Lifelong mobile learning for skills development in low- and middle-income contexts

By Ronda Zelezny-Green

When the topic of mobile learning arises, initial connections tend to be made with use of mobile devices to engage in formal learning activities, while a learner of school-age is stationary or on the go, inside the classroom or outside of it. Yet, mobile learning can take place not only across contexts but also across lifespans – at any age – and for broad-ranging purposes (Figure 6.1).

Lifelong mobile learning for skills development (LmL4SD) is one such purpose, and is a small but growing area of interest within the mobile learning community. In low- and middle-income contexts[1] LmL4SD is gaining traction as a mechanism to help people of diverse ages acquire skills that may eventually lead to employment, the creation of new business ventures, and/or improved business practices. Mobile learning is uniquely placed to facilitate skills development opportunities for people in low- and middle-income contexts because this learning process can help facilitate more flexible, cost-effective, and relevant learning and development experiences. (Figure 6.2).

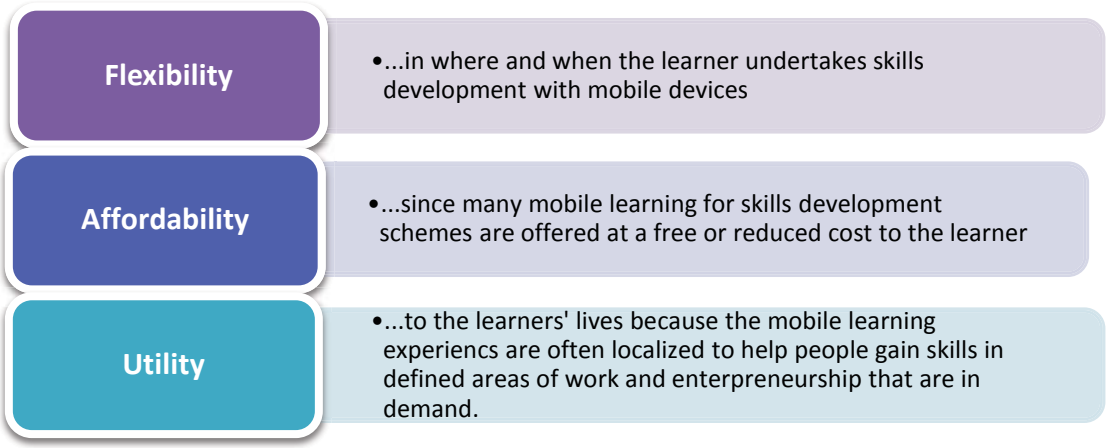
As the percentage of unique mobile subscribers grows[2] and the costs of mobile phone ownership and use declines[3], the number of people who stand to benefit from LmL4SD could be quite high, especially among special populations such as women and girls and out-of-school youth.

This article will begin by briefly revisiting the definition of non-formal learning to explore its links to what will be termed and defined as lifelong mobile learning for skills development in this publication. Then, it will explore reasons why there is an increasing need to explore mobile learning as an emergent lifelong skills development medium in low- and middle-income contexts. Subsequently, brief case studies on LmL4SD will be shared from low- and middle-income contexts in the following countries: the Philippines, Tunisia, as well as an experience from the United States and Canada that has global reach. The article will conclude with recommendations for how local and national governments and civil society organizations can harness the potential of mobile learning for skills

Figure 6.1: Learning across contexts

Sources: Photo 1: *Young female students at Samangan*. (2006). Available at: https://commons.wikimedia.org/wiki/File:Young_female_students_at_Samangan.jpg; Photo 2: Jisc infoNet. (2007). *Social Space Seating, Dungannon Campus (Formerly East Tyrone College), South West College*. Available at: https://www.flickr.com/photos/jiscinfonet/434855667/in/album-72157600028008635/; Photo 3: Pierre Holtz for UNICEF. (2007). *Girl Guides in the Central African Republic*. Available at: https://commons.wikimedia.org/wiki/File:Girl_Guides_in_the_Central_African_Republic.jpg. All accessed 11 Dec. 2016.

Figure 6.2: The mobile learning context



development to help empower people to achieve their learning goals throughout their lifetime.

Lifelong mobile learning for skills development

Earlier, the Organisation for Economic Co-operation and Development (OECD) definition of non-formal learning has been shared. This article will proceed with the following addendum to the OECD definition in order to focus more on the learner and the things they may learn about with mobile devices:

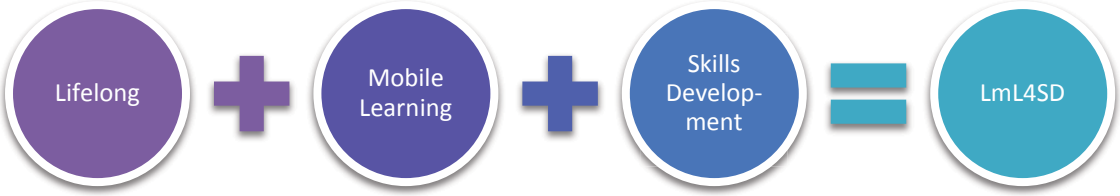
> *Depending on country contexts, it [non-formal learning] may cover educational programmes to impart adult literacy, basic education for out-of-school children, life-skills, work-skills, and general culture. Non-formal education [...] may have differing durations, and may or may not confer certification of the learning achieved.*[4]

This presents the notion that learning for skills development can be conceived as a subset of non-formal learning since a number of skills-based educational programs take place outside of formal education settings. Non-formal learning and learning for skills development also help learners obtain knowledge that is not typically found in national curricula, which usually focus solely on subject areas such as mathematics, science and the language of instruction (although academic subjects may still be included to facilitate basic education in the non-formal learning sector).

Furthermore, like formal learning, non-formal learning, even for skills development, is led by an organisation concerned with the area of learning to be covered. Some examples of well-known non-formal learning organisations include the Girl Guides/Girl Scouts, Boy Scouts, the YWCA and the YMCA. Yet, unlike formal learning, a rigid instructional structure is not always imposed with non-formal learning or learning for skills development. Moreover, there may be no formal examinations required in order to achieve official recognition for participation or successful completion of a non-formal learning or skills-based course.

With a link between non-formal learning and skills development established, attention will now be turned to elaborating what lifelong mobile learning for skills development is. This will be achieved by

Figure 6.3: LmL4SD



breaking down each component of this phrase as illustrated in Figure 6.3.

Lifelong learning

The Commission of the European Communities (CEC) embraced a definition for lifelong learning that balanced social and economic perspectives on learning. Their definition also traversed the three broad categories of learning in addition to seeking to remove age restrictions. Accordingly, they collaboratively created the following conceptualisation of lifelong learning: "all learning activity undertaken throughout life, with the aim of improving knowledge, skills and competences within a personal, civic, social and/or employment-related perspective"[5].

In the report to UNESCO of the International Commission on Education for the Twenty-first Century, lifelong learning is framed into four areas (Figure 6.4).

Figure 6.4: Four areas of lifelong learning

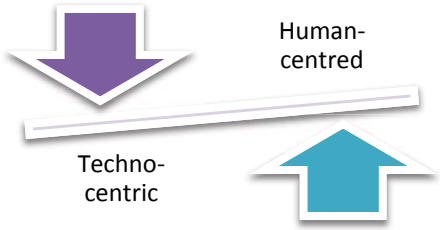
Source: International Commission on Education for the Twenty-first Century. (1996). *Learning: The treasure within. Report to UNESCO of the International Commission on Education for the Twenty-first Century.* Paris: UNESCO Publishing. Available at: http://unesdoc.unesco.org/images/0010/001095/109590eo.pdf Accessed 8 Dec. 2016.

By adopting inclusive definitions it becomes clear that because a variety of people participate in lifelong learning, diverse opportunities to know, do, be and live together must be made accessible for all. One way that this is being done is by facilitating instruction through and with mobile devices.

Contextualising mobile learning

In other articles, the question of what mobile learning is has been touched upon. To contextualise mobile learning in this article, the term will be briefly outlined. Mobile learning has undergone numerous definitional transformations that can largely be attributed to how the relationship between people and technology is perceived and articulated (Figure 6.5), as well as the growing sophistication in the technology and the devices with which once can engage in mobile learning.

Figure 6.5: Relationship between people and technology



Striking a balance in mobile learning

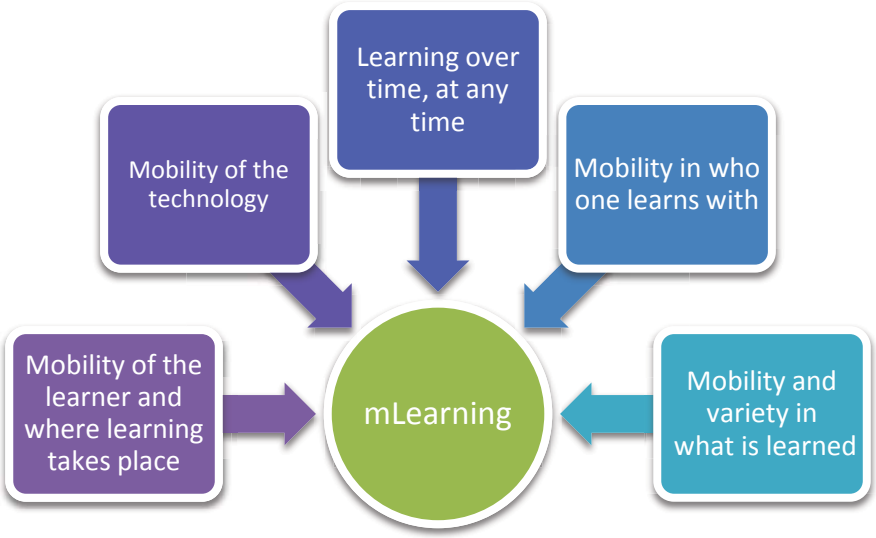
In acknowledgement of the need to take a balanced yet future-proof approach to the definition of mobile learning, this article borrows from the one formed by Sharples, et al,[6] to position mobile learning (Figure 6.6).

With this conceptualisation in place, it is clear that mobile learning has links not only to lifelong learning but also to non-formal learning and skills development given the flexibility in what is learned where, with who and when.

Skills development

Skills encompass the "know how" for performing activities crucial to a person's ability to earn a livelihood, and can include both so-called soft skills (e.g. professional communication, negotiation, mediation) and hard skills (e.g. foreign or programming language fluency or basic numeracy). The World Bank[7] believes that skills form the foundation of a nation's growth as well

Figure 6.6: A definition of mobile learning



Source: Sharples, et al. (2009). Mobile Learning: Small devices, big issues. In: Balacheff, N., Ludvigsen, S., Jong, T. de and Barnes, S., eds., *Technology Enhanced Learning: Principles and Products.* Heidelberg: Springer, pp. 233–249. Available at: https://www.researchgate.net/publication/44909945_Mobile_Learning_Small_Devices_Big_Issues Accessed 8 Dec. 2016.

as a person's ability to obtain gainful employment during their lifetime. The OECD[8] calls skills "…the global currency of the 21st century". The process of developing skills is one that often does not take a one-size-fits-all approach. Nevertheless, guidance in the form of knowing which skills are in demand for employment and entrepreneurship or which may be helpful for achieving personal fulfilment goals is a pertinent part of the skills development process.

Summarising LmL4SD

With the individual components of lifelong mobile learning for skills development explained, a working definition of LmL4SD for this article is people using mobile devices, at any age, time or place to develop new or existing skills by working alone, or in a group, on a course or on their own.

With this in mind, the next section of this article will discuss some of the reasons why mobile learning is both a relevant and useful tool in the push to help people in low- and middle-income contexts develop their skillsets.

Why the need for skills development? Why go mobile?

As earlier mentioned, this article will focus on lifelong mobile learning for skills development to find and obtain employment, create new businesses, and/or improve business practices. While this focus is decidedly economic in nature, these aspects form some of the personal goals and ambitions that people have for their lives. This section will explore why LmL4SD is becoming more common for such purposes.

Sounding the alarm on the need for skills development

For the past two decades, skills development has become an increasingly important area in the learning spectrum. The post-2008 global economic crisis caused not only a significant amount of job loss but also an increase in what the International Labour Organization (ILO)[9] terms 'occupational mismatch', whereby the jobs available to people are too high or too far below their present skillset. The ILO report[10] also stated that in 2012, the total number of people without jobs globally had risen to 197 million people. Some population segments, such as youth and females, were more severely impacted than others.

National governments including India, the United States, and South Africa, as well as regional bodies such as the European Union, have taken critical steps to grow and revitalize the opportunities for their citizens to access learning opportunities that help them improve or build new skills (Figure 6.7).

Figure 6.7: Strategic skills development activities

Sources: For South Africa: UNESCO. (2012). *Youth and Skills: Putting Education to Work—EFA Global Monitoring Report 2012*. [online] Available at: http://www.skillsforemployment.org/wcmstest4/groups/skills/documents/skpcontent/mwdf/mdix/~edisp/fm11g_021828.pdf.For European Union: European Commission. (2016). *Digital Skills and Jobs Coalition*. [online] Available at: https://ec.europa.eu/digital-agenda/en/grand-coalition-digital-jobs-0. For United States: US Department of Education. (2016). *Science, Technology, Engineering and Math: Education for Global Leadership*. [online] Available at: www.ed.gov/stem. For India: Ministry of Skill Development and Entrepreneurship. (2016). *About us*. [online] Available at: http://www.skilldevelopment.gov.in/aboutus.html. All accessed 11 Dec. 2016.

Although these top-down efforts are commendable, more needs to be done at the grassroots level if the most marginalised are to be reached. The OECD[11] asserts that in low-income contexts, youth unemployment is characterised by a prevalence of low quality jobs on the market while in middle-income contexts the issue is a lack of jobs, especially ones that youth qualify for (Figure 6.8). Sustained skills mismatch for youth in low- and middle-income contexts can lead to discouragement that affects employment opportunities and productivity later in life.

Figure 6.8: Skills mismatch for youth

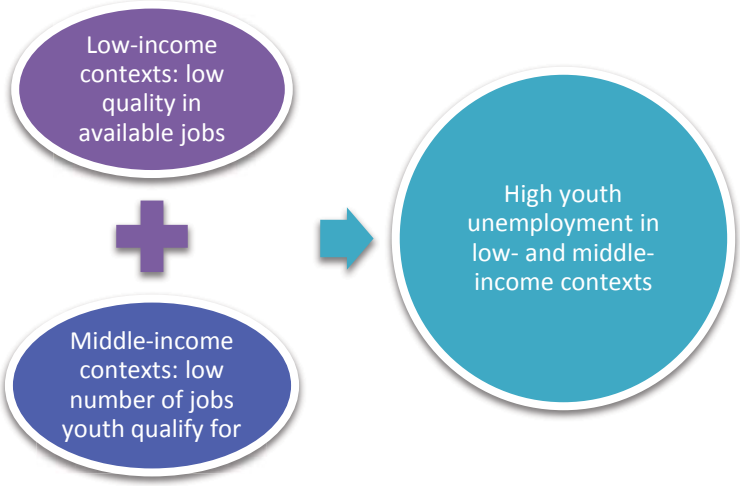
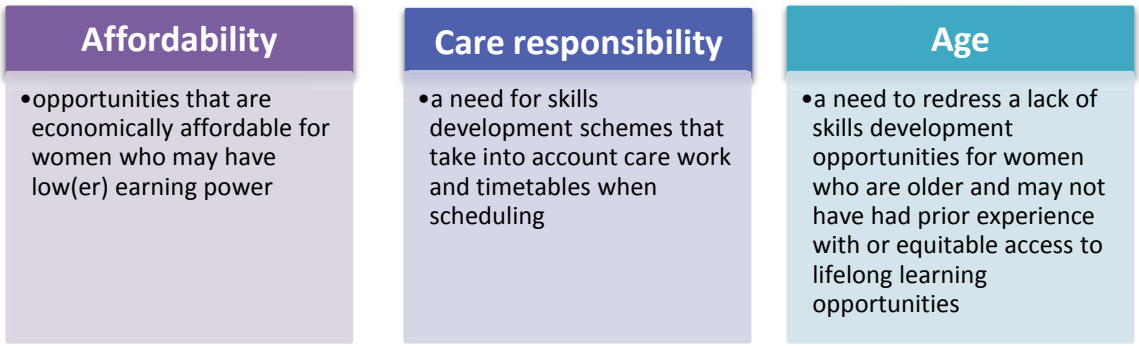


Figure 6.9: Gender equality links



Source: ILO. (2010). *A Skilled Workforce for Strong, Sustainable and Balanced Growth: A G20 Training Strategy*. Geneva: International Labour Office. Available at: www.skillsforemployment.org/wcmstest4/groups/skills/documents/skpcontent/mwdf/mdix/~edisp/fm11g_021626.pdf Accessed 8 Dec. 2016.

In order to improve their skillset, youth face barriers such as the cost of transport to and from skills development opportunities, lack of awareness about what skills development opportunities are available to them and how development of these skills can lead to jobs, and even gender discrimination in the skills development opportunities available to them. Research from GSMA Mobile for Employment[12] corroborates these barriers through findings gathered from youth in Bangladesh, Spain, Indonesia, and Ghana.

The ILO[13] points out that gender equality in skills development opportunities is directly linked to challenges shown in Figure 6.9.

Potential female members of the workforce also experience difficulty related to the availability of skills development opportunities that encourage women to enter non-traditional professions.

Mobile as a skills development medium

Given some of the aforementioned barriers to access skills development, lifelong mobile learning for skills development can present people in low- and middle-income contexts with opportunities that other print and electronic media are not as easily able to facilitate.

Undoubtedly mobile devices (their cost, availability, and technological affordances), network reception, and usage costs are issues that still impact the ability of a number of people to benefit from LmL4SD. Nevertheless, in terms of reach (both in the number of people who can benefit today as well as where these people are located), comparative ease of use, personalisation, speed, and flexibility, mobile devices are poised to help facilitate more benefits for more people in low- and middle-income contexts seeking to develop their skillset than if postal correspondence, radios, television, or telecentres were used on their own. Still, like all other media before it, mobile devices could also serve to amplify inequality among those who are very poor, disabled, have low or no literacy, or face cultural barriers to access and use mobile if care and planning is not undertaken in order to help minimise this undesirable outcome.

In many low- and middle-income contexts, mobile devices have become tools to help achieve individual and collective empowerment by facilitating access to vital services from areas such as government, health, banking and finance, and agriculture. Lifelong mobile learning for skills development is on its way to becoming an integral type of life-changing mobile device use for education and learning, as the case studies in the next section will help illustrate.

LmL4SD case studies from low- and middle-income contexts

The case study from the Philippines (Box 6.1) highlights a lifelong mobile learning for skills development initiative to benefit out-of-school youth with inelastic wallets and a government that is adopting LmL4SD as one of many pathways towards redressing the availability of skills development opportunities despite its own resource limitations.

Box 6.1: Philippines

Facing a constantly expanding "youth bulge", the Philippines has approximately 6.2 million people under the age of 35 who lack employment or are under-employed. With an estimated population of nearly 101 million people in 2015[a] (12th largest country in terms of population in the world), the government's ability to address the youth unemployment challenge through provision of skills development opportunities is daunting given the country must also grapple with yearly, devastating natural disasters which take significant funding from the national budget.

Beginning in April 2013, a coalition of government agencies created and offered support to a national programme known as "Abot Alam," whose goal is to help return or help facilitate first encounters for millions of youth to some form of education or training. With the desire to support the potential reach of this initiative, all three mobile network operators in the country, Digitel Mobile Philippines (Sun Cellular), Globe Telecom, and Smart Communications took the decision to unite to develop innovative LmL4SD products and services to help the government reach its target, competing on the content and quality of their offerings instead of brand recognition or loyalty. This partnership was cemented in September 2013 with a MoU signing[b].

In February 2014, the first skills development services, both based on interactive voice response technology, were debuted at Mobile World Congress[c].

Filipino youth reads training content on mobile phone

Photo credits: Globe Telecom

Rural Filipino community watches an app demonstration on a smartphone

Photo credits: Smart Communications

One service provides basic education in the English language to help people acquire basic English skills, and the other is for people to acquire English for employment within the business process outsourcing industry, an industry that provides a large source of employment in the Philippines. Both services were launched in 2014 with the support from LmL4SD subsidies made by the Department of Education and the Technical Education and Skills Development Agency.

Notes:

[a] Philippine Statistics Authority. (2016). *Highlights of the Philippine Population 2015 Census of Population*. [online] Available at: https://psa.gov.ph/content/highlights-philippine-population-2015-census-population Accessed 11 Dec. 2016.

[b] Luces, K. (2013). Telcos, gov't agencies to collaborate on 'mobile education' for 1 million OSYs. *GMA News*, [online] 25 September. Available at: www.gmanetwork.com/news/story/328130/scitech/technology/telcos-gov-t-agencies-to-collaborate-on-mobile-education-for-1-million-osys Accessed 8 Dec. 2016.

[c] Gallardo, C. (2014). Apps aim to help educate millions of young Filipinos. *SciDev.Net*, [online] 28 February. Available at: www.scidev.net/global/education/news/apps-aim-to-help-educate-millions-of-young-filipinos.html Accessed 8 Dec. 2016.

Figure 6.10: Youth unemployment

Source: World Economic Forum, (2013). *The Challenge of Youth Unemployment*. [online] Available at: http://www3.weforum.org/tools/gac/youth-unemployment-visualization-2013/ Accessed 11 Dec. 2016.

The next case study (Box 6.2) comes from North Africa, an area of the world that, when coupled with the Middle East, has the highest rate of youth unemployment (Figure 6.10).

Earlier the challenge of encouraging women and girls to pursue skills development opportunities in fields where they are traditionally underrepresented was referenced. The final case study (Box 6.3) comes from the United States and Canada, where this challenge is being approached with backing from major tech companies.

Box 6.2: Tunisia

While some people viewed the so-called Arab Spring as a victorious fight for democracy and a better life, for many youths, that reality has not yet materialised. So is the case of Tunisia, where youth unemployment for people under 30 is a staggering 30%, and countless young women and rural inhabitants in particular have gone many months and even years without a professional placement[a].

In a collaboration between civil society organizations (PRO-INVEST, Edupartage, Silatech) and the private sector (Tunisiana), two services to support Tunisian youth with their skills development needs and job search hopes were launched, Najja7ni m-English and Najja7ni Employment, in 2011 and 2013, respectively.

Najja7ni m-English is promoted as a low-cost way for youth to improve their English language abilities to increase their chances of obtaining a good job, and without the expense associated with hiring a tutor. The service uses USSD technology and users can use short codes to initiate access.

When launched (also using USSD technology), Najja7ni Employment was the first youth skills development service of its kind in North Africa.

Young Tunisian woman tells her friend about the Najja7ni service for the first time

Photo credits: Tunisiana. (2013). *300,000 customers using Najja7ni in one month!* Available at: https://www.youtube.com/watch?v=oDsN27ZKzxg

The service provides access to information on entrepreneurship, available skills development opportunities, and even the possibility for job matching, all on basic handsets and without the need for Internet service.
With carefully planned targeting, outreach and marketing efforts to youth, especially young women (see photo above), and people living in rural areas, as of February 2014 Najja7ni Employment has reached over 1 million Tunisians[b].

Notes: [a] Atkinson, S. (2013). Revolution brings no job hopes for Tunisia's women. *BBC News*, [online] 11 December. Available at: www.bbc.com/news/business-25262847 Accessed 8 Dec. 2016. [b] GSMA. (2014). *Najja7ni: Mobile learning services for improving education, English language skills and employment opportunities in Tunisia*. Available at: www.gsma.com/connectedliving/wp-content/uploads/2014/02/2013-2014-Q4-Tunisiana-Najja7ni-services.pdf Accessed 9 Dec. 2016.

Box 6.3: United States and Canada

The women in global science and technology (wisat) completed a national assessment on science, technology and innovation that found that even in a G8 country such as the United States, women remain underrepresented in STEM fields, and among six countries the US ranks the lowest in enabling policy environments to support women in STEM fields[a]. It is thought that if this situation continues, it will have long-term negative or depressed impact on the employment sector.

Technovation[b] is one organisation working to change this. With backing from Twitter, Google, and DropBox, among others, Technovation gathers girls ages 10-23 from around the globe (primarily from the United States, where the programme originated, and Canada; a total of 1,300+ girls from 38 countries in 2014) to stimulate their confidence and interest in the science, technology, engineering and mathematics subject areas.

A team of girls build their mobile prototype using Android App Inventor

Photo credits: Technovation. (2009). Available at: https://googleblog.blogspot.co.uk/2011/05/future-female-engineers-come-together.html

Adopting curriculum standards developed by the International Society for Technology in Education, girls, working with female mentors who are established in a STEM profession, complete free, intensive 12-week course that focuses on mobile app development to help solve local community issues, including educational challenges, among others. No prior coding experience is required. At the end of the course, teams compete for the best app, with the team with the winning app being awarded a cash prize.

Technovation Challenge finalists selected to pitch in San Francisco, CA in June 2015

Photo credits: Opportunity Desk. (2015). Available at: http://opportunitydesk.org/2015/05/24/technovation-challenge-finalists-selected-to-pitch-in-san-francisco/.

Yet all participants are indeed winners since they gain sought-after skills in a well-paid area, have networking opportunities with some of the top STEM companies in the world, and between 2010-2013, 94% of more than 800 graduates of the programme have expressed an interest in a technology career.

Notes: [a] WISAT and OWSD. *Gender Equality in the Knowledge Society: National Assessments in STI*. [pdf] Available at: http://wisat.org/data/documents/GEKS_KeyFindings_onepage-Feb13.pdf Accessed 9 Dec. 2016.
[b] www.technovationchallenge.org/home/

Conclusion and recommendations

Lifelong mobile learning for skills development is showing potential to complement existing efforts to help people in low- and middle-income contexts gain the skills they need to realise the personal and professional goals they have. As the case studies have shown, there are strong challenges for youth, rural inhabitants, and women and girls who wish to develop skills across a spectrum of areas.

To help people address these challenges, it is recommended that:

1. Governments prioritise experimentation with innovative methods to facilitate skills development opportunities for people in low- and middle-income contexts. Digital literacy skills that can be gained through LmL4SD can serve to supplement the skills learned with mobile devices.

2. Ensure that outreach efforts of government, private sector, and civil society organisations are coherent yet adapted for the people you are trying to reach. Awareness-raising activities are key. The best structured programme will not benefit target groups regardless of their age, location, or language if they do not know they exist or do not think the programme or service is for them.

3. Partnerships for skills development are a must when working in low- and middle-income contexts for lifelong mobile learning for skills development. Governments, the private sector, and civil society organisations all have areas of expertise, strengths, and limited resources that will be amplified by working with partners who share and commit to similar goals. Especially when applying a top-down approach, the work of CSOs becomes crucial in making sure LmL4SD efforts reach the intended recipients.

4. See everyone as a potential beneficiary of lifelong mobile learning for skills development. Learners of every age, gender, location and culture ultimately have the desire for self-improvement. Skills development is one way to do that, and mobile learning is one medium that can help facilitate this development.

Endnotes

1 In this article, low- and middle-income "contexts" is not synonymous with low- and middle-income "countries" in acknowledgement that both developed and developing countries contain areas where low- and middle-income households can be found.

2 GSMA Intelligence. (2014). Available at: https://gsmaintelligence.com/ Accessed 8 Dec. 2016

3 GSMA. (2014). *GSMA and Facebook announce joint initiative to connect the unconnected*, [online] 25 February. Available at: http://www.gsma.com/newsroom/press-release/gsma-and-facebook-announce/ Accessed 8 Dec. 2016.

4 UNESCO. (2016). *ICT Applications for Non-Formal Education*. [online] Available at: http://www.unesco.org/new/en/unesco/themes/icts/lifelong-learning/non-formal-education/ Accessed 8 Dec. 2016.

5 Commission of the European Communities. (2001). *Communication from the Commission. Making a European Area of Lifelong Learning a Reality*, [pdf] p.9. Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2001:0678:FIN:EN:PDF Accessed 8 Dec. 2016.

6 Sharples, et al. (2009). Mobile Learning: Small devices, big issues. In: Balacheff, N., Ludvigsen, S., Jong, T. de and Barnes, S., eds., *Technology Enhanced Learning: Principles and Products.* Heidelberg: Springer, pp. 233–249. Available at: https://www.researchgate.net/publication/44909945_Mobile_Learning_Small_Devices_Big_Issues Accessed 8 Dec. 2016.

7 World Bank. (2010). *Stepping up skills for more jobs and higher productivity*. Washington, D.C.: International Bank for Reconstruction and Development/The World Bank. Available at: http://documents.worldbank.org/curated/en/2010/06/12515032/stepping-up-skills-more-jobs-higher-productivity Accessed 8 Dec. 2016.

8 OECD. (2012). *Better Skills, Better Jobs, Better Lives: A Strategic Approach to Skills Policies*. OECD Publishing, p.3. Available at: http://dx.doi.org/10.1787/9789264177338-en Accessed 8 Dec. 2016.

9 ILO. (2013). *Global employment trends 2013: Recovering from a second jobs dip*. Geneva: International Labour Office. Available at: www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_202326.pdf Accessed 8 Dec. 2016.

10 Ibid.

11 OECD. (2012). *Better Skills, Better Jobs, Better Lives: A Strategic Approach to Skills Policies*. OECD Publishing, p.3. Available at: http://dx.doi.org/10.1787/9789264177338-en Accessed 8 Dec. 2016.

12 GSMA Mobile for Employment. (2013). *Mobile Services for Youth Employment*. Available at: www.gsma.com/mobilefordevelopment/wp-content/uploads/2013/07/Mobile-Services-for-Youth-Employment.pdf Accessed 8 Dec. 2016.

13 ILO. (2010). *A Skilled Workforce for Strong, Sustainable and Balanced Growth: A G20 Training Strategy*. Geneva: International Labour Office. Available at: www.skillsforemployment.org/wcmstest4/groups/skills/documents/skpcontent/mwdf/mdix/~edisp/fm11g_021626.pdf Accessed 8 Dec. 2016.