hausa, and Nigerian Pidgin—to provide access to agriculture-related services that will make a significant impact on productivity, markets, and livelihoods. In doing this the project will also promote literacy development among small holder farmers.

Another large project funded by the government of Colombia provides inexpensive mobile devices equipped with educational software to 250,000 people in an effort to eradicate illiteracy. (West & Vosloo, 2013. p. 10) As in Nigeria, their hope is that addressing literacy for more people using mobile devices will positively help the economy.

Gender Equity and Literacy

Because they're more affordable in general, low cost mobile phones are more accessible to the most impoverished segments of the population, including women and girls in developing countries. This offers additional freedom in deciding when and where to use mobile phones for learning, and providing on-demand access to voice- and text-based instructional materials. These characteristics of mobiles, when used appropriately, can help increase gender equality in education by offering training opportunities to prepare additional (female) teachers to enter classrooms, facilitate free access to resources such as Wikipedia for women and girls, as well as help enable a degree of flexibility for the time and places that learning can occur. In many cultures women are sequestered; mobile devices hold great promise to help them learn literacy skills in private. (Zelezny-Green, March 4, 2013)

Content

Content for mobile devices, especially in under-developed countries is in its nascent stage of availability in education. Currently most educational content is not accessible from or optimized for mobile devices. Most products don't take advantage of the unique features of mobile devices including communication and location-aware capabilities. Also, one of the biggest challenges for mobile learning in many countries is the lack of relevant content in their local languages.

Digital content that can be used on mobile devices is a burgeoning area in content development. Some governments are incentivizing new companies or existing companies to help in this effort. Content will be a key driver in the success of mobile learning.

Internet Capable Phones

"The penetration rate for standard mobile phones in Latin America is very high, even among lower-income groups. Though standard mobile phones may offer fewer educational possibilities than smartphones, their widespread dissemination makes them an excellent low-cost option for mobile learning programs, as the majority of the population already owns a device." (Lugo & Schurmann, 2012, p. 30)

Another critical driver is the widespread availability of internet-ready mobile devices at increasingly affordable prices. As powerful mobile devices like smartphones become more pervasive, there is little doubt that they will be adopted for educational purposes. (So, 2012, p. 23)

Case Study: The UNESCO Mobile Literacy Project

...used mobile phones to complement and support a traditional face-to-face literacy course offered to 250 adolescent girls living in remote areas of Pakistan. Illiteracy is an acute problem in Pakistan and disproportionately impacts women and girls. Across the country the adult literacy rate is 69% for males but only 40% for females. The only way to communicate with participating students who lived in villages without computers or reliable fixed-line internet connections was via mobile phones. Instructors sent text messages to their students reminding them to practice handwriting skills or reread passages in a workbook. Instructors also posed questions to their students, which the girls answered via text messages. All the activities and communication sought to reinforce the literacy skills the girls had gained during the in-person course. Before the UNESCO project incorporated mobile devices, only 28% of the girls who completed the literacy course earned an 'A' grade on a follow-up examination. With the mobile support over 60% of the girls earned an 'A' grade. Based on this initial success the project is currently being expanded and now reaches over 2,500 students.

- West & Vosloo, 2013. p. 15

Cost of Devices

The relatively low cost of mobile devices factors in as a driver for wealthier nations too. Mobile learning is expected to expand in Europe as the price of a mobile device drops. “The primary drivers for mobile learning are the low cost of mobile devices, the increasingly diverse functionalities mobile technologies provide, and the proliferation of powerful handheld devices such as smartphones and tablets among students in Europe.” (Hylan, 2012, p. 28)

Many governments have successfully expanded educational opportunities by utilizing the technology people already own, rather than providing new devices. Initiatives that transform ubiquitous mobile devices into tools for learning, while ensuring equity of opportunity for students who cannot afford them, generally provide affordable solutions to educational challenges. (West & Vosloo, 2013 p. 26)

“At this stage, it could be argued that collaboration between Ministries of Education and higher education institutions is the main driver for exploring the potential of mobile phones for education.”
– So, 2012, p. 23

High-level Support for Mobile Initiatives

Government support and the support of partners/stakeholders are key enablers for mobile learning initiatives.

Governments and ministries are sponsoring mobile learning research initiatives in Asian countries. The “majority of governments” in Asian countries “appear to be supporting mobile learning by providing necessary funding and resources to encourage mobile learning research.

Government advocacy brings wireless access to every classroom in Denmark. “Denmark recently introduced Bring Your Own Technology (BYOT) as a national

policy and has required schools to provide wireless internet access in all classrooms by 2014 to allow students to use their devices for learning activities throughout the day.” (Hylan, 2012, p. 28)

South Africa’s Mobile Math project is sustained through the coordinated efforts of a network of stakeholders. The Mobile Math (MoMath) project in South Africa reaches 25,000 learners. Its partners include “officials from national, state and local education agencies; school leaders; local NGOs; three major cellular network providers; a widely used social networking platform; a textbook publisher; and a multinational telecommunications corporation.” (West, 2012, p. 13)

A cooperative effort between public and private sectors supports mobile learning pilot programs in Latin America. The Seeds of Empowerment program has implemented numerous mobile learning pilot projects in Latin America that are designed to increase basic education access to underserved children. One of the primary objectives in planning the pilots “was to secure not only the support of national or local governments, but also to ensure the participation of telecommunications companies...and foundations or local NGOs [non-governmental organization] linked to social development.” (Lugo & Schurmann, 2012, p. 32)

The BridgeIT initiative in Latin America and Asia brings up-to-date content that supports inquiry-based learning pedagogies to geographically isolated schools via mobile networks. These networks provide internet access to institutions that do not have fixed-line connections.



“Australia’s young people are among the 1.2 billion (and growing) Facebook users worldwide. A quarter of those users are aged under ten despite the minimum age requirement of 13 years. They are among the more than 500 million Twitter users who send 190 million tweets per day.”
 -www.statisticbrain.com

Educational Goal Attainment

Mobile technologies improve access to content, which can help to address educational deficiencies. “The strategy of delivering educational content through standard mobile phones is particularly well-suited for use in rural areas where educational resources are scarce and fixed broadband connections are unavailable or unreliable.” (Lugo & Schurmann, 2012, p. 29)

Systemic failures in traditional education delivery are another driving factor in the development of mobile learning in [Africa and the Middle East]. (Isaacs, 2012, p. 26)

Professional Development

At UNESCO’s Mobile Learning Week, many country representatives described pushback from teachers, just as in the United States. The move from traditional, textbook-based pedagogies worried teachers. So as in the United States many governments are making investments in teacher training to help instructors understand how to use mobile technologies effectively to improve student achievement.

Technology requires re-conceptualization of the role of the teacher and revisiting educators’ pre- and in-service training. Mexico, Nigeria, Pakistan and Senegal have undertaken initiatives to build the capacity of teachers to embrace mobile technologies in the classroom. For example, Senegal focuses their training for teachers on how to help students practice mathematical concepts. Mexico builds the Spanish language skills of teachers working in areas where indigenous languages are dominant.

Potential to Expand to New Types of Learning Opportunities

In many countries there is growth of new learning modes such as social media, which is being used to improve student achievement.

Social learning

In South Africa instructors involved in the Teaching Biology Project used social media platforms to share lesson plans and pedagogical ideas via mobile phones. Teachers involved in this project reported that it helped instill a sense of professionalism and camaraderie and made it easier for them to request assistance from peers who understood the day-to-day exigencies of their job. (West, p. 24)

“On average, Africans spend 17% of their monthly salary on mobile subscriptions, whereas people in wealthier countries spend closer to 1.5%.” - West, 2012

International Challenges and Concerns

Total Cost of Ownership

Although many parts of the world exhibit a high penetration of mobile phones, the total cost of ownership is still too expensive for many.

Mobile adoption in Africa and much of the Middle East, Latin America, and Asia is hindered by cost.



There is also a significant difference in functionality between a mobile phone and a smartphone, and the large-screen, full-featured models that would most enhance learning opportunities “tend to be found predominantly in the pockets of rich people.” (West, 2012, p. 6)

“In spite of the high penetration rate of mobile phones in Asia, the cost of mobile devices and mobile communication subscriptions appears to be a critical barrier to mobile learning, as not all students, teachers and schools can afford mobile devices and accompanying data plans...” (So, 2012, p. 23)

In Latin America, “broadband access, both fixed and mobile, is still scarce and expensive for large segments of the population.” (Lugo & Schurmann, 2012, p. 32)

Policy Support

The absence of guidelines to support national governments, education institutions, local private sector organizations and civil society in developing policies that support decision-making on mobile phone access and use, holds serious implications for their integration in education.

UNESCO has recently launched an M-Learning Policy Guidelines Project to address this dearth in policy regarding the use of mobile devices in education. Its goal is to guide national governments and education institutions on policy choices that can support and enable education delivery through the safe, affordable and sustainable use of mobile technologies. The adjacent goal is to develop the future of mobile learning beyond the Education For All goal year of 2015. (UNESCO website, M-Learning Policy Guidelines Project)

Mobile learning initiatives that are not prioritized on the national education agenda often go unfunded.

Few EU Governments Lend Support to Mobile Initiatives

“With the exception of the United Kingdom, the Netherlands and Denmark, few countries in Europe have included mobile learning in their national education agendas, and even these countries have not managed to sustain mobile learning efforts on a nationwide scale.” (Hylan, 2012, p. 29)

Technical Limitations

Lack of technical infrastructure and/or high-speed broadband access limits learning opportunities. Governments embarking on mobile learning initiatives must address the infrastructure and its related costs for the program to be successful.

The limitations of the network and available devices pose significant challenges. In Africa and the Middle East “connectivity is restricted in many areas by the cost of data and the limited availability of high-speed third generation (3G) networks.” (Isaacs, 2012, p. 27)

In Latin America, “despite the fact that mobile phone use has grown enormously in the last decade, and that the number of Internet users continues to grow steadily, the region’s telecommunications infrastructure is extremely limited.” (Lugo & Schurmann, 2012, p. 7)

Anti-Mobile Sentiments and Restrictions on Mobile Phone Use

It is not uncommon for mobile devices to be banned or have restrictions imposed on their use in education settings.

There are lingering concerns about the impact of mobile technology on learning, behavior, psychological wellbeing and physical health. “Parents worry that the overuse of digital media decreases the amount of exercise and social interaction young children engage in, which may have harmful effects on their physical and psychological development.” (So, 2012, p. 24) Health-related issues (though inconclusive) about a possible correlation between cellphone use and cancer are of concern.

Educators and parents are concerned about the misuse of technology for such activities as cyber-bullying, accessing inappropriate content, gaming, or gambling. Mobile devices are thought by some to be a distraction from learning rather than a tool for learning.

This year the number of connected mobile devices, the vast majority of which are mobile phones, will surpass the world’s population for the first time in history. Yet despite their ubiquity and the unique types of learning they support, these technologies are often prohibited or ignored in formal systems of education. (West & Vosloo, 2013 p. 40)

Summary

Mobile learning is a worldwide phenomenon. The explosive growth in the number of mobile phones makes them nearly ubiquitous around the world. However, the level of sophistication of implementation varies greatly.

- **Devices** – In under-developed countries, the number of mobile subscriptions may be high but the actual devices are minimal in the capacity to perform many of the tasks that smartphones now enable. Interactive tablets have just been introduced but their cost exceeds the average student’s or even school’s ability to purchase them.
- **Infrastructure** – Some governments, such as the United Kingdom, are investing heavily to enable homes and schools to be connected. Under-developed countries are challenged to replicate this implementation.
- **Teacher Training** – Research shows that the success of any innovation in education depends greatly on the level of preparedness of the teachers to implement it effectively. Governments like Australia are committed to preparing teachers and providing them with ongoing support as they integrate mobile learning into the curriculum.
- **Content** – The United States leads the way with developers who are designing content to take advantage of the distinct capabilities of smartphones, tablets and other devices. UNESCO encourages all governments to either incentivize or partner with content development efforts in the private sector to ensure content is engaging, mobile-capable, locally relevant and language-appropriate.
- **Access** – The biggest challenge for any region of the world is providing access to mobile devices and appropriate content. Gender access is a critical part of this equity issue as girls and women often are not addressed in implementations. Each government must address equity at many levels.
- **Cost** – The cost of devices, infrastructure, ongoing support, content and training often is the barrier that prevents mobile learning from becoming a reality. Governments and ministries around the globe are stepping in to establish funds to begin to address these issues. BYOD is a growing phenomenon to help schools get to 1:1 faster but with that comes the support issue for multiple platforms and the instructional challenge to develop a common suite or platform to enable more effective teaching.

Despite these challenges, the promise of mobile learning rises above to enable Education for All (UNESCO’s initiative) as never before. UNESCO’s Key Issues to Consider and Implications for Policy Makers and Planners and Policy Guidelines for Mobile Learning provide excellent recommendations, guidelines and policies for each government to consider as they launch into this new realm or are striving to expand and refine their programs.

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