



mEducation



GSMA mEducation Toolkit

GSMA mEducation: www.gsma.com/connectedliving/meducation

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Introduction to mEducation

The Education Landscape



- Increasingly, societies and individuals around the world are recognising that investment in education is an investment in their future growth and economic prosperity.
- Economic globalisation, demographic change and rapid innovation and adoption of technology are among many global trends driving demand for education in both developed and emerging economies.
- In most OECD countries, annual public expenditure on education represents between 4% and 5% of GDP.



The Education Landscape (cont.)



- Global education IT spend was \$64.15 billion in 2010, achieving 2.5% annual growth even after the financial crisis, according to Gartner research¹.
- The growing adoption of smartphones, tablets, portable gaming machines and other handheld devices by individuals is building a potentially compelling learning platform that could be harnessed by a significant proportion of the education market.
- Mobile connectivity provides the opportunity to offer new ways of teaching and learning that are cost-effective and can create programmes of education that can be better personalised to the needs and location of the individual, thereby improving the educational experience and outcomes.



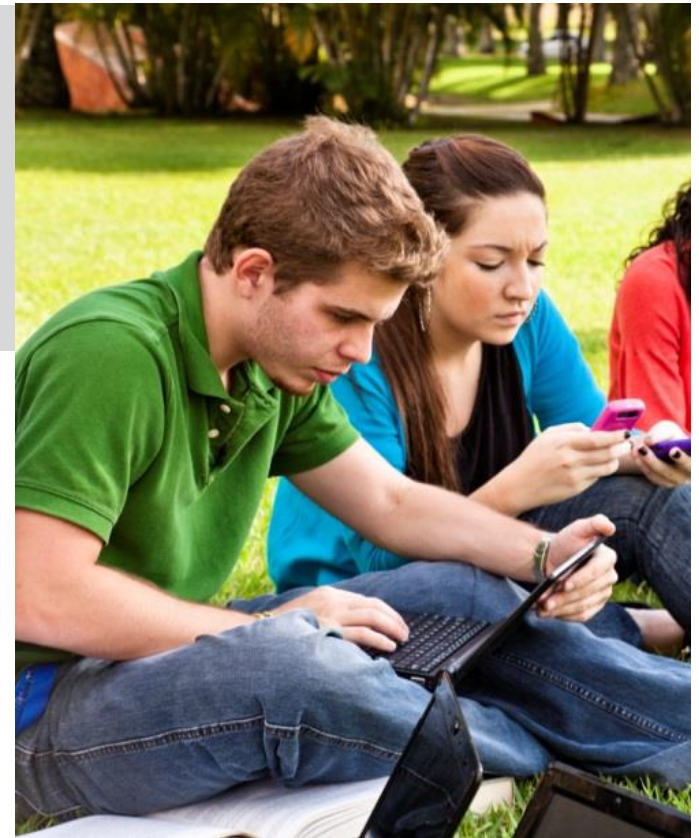
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What is mEducation?

mEducation is the application of mobile devices & services, connected to mobile networks, in any education process, including teaching & learning, assessment and administration.

mEducation can be:

- Formal, non formal or informal
- Collaborative or individual
- Self guided or facilitated
- Private or public funded
- Available at any time, in any place on any mobile device
- Relevant throughout a person's lifetime



“mEducation has the potential to transform any education experience”

What are the benefits of mEducation?



Accessible

Simplifies access to education resources and experts. Overcomes traditional constraints of time and space.

- mEducation is highly scalable; once created, learning material can be accessed by many.
- Students not able to physically be in class can access live or recorded lectures and other supportive resources such as tutors or tests.
- Teachers can access, create and co-create on-line courses or learning objects.
- Adults wanting to up-skill can learn when convenient and at their own pace.
- Concepts such as the Flipped classroom and 'just in time' learning becomes a practical reality

Personal

Personalises the education experience for learners by offering flexibility and a tailored learning experience.

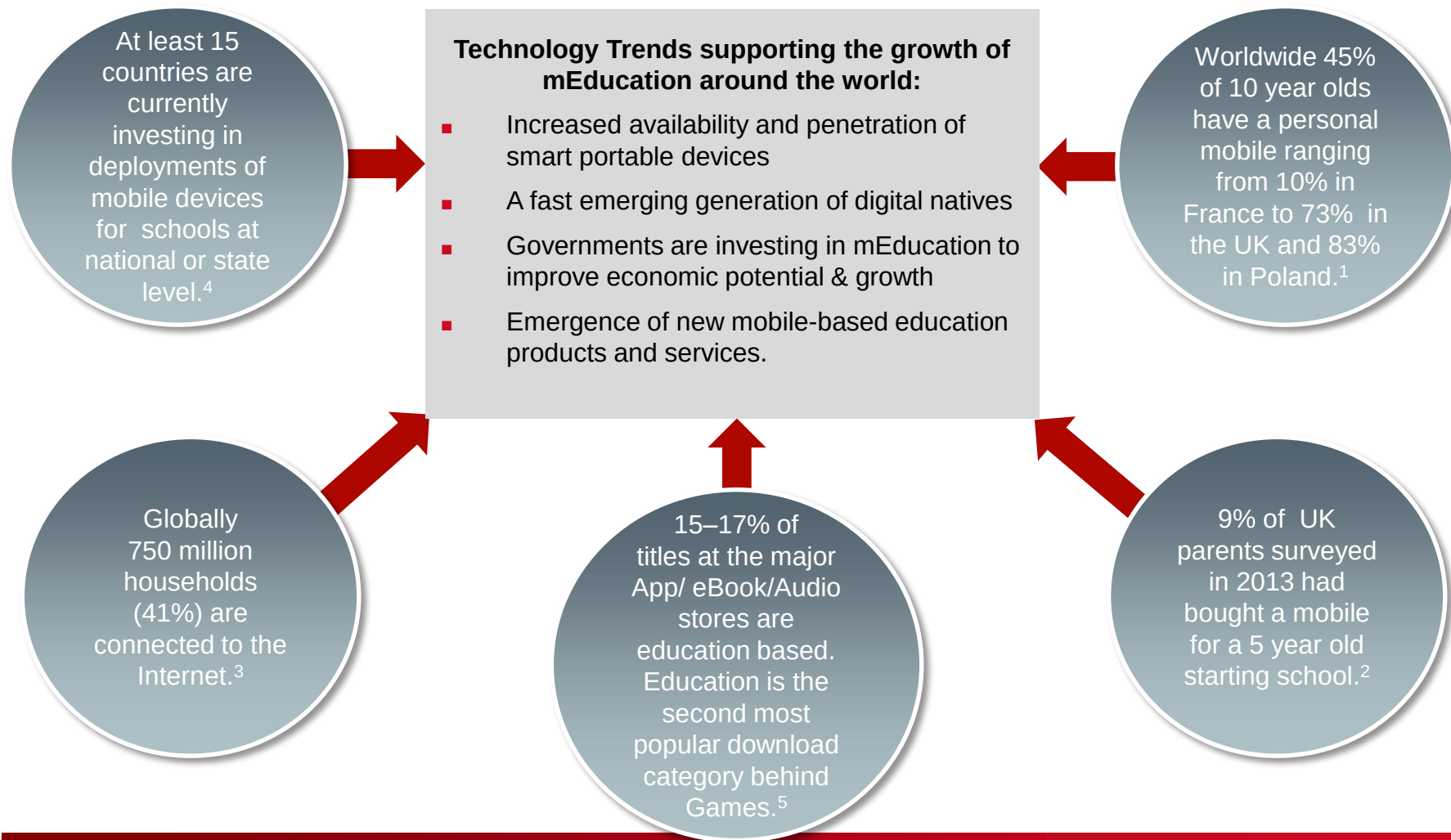
- Complete flexibility in use of time & space, enabling us to rethink the way education is delivered and received
- Content type and modality of learning can be specified according to the student's learning style
- Real time data allows Teachers / coaches to make high quality decisions.
- Education insights from Big Data: Identify trends, test new ideas, conduct root cause analysis etc.

Efficient

Promotes efficiency and cost savings by automating processes in education systems.

- Teaching & learning - voting, reminders, reinforcement and assessment. 21st Century skills such as collaboration & communication.
- Improved security such as access to buildings & single sign on to IT systems.
- Automated and secure financial transactions for students and parents e.g. mobile money.
- Automated recording of attendance & trigger of absence actions e.g. via NFC.
- Communications, such as in-school, safety messages and to parents.

There are a number of technology trends which are supporting the development of mEducation today



mEducation services can be applied across a wide range of teaching and learning scenarios



	Schools	Higher Education	Workplace	Skills & Employment	Lifelong Learning
Formal Learning	Connected Class/School Out-of-school Education Teacher Training	Connected Lecture Halls / University Distance Education	Compliance Training & Assessment Workforce Development	Vocational Training MOOC	Distance Learning MOOC Badges
	Collaborative Learning Assessment, Electronic Certificate wallet Secure Access , Registration, financial systems Communication systems				
Non Formal Learning	Supplemental Learning Distance Tutoring Exam Preparation	Distance Tutoring Exam Preparation MOOC	Enterprise University	Career Information Job Search Expert Gateways	Clubs/Communities Knowledge Acquisition e.g. Search & MOOC Crowdsourcing Platform
Informal Learning	Secure Social Spaces	eBooks MOOC	Intranet based social / Community Platforms	Employment Clubs	Social Media Rich Communication Services Community Platforms

Definitions:

Formal Learning: Education and lessons to achieve qualification e.g. school, university, college, professional certification

Non Formal Learning: For example, activities supporting formal education, personal studies, hobbies

Informal Learning: Reading, observing, listening, conversing, daily life

MOOC: Massive Open Online Course

System Automation: Services which increase efficiency in the administration of education and learning



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mEducation Market Forecasts and Trends

Africa

Overview of the market - Africa



- Africa has the highest mobile learning growth rate in the world. The five-year compound annual growth rate (CAGR) for the mobile learning market in Africa is 38.9%.
- Consumers are driving the current market, with academic buyers close behind.
- Report covers revenue forecasts for: Algeria Angola Ghana Kenya Mozambique Nigeria Rwanda Senegal South Africa Tanzania Tunisia Uganda Zambia Zimbabwe.
- Seven of the fourteen countries analysed in this region have growth rates above the 38.9% aggregate rate.
- Several countries in Africa have mobile penetration rates over 100% including: Algeria, Ghana, Morocco, Senegal, South Africa, and Tunisia.
- Africa is not a single cohesive market. There are 56 countries in Africa with over 1,500 spoken languages. Suppliers that compete in the region must market products to specific countries and to particular demographics inside each country.

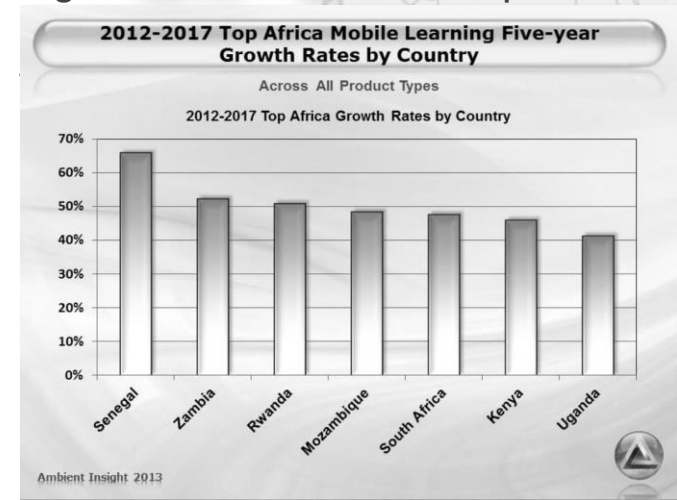
Overview of the market continued - Africa



- Unlike other regions of the world where many mobile operators have closed down their app stores, they are still opening new app stores in Africa—the most recent being MTN's app store in Nigeria, which opened in July 2013.
- Consumers buy educational apps and subscribe to mobile learning value-added services (VAS) products. Academic institutions are just starting to adopt mobile learning. By 2017, the expenditures made by the combined academic segments (PreK-12 and

higher education) will be on par with consumers spending.

- In the 2012 market, private academic institutions were more likely than public institutions to purchase mobile learning products. This will change over the forecast period as major digitization and tablet adoption efforts



Prominent themes in the region - Africa



- Mobile learning VAS Literacy exam prep (also known as exam revision) - Healthcare and Agricultural education content are the top mobile learning VAS products in Africa.
- The adoption of tablets and personal learning devices (PLDs) in the schools.
- The availability of low-cost smartphones and fast networks.
- Direct carrier billing for app purchases in vendor app stores.
- The leapfrog effect - Mobile devices are the primary computing devices used by large percentages of the population.
- Early childhood learning and language learning apps - Strong consumer demand in most African countries. Brain training apps are popular in several African countries analysed in this report.
- PLDs - Increasingly popular in Africa. Very few PLD suppliers develop their own digital content. Most of the personal learning device suppliers collaborate with third-party education publishers for content.
- Custom content development services - Significant demand in the region, particularly in the public and private academic segments.

***Note of Interest*:** The unique app buying behaviours in each country. No two countries analysed in this report

Further details on themes - Africa



Mobile learning VAS

By July 2013, there were 44 mobile learning VAS products in Africa.

Highest: Kenya - 8 South Africa - 5

The mobile operators partner with content providers and have become a lucrative distribution channel for digital education content publishers. Over 35 of these mobile operators are identified in this report.



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The adoption of tablets and PLDs

- Both the PreK-12 and higher education segments across Africa are just beginning to use mobile devices in the classroom.
- There were hundreds of small-scale initiatives as of the end of 2012.
- By the end of the forecast period, tablets will be a major distribution channel for educational content suppliers competing in Africa.
- Tablet adoption is also gaining traction in the higher education segments in Africa.
- PLDs are becoming popular in Africa with domestic suppliers selling PLDs preloaded with content designed for particular countries.



The leapfrog effect

- Mobile devices are now the primary computing devices used by consumers in many countries in Africa.
- Mobile users in African countries are quite advanced in the use of mobile technology for a variety of things that are still quite rare in developed economies.
- Large rural populations across Africa are now avid users of mobile learning technology, while relatively few have experienced self-paced eLearning on a PC.
- Six of the fourteen countries analysed in this report had mobile penetration rates over 100% by the end of 2012. By the end of 2013, three more countries will also have over 100%.
- By the end of 2012, four countries in Africa (Kenya, Uganda, Tanzania, and Mozambique) were spending more on mobile learning than on self-paced learning.



Government engagement in mEducation - Africa



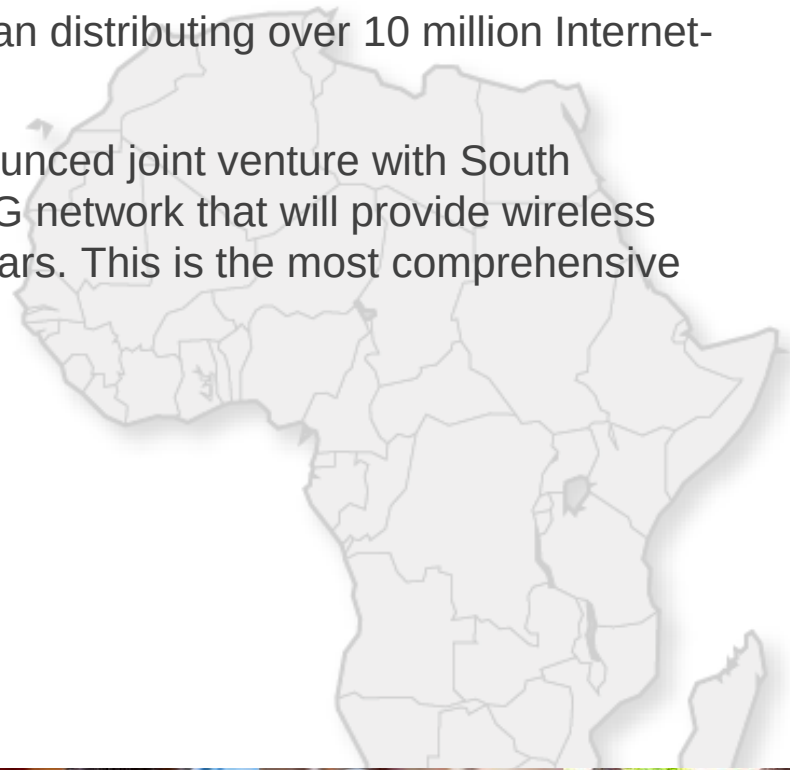
- In October 2012, Microsoft announced an agreement with the Kenyan government and Indigo Telecom to supply 2,000 tablets preloaded with educational content to rural Kenyan schools.
- In June 2013, the governor of Osun State in Nigeria announced the Opon-imo (tablet of knowledge) program that will distribute tablets to every secondary student in the state. The first phase will deploy 150,000 tablets preloaded with an e-library of 63 eTextbooks, a virtual classroom, and an integrated test zone.
- In June 2013, the government in Gauteng, South Africa announced that they would distribute 88,000 Huawei tablets to 2,200 schools in the province by January 2014. In June 2013, the Kenyan government announced a four-year \$622 million project to provide computing devices to every primary and secondary student in the country.



Government engagement in mEducation continued - Africa



- In January 2013, the Nigerian government began distributing over 10 million Internet-enabled phones to farmers in the country.
- In June 2013, the government of Rwanda announced joint venture with South Korea's KT Corporation to build a nationwide 4G network that will provide wireless broadband to 95% of the population in three years. This is the most comprehensive roll out of 4G in Africa.



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Regional examples of mEducation - Africa



- Mxit is the largest social network in South Africa. Mxit is also a native mobile platform. By October 2012, Mxit had over five million subscribers to their new educational content catalogue, with 600,000 subscribing to the eight exam revision applications.
- Apple opened app stores in sixteen African countries in the last two years including Algeria, Angola, Ghana, Mozambique, Nigeria, Tanzania and Zimbabwe.
- Nokia continues to roll out their Nokia Life mobile learning VAS across Africa. Nokia Life, already available in Uganda and Nigeria, launched in Kenya in early 2013.
- In April 2013, Bharti Airtel, the region's largest telecom, announced that they would make Nokia Life available in fifteen additional countries in Africa including Ghana, Rwanda, Tanzania and Zambia.



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Regional examples of mEducation - Africa



- In December 2012, Microsoft opened twenty app stores across Africa including Angola, Kenya, Mozambique, Rwanda, Senegal, Tanzania, Uganda, Zambia and Zimbabwe.
- The BlackBerry World app store is now available in 37 African countries. BlackBerry has taken an active role in supporting the local development of apps in Africa. As of January 2013, there were over 80 universities and colleges participating in the BlackBerry Academic Program (BAP).
- IT School Innovation (ITSI) is a South African mobile learning supplier serving the PreK-12 segment. ITSI has a deal with Samsung and the ITSI MobiMath, MobiWord and MobiSpeed apps were preloaded on over three million Samsung devices in 2012.
- In March 2013, Vodacom reported that they sold 1.6 million smartphones in 2012, a 30% increase from the year before. In May 2013, they reported that they had over 6 million smartphones on their network in South Africa, which is 80% of all smartphones in use in that country.



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mEducation Market Forecasts and Trends

Latin America

Overview of the market - Latin America



- The growth rate for mobile learning products and services in Latin America is 32.5%, the second highest regional growth rate in the world after Africa.
- Revenue forecasts in this report are broken out for fifteen countries in Latin America:

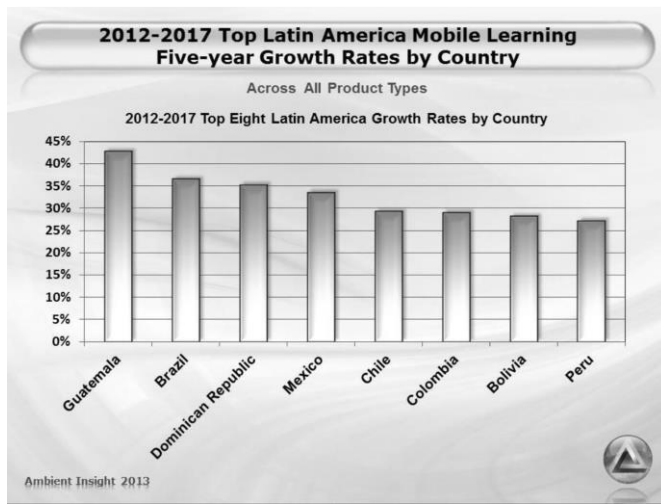
Argentina
Bolivia
Brazil
Chile
Colombia
Costa Rica
The Dominican Republic
Ecuador

Guatemala
Mexico
Panama
Paraguay
Peru
Uruguay
Venezuela

Overview of the market continued - Latin America



- **Top four growth rates for 2012:**
 - Guatemala: 42.8%
 - Brazil, 36.5%
 - The Dominican Republic: 35.3%
 - Mexico: 33.6%



- **Top buying countries in 2012 for revenue:**

Brazil
Mexico
Argentina
Colombia
Venezuela.

- **Top buying countries for 2017 for revenue:**

Brazil
Mexico
Colombia
Guatemala
Argentina

Prominent themes in the region - Latin America



- **Mobile learning value-added services** products that are now generating millions in new revenues each year for suppliers operating in this region.
- **The large-scale adoption of smartphones and tablets** connected to wireless broadband creates an advanced delivery channel for mobile learning suppliers, particularly in the consumer and academic segments.
- **Leapfrog effect** with a user being exposed to the Internet and learning content for the first time not on a PC, but on a mobile device.
- **Packaged content** will generate the highest revenues.

**Note of Interest* The unique app buying behaviours in each country.
No two countries analysed in this report exhibit the same consumer buying patterns.*



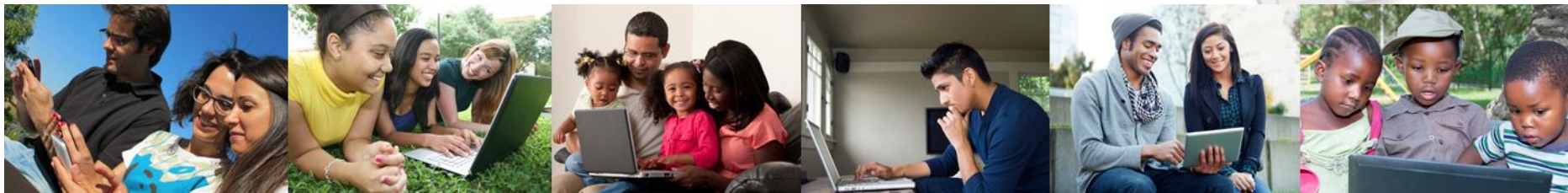
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Further details on themes - Latin America



Mobile learning value-added services products

- These are now generating millions in new revenues each year for suppliers operating in this region. Mobile learning value-added services (VAS) products account for the second-largest revenues in Latin America. Revenues for mobile learning VAS will more than quadruple over the forecast period.
- As of May 2013, all but three of the fifteen countries analysed in this report have commercial mobile learning VAS products offered by the mobile operators.
- While English language learning is in high demand, there are also mobile learning VAS products for Spanish, Portuguese, French, and Italian in Latin America.
- Mobile operators can take up to 60-80% in royalties leaving their content partners with a small percentage, which is a strong incentive for content suppliers to bypass the mobile operators.



Further details on themes - Latin America



The large-scale adoption of smartphones and tablets

- High-speed networks are rolling out across Latin America at a rapid rate.
- All fifteen countries analysed in this report will have 4G by 2014.
- The device makers have begun to flood the Latin America region with very low cost smartphones.
- Nokia and BlackBerry announced their low-cost smartphones for the region in early 2013.
- Across the region, sales of tablets have doubled in 2011 and 2012. By 2017, there will be over 400 million tablets in use in Latin America.
- Uruguay is the first country in the world to reach a one-to-one student-to-computer ratio and Venezuela is on track to become the second country in the world to achieve this goal by the end of 2013.

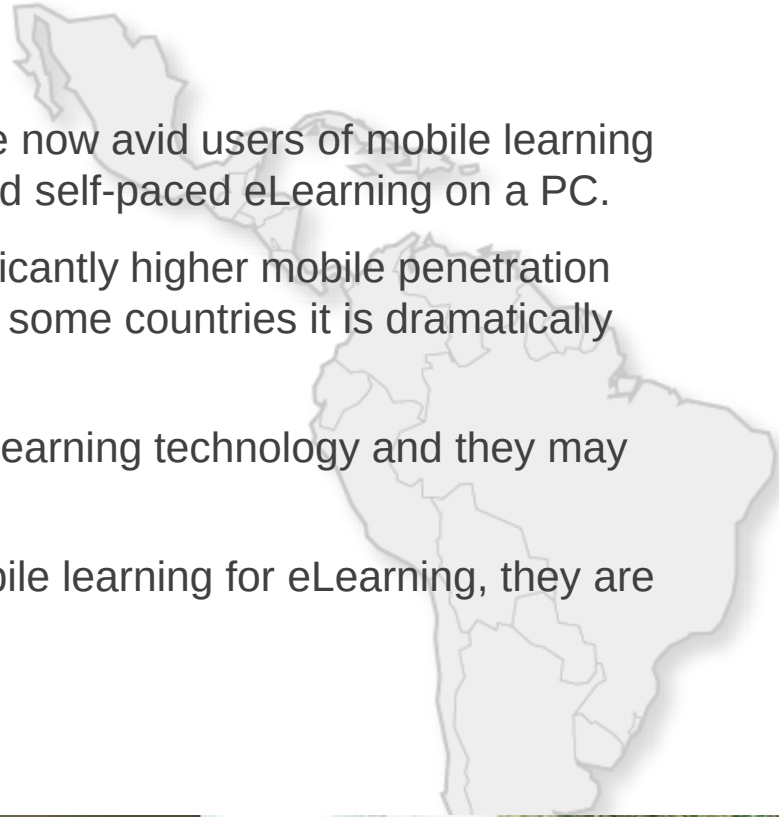


Further details on themes - Latin America



Leapfrog effect

- Large rural populations across Latin America are now avid users of mobile learning technology, while relatively few have experienced self-paced eLearning on a PC.
- May 2013, all 15 countries analysed have significantly higher mobile penetration rates compared to PC-based Internet access. In some countries it is dramatically higher.
- In some cases mobile learning is users primary learning technology and they may never be exposed to other learning products.
- Buyers in Latin America are not substituting mobile learning for eLearning, they are leapfrogging eLearning altogether.



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Further details on themes - Latin America



Packaged content

- In many countries in Latin America, the app ecosystem is relatively new.
- In the space of less than two years, the educational app market across Latin America has exploded.
- The mobile operators have just recently expanded the reach of their app stores in the region.
- The mobile operators have a significant advantage in the developing economies as they offer the **only** electronic payment gateway. As of the end of 2012, up to 60% of consumers in Latin America do not have credit cards.
- Direct carrier billing is also convenient for consumers shopping in third-party stores in developed economies.



Regional examples of mEducation - Latin America



■ Vivo

- In May 2013, Vivo combined all their mobile learning VAS offerings into a bundle called the Digital Communication for Mobile Education Services platform.
- Vivo claims to have six million active users that pay the equivalent of \$1.40 a week to access a wide range of educational content, health information, and career advice via SMS messages.

■ Telefónica

- Operates in twelve of the fifteen countries analysed in this report and has over 212 million subscribers in the region.
- In 2012, Telefónica announced direct billing agreements with Microsoft, Facebook, and RIM (now rebranded as BlackBerry). In May 2013, they announced a global direct billing agreement with Samsung.
- Telefónica's deal with Samsung allows subscribers to make purchases in Samsung's Learning Hub store (a dedicated educational content store) and be billed directly by Telefónica.

Regional examples of mEducation - Latin America



■ **Nokia**

- In June 2013, Nokia announced a direct billing agreement with América Móvil allowing customers to buy mobile apps from the international Nokia Store without a credit card. The agreement provides direct billing to subscribers across all fifteen countries analysed in this report.

■ **Uruguay**

- Using One Laptop per Child (OLPC) XO devices and as they replace the older machines, they could opt to use the new XO4 device, which is a tablet.

■ **Venezuela**

- Manufactures their own laptops (and most of their own content) for the schools and just updated their open source operating system to support tablets.

■ **LG, Sony, ZTE, Alcatel One Touch, and Huawei**

- Announced in February 2013 that they would build inexpensive smartphones on Mozilla's new mobile operating system. The first Mozilla Firefox smartphones launched in Latin America in June 2013 in Brazil, Colombia, Mexico, and Venezuela.



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mEducation Market Forecasts and Trends

Asia

Overview of the market - Asia



- Asia will generate the highest revenues for mobile learning on the planet throughout the forecast period.
- It has the third highest growth rate at 21.2% (after Africa and Latin America).
- Mobile learning revenues in Asia reached \$2.6 billion in 2012 and will reach \$6.8 billion by 2017.
- Forecasts for twenty countries are included in this Asia report:

Australia	Nepal
Bangladesh	New Zealand
Cambodia	Pakistan
China (including Hong Kong and Macao)	The Philippines
India	Singapore
Indonesia	South Korea
Japan	Sri Lanka
Laos	Taiwan
Malaysia	Thailand
Mongolia	Vietnam.

Overview of the market continued - Asia



- In the 2012 market the top buyers were:
 - **Japan**
 - **South Korea**
 - **China**
- By 2017, China will be the top buyer followed by India and Indonesia.
- Malaysia has the highest growth rate in the region at a breath-taking 57.5%, followed by Thailand and Vietnam at 56.0% and 49.9%, respectively.
- Thirteen countries in Asia have mobile learning growth rates above the combined aggregate growth rate of 21.2% in the region.
- Main trends in this region have created a massive demand for mobile learning content in Asia on a scale previously seen only in North America.
- By as early as 2013, Asia will overtake North America as the top buying region for mobile learning content.

Prominent themes in the region - Asia



1. **Mobile learning value-added services (VAS) products.** These are now generating hundreds of millions of new revenues each year for suppliers.
2. **Investments by the device makers and mobile operators in the industry.** They are major innovators in all the countries analysed in Ambient's report.
3. **Large-scale deployment of Internet-connected tablets** in the academic segments and the uptake of personal learning devices (PLDs) in the consumer segments.
4. **Adoption of "smart" mobile devices** connected to wireless broadband.
5. **The activities of the mobile operators in this region.**

**Note of Interest* The unique app buying behaviours in each country.
No two countries analysed in this report exhibit the same consumer buying patterns.*



Mobile learning value-added services.

- The device makers and mobile operators initially launched mobile learning VAS products in developing economies in Asia in 2008 and are now expanding into the developed economies.
- All of the top mobile operators in India have launched mobile learning VAS products in the last four years. Combined, they have a potential customer base of over 500 million subscribers.
- As of February 2013, Asia had 99 mobile learning VAS products, more than any other region and 45% of all mobile learning VAS products on the global market.
- In Asia, India had the most with 37 products on the market, followed by China at eight, and South Korea and the Philippines with six each.

**Note*: Not all mobile learning VAS suppliers are device makers or mobile operators. Depending on the country and the business relationship between the content supplier and the telecom, the mobile operators can take up to 80% of sales (particularly in India)*

Further details on themes - Asia



Investments by the device makers and mobile operators in the industry

- Device makers and mobile operators are major innovators in all the countries analysed in the Ambient Asia report.
 - In some countries, they are the only major suppliers.
- Device makers and mobile operators in Asia offer significant partnering opportunities for content and services suppliers.
- Device makers are making substantial investments in product development and localized content distribution. They offer third-party services and content suppliers significant revenue opportunities in specific countries.
- Nokia, Samsung, Apple, LG, and Nintendo are important players in Asia's mobile learning markets. Each contributes to the industry in different ways. The one thing they have in common is that they are all distribution channels for third party learning content suppliers.

Large-scale deployment of Internet-connected tablets

- PLDs have been popular in the developed economies in Asia for over a decade. The products are now gaining traction in the less developed economies in Asia.
- The largest national deployments of tablets in Asia are in South Korea, Thailand, Malaysia and Singapore.
- It is common in Asia for general-purpose device makers to partner with educational publishers and offer education bundles with digital content preloaded on general-purpose tablets.



Adoption of "smart" mobile devices

- Large rural populations across Asia are now avid users of mobile learning technology, while very few have experienced self-paced eLearning on a PC.
- In developing economies, PC penetration is often low, yet mobile subscriptions are quite high. mobile learning suppliers are targeting the mobile device as the delivery platform of choice in those economies.
- By 2017, ten countries in Asia will be spending more on mobile learning than on eLearning: India, Laos, Nepal, Malaysia, Indonesia, Cambodia, Pakistan, Bangladesh, Sri Lanka and Thailand.
- Device makers are flooding the markets in developing countries with inexpensive smartphones. 4G networks are rolling out across Asia. As of December 2012, half of the twenty countries analysed in this report had operational 4G networks.



The activities of the mobile operators

- The mobile operators are major players in the mobile content markets in most countries in the region.
 - They are the top mobile learning competitors in several Asian countries.
- In developing economies, the mobile operators are first to market in the academic segments as they roll out Internet connectivity to the schools, often under a government contract.
- Once in, they are the first point of contact for academic learning technology buyers. They have the customer relationship with the schools.



Regional examples of mEducation - Asia



■ Nokia

- Nokia has been promoting mobile learning in the region since the launch of their Mobiledu product in China in 2007.

■ Samsung

- February 2013 - Piloted their new Smart School Platform in schools in 24 countries. The most advanced projects include schools in South Korea and in Australia. Their primary content partner is US-based Houghton Mifflin Harcourt.

■ Nintendo

- Greatly expanded the buying demographic for mobile edugames by encouraging developers to design games on a range of topics including early childhood learning, language learning, yoga training, music, test prep, cooking, general academic topics, and, more recently, art instruction.



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mEducation Market Forecasts and Trends

Middle East

Overview of the market - Middle East



- The revenues for mobile learning products in the Middle East reached \$88.3 million in 2012.
- The growth rate is 18.4% and revenues will more than double to \$205.4 million by 2016. The largest buyers in the region are consumers, followed by academic buyers.
- This is a regional report with revenue forecasts broken out for twelve countries:

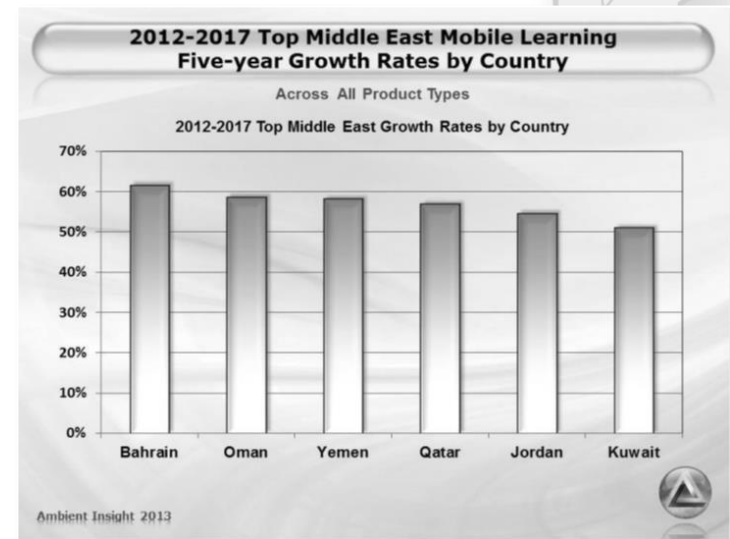
Bahrain	Oman
Egypt	Qatar
Israel	Saudi Arabia
Jordan	Turkey
Kuwait	The United Arab Emirates (UAE)
Lebanon	Yemen.

Overview of the market continued - Middle East



- The growth rates in nine of these twelve countries are significantly higher than the aggregate growth rate of 18.4% for the region.
- Six countries have growth rates over 50%. This indicates that the Middle East is still a new mobile learning market with expenditures spiking from relatively small amounts in 2012 to significant amounts by the end of the forecast period.
- In the current market, the two major buying segments across the Middle East are the consumer and academic segments.
- Mobile learning adoption is just starting to expand into the other buying segments, with the highest growth rates in the healthcare and NGO segments.

- The UAE has the highest expatriate population in the region, followed by Qatar, Kuwait and Bahrain.
- The presence of large numbers of people that speak non-native languages is an opportunity for suppliers to offer products in those languages.



Prominent themes in the region - Middle East



1. Mobile learning exceeds eLearning in the Middle East.
2. Consumer demand for mobile learning apps and mobile learning value-added services (VAS) products.
3. Large-scale deployments of tablets in the academic segments
4. Countrywide content digitization efforts across the primary and secondary school systems in the region.
5. The rapid adoption of mobile learning in the higher education segments.



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Mobile learning exceeds eLearning in the Middle East.

- There is a significant "threat of product substitution" in the Middle East, with mobile learning gaining traction at the expense of eLearning.
- Every country in the region had operational 3G networks by the end of 2012 and nine of the countries analysed in this report have launched 4G networks.
- According to the International Telecommunication Union (ITU), the Middle East has some of the highest mobile penetration rates in the world.
 - Of the twelve countries analysed in this report:
 - Mobile penetration rates above 100% = 11 Countries
 - Mobile penetration rates over 150% = 5
 - Kuwait and Oman had mobile Internet penetration rates above 200%.
- In contrast, half of the twelve countries analysed in this report have PC-based Internet penetration rates below 50%. Only two countries (Qatar and Bahrain) have PC-based Internet penetration rates above 75%.

Further details on themes - Middle East



Consumer demand for mobile learning apps and mobile learning VAS products.

- Consumers are now strong buyers of mobile learning apps in every country analysed in this report.
- There are now fourteen mobile learning VAS products on the market across the region. In the current mobile learning market in the region, the mobile operators have a major advantage due to their billing capabilities.
- A major barrier for the wider app store ecosystem in the Middle East is the almost non-existent use of credit cards.
 - Except for Israel, the rest of the Middle East has a credit card ownership rate of 2-3%, according to a May 2012 Gallup-World Bank study.
 - Direct carrier billing is now seen as a way to overcome this barrier.
- Arabic language learning is also in high demand, particularly for young children and expatriates working in the region.



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Further details on themes - Middle East



Consumer demand for mobile learning apps and mobile learning VAS products continued...

- Mobile learning VAS products are also gaining in popularity with consumers. At the end of 2011, there were only three mobile learning VAS products on the market in the region, one each in Jordan, Oman, and the UAE.
- By September 2013, there were fourteen operational mobile learning VAS products across Jordan, Kuwait, Oman, Saudi Arabia, Turkey, and the UAE. Five of the fourteen mobile learning VAS products are in Saudi Arabia, and all of them launched in 2012.
- In Kuwait, Zain's Cloud Campus content is targeted to consumers and includes content across the spectrum from PreK-12 to adult education apps. Over 600 of the apps are English language learning apps. Zain intends to expand the service to their customers in Bahrain, Lebanon, Saudi Arabia, and Jordan.



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Further details on themes - Middle East



Large-scale deployments of tablets in the academic segments

- Countrywide academic content digitization efforts are underway in most of the countries in the region.
- Many of the initiatives in this region are including the provision of tablets on a national scale. This essentially creates a new delivery platform for suppliers.
- In June 2013, the UAE government indicated that they were on track to get all state-run schools equipped with learning platforms by 2015.
 - *The UAE Minister of Education stated in the press that "the UAE has made qualitative leaps in keeping pace with advanced learning technology, establishing a state-of the-art ICT infrastructure in schools, and publishing 7,000 e-lessons and e-contents." Every student in the state-run schools (over 230,000) will be using a personal learning device by 2017.*



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The rapid adoption of mobile learning in the higher education segments

- Most of the higher education institutions in the region have started to offer online courses, some quite recently. These institutions are experiencing a boom in online course enrolments. The majority of the students enrolling in these courses use tablets and smartphones to access the content.
- The Arab Open University (AOU) has seven branches in the region: Kuwait, Saudi Arabia, Egypt, Jordan, Lebanon, Bahrain, and Oman. AOU has physical campuses and offer most of their courses online (in physical labs and over the Internet).
- AOU is a pan-regional higher education institution that makes extensive use of mobile learning in their programs. They are a pioneer of mobile learning in the region launching a content library for Java-enabled phones in 2007. AOU has over 50,000 enrolled students across the region with enrolments rising by over 20% a year.
- Virtual universities (100% online) were quite rare in the region until very recently. Bin Mohammed e-University (HBMeU) launched in 2009 and is the first virtual university in the United Arab Emirates (UAE). HBMeU now creates commercial learning content for mobile learning VAS products sold to consumers.

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- A faint, light gray map of the Middle East is positioned in the background on the right side of the slide, behind the text.
- Major catalyst in the region is government mandates designed to increase English proficiency.
 - This has created a demand for English language learning in the consumer segment as parents try to help their children gain proficiency. English language learning apps are now top sellers in several countries in the region.
 - **Israeli Ministry of Education**
 - In September 2011, indicated their goal was to replace all print-based textbooks with digital books by 2016.
 - The government will not approve any books that do not contain an additional digital format, a policy that took effect in the 2012-2013 school year. This is the first country in the world to establish such a firm eTextbook mandate.
 - **The Qatar government**
 - In September 2012 announced that all the instructional content in public schools would be digital by 2014.
 - "The e-content objective is to provide world-class digital content and related services in all areas of the curriculum in both Arabic and English."

■ The Turkish government

- Now supports four virtual institutions including Anadolu University. Anadolu University was an early adopter of mobile learning and is now a major mobile learning research facility in the region

■ The UAE government

- In September 2012, launched the Federal Higher Education Mobile Learning Initiative in a partnership with Apple.
- Stating "The official launch marked the largest nationwide mobilization of mobile learning in higher education anywhere in the world that places the UAE at the forefront of adopting transformative technologies in education.

■ The Egyptian Government

- In March 2013, The Ministry of Communications and Information Technology (MCIT) and the Ministry of Education announced the five-year National Project for School Development. One of the project's goals is to distribute government-subsidized tablets to **over 20 million** PreK-12 and higher education students by 2018. They had distributed over 10,000 tablets by August 2013.

Regional examples of mEducation - Middle East



■ Nokia, Microsoft, BlackBerry

- Partnered with local app stores to have new direct carrier billing agreements with mobile operators in Jordan, Qatar, and Saudi Arabia.

■ Arabic Learning Apps

- Several new suppliers have launched Arabic learning apps in the region including BeeLabs, AbjadCity, Sacha Books, Weladna and Ketaaby.
- A company called EduKitten develops apps to help the children of expatriates learn Arabic

■ Zain – Kuwait

- In March 2013, launched the Cloud Campus mobile learning VAS in Kuwait with content from UAE-based Hamdan Bin Mohammed e-University (HBMeU).
- The content catalogue had 1,950 mobile learning apps at launch, ***the largest collection of mobile learning content sold via subscription in the world.*** Customers are charged for the service on their monthly phone bill.



mEducation



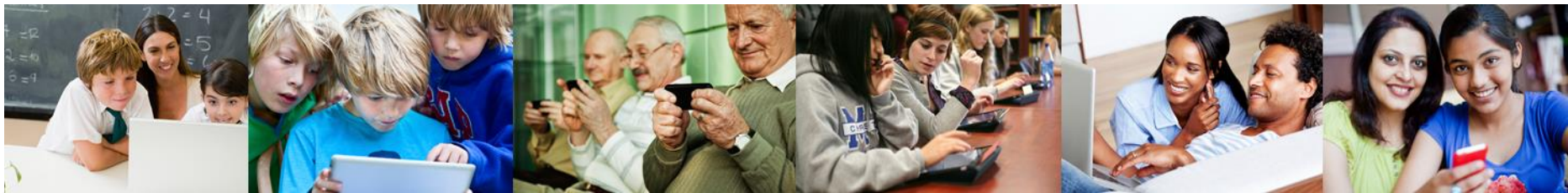
mEducation Market Forecasts and Trends

North America

Overview of the market - North America



- North America has the second largest revenues for mobile learning after Asia.
- The majority of mobile learning revenues in North America are concentrated in the US, yet the growth rates in Canada are significantly higher than in the US.
- The overall growth rate in Canada is 20.8% and the growth rate in the US is 6.1%.
- The US is a mature market: the mobile learning market in the US is over a decade old. Mobile learning adoption is still growing fast in the US, but increased competition and pricing pressures are dampening revenue growth somewhat.
- The revenues for packaged mobile learning content are heavily concentrated in the consumer and healthcare segments in both countries, but the type of content purchased is different in each country.

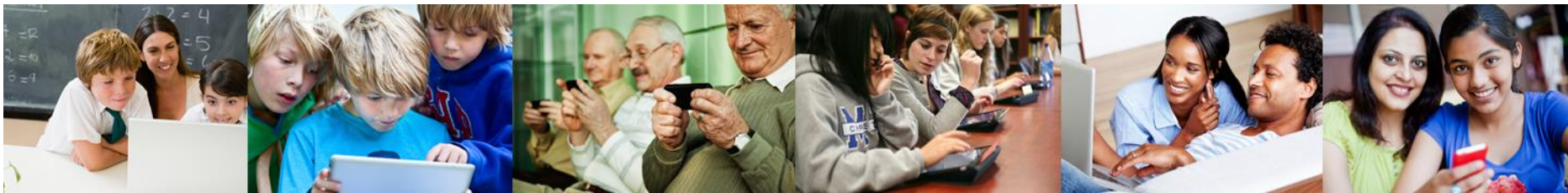


GSMA mEducation Toolkit

Overview of the market continued - North America



- The revenues for mobile learning products in North America reached \$1.4 billion in 2012.
- The compound annual growth rate (CAGR) is 7.6% and revenues will grow to \$2.1 billion by 2017.
- While the growth rate may seem low compared to the other regions in the world, the revenues are very high.
- A modest growth rate in a region with very high revenues means that revenues will remain steady over the forecast period.



GSMA mEducation Toolkit

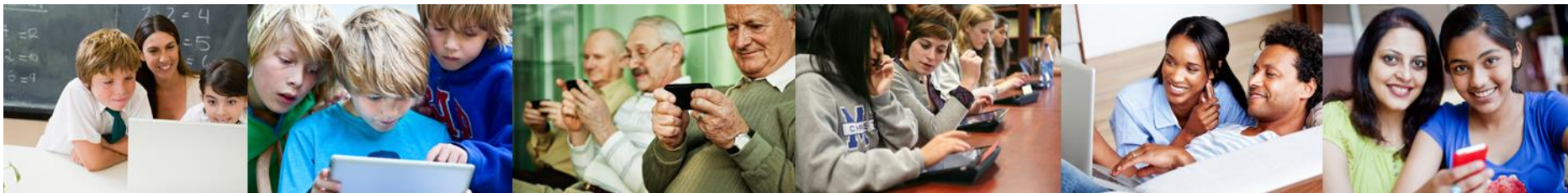
Prominent themes in the region - North America



- Packaged content.
- Personal learning devices in the consumer segments.



****Note of Interest*: There are major differences in buying behaviour between the US and Canada. There is one similarity in both countries and that is the popularity of personal learning devices in the consumer segments.***



Further details on themes - North America



Packaged content

- The revenues for packaged mobile learning content are heavily concentrated in the consumer and healthcare segments in both countries, but the type of content purchased is different in each country. For example:
 - The buying behaviour in the academic segments in either country is quite different.
 - The buying behaviour in the corporate and healthcare segments in the two countries is fundamentally different
- In general, suppliers cannot use US buying behavior patterns as a baseline for doing business in Canada. They are two distinct markets.



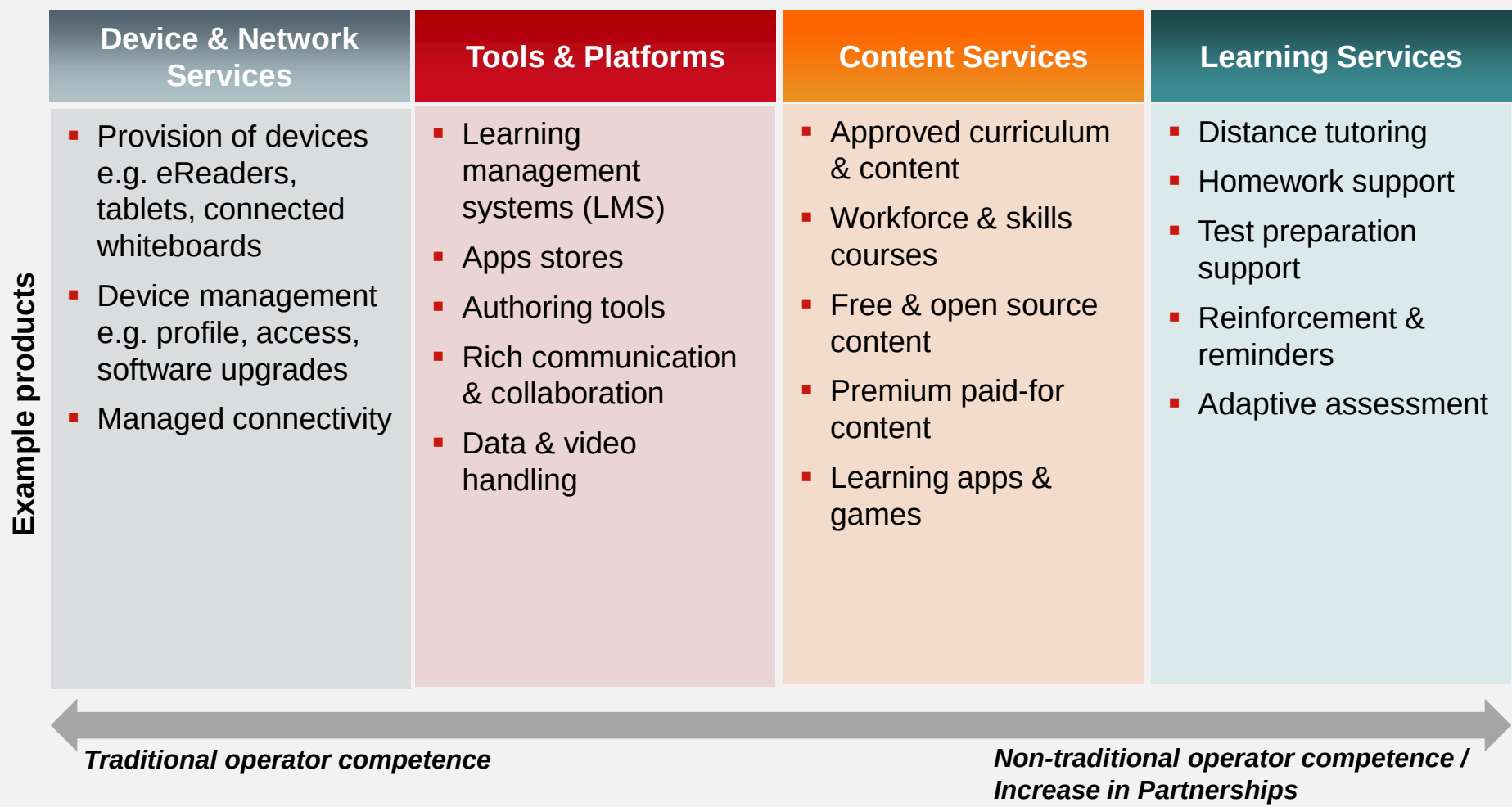


mEducation

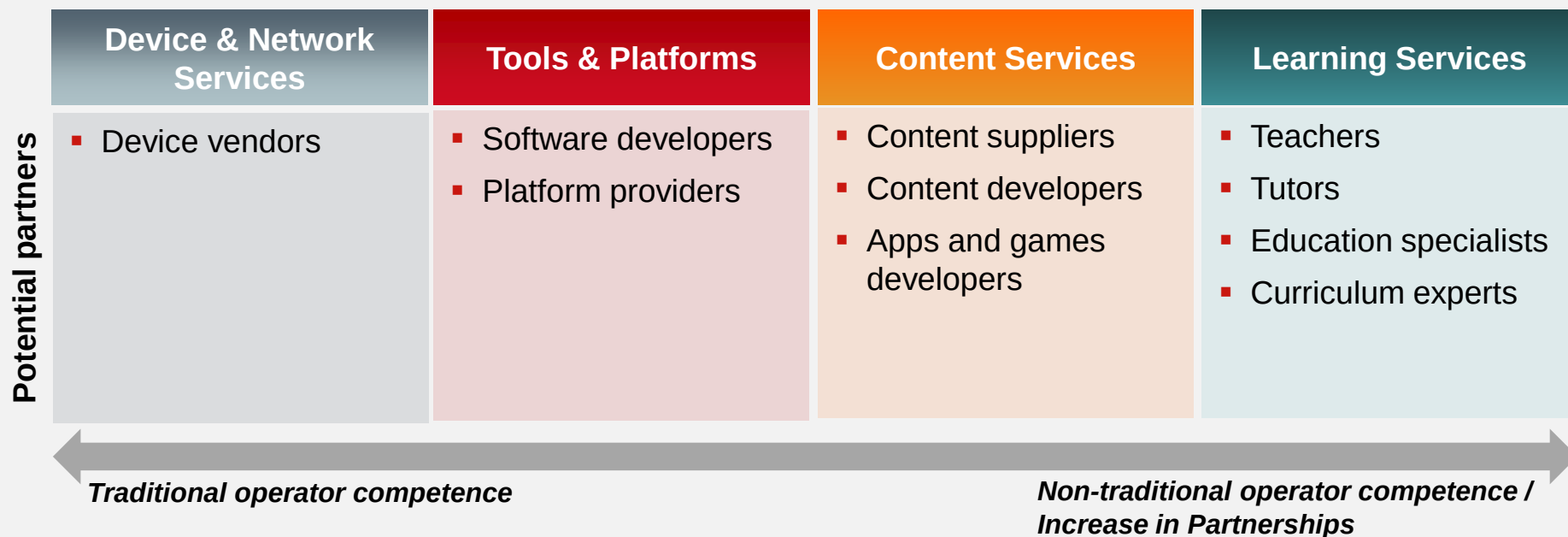


mEducation – Operator Offerings

The mEducation product landscape



Depending on the operator service offering and role, partnerships may be required for service delivery

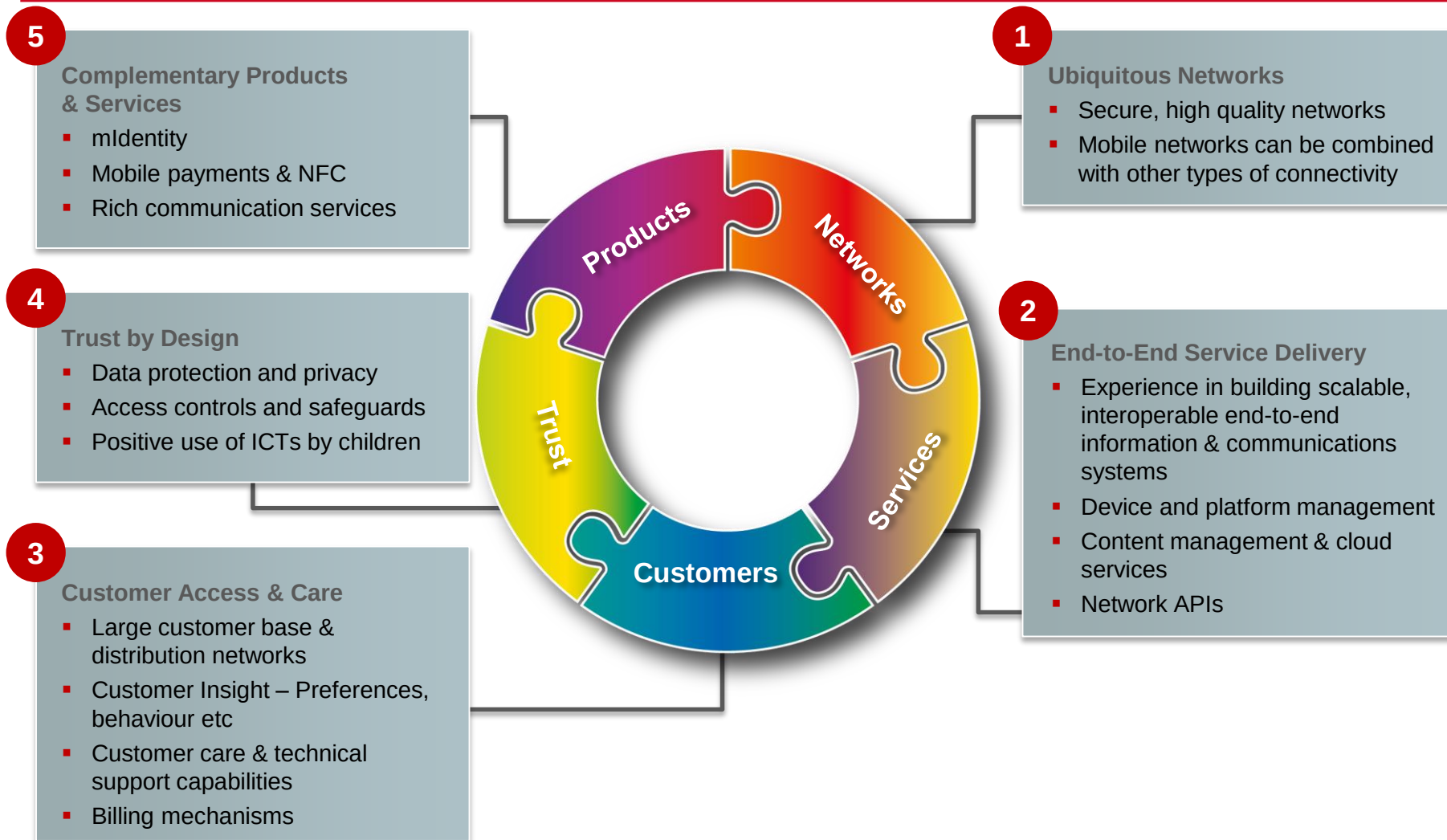


Note: While more traditional services may require fewer partners, this does not necessarily mean that deployments are less complex. For example, device or network provision to a government customer may be as (or more) complex as a learning service targeted at individual customers.

Forms of partnership may include:

- Supplier-purchaser relationship with agreed payments
- Specialist consultancy service provision
- Service partnership agreement with revenue share
- Joint venture

Mobile operators have a number of assets & capabilities which support their mEducation offerings



Mobile operators are uniquely positioned to become key players in mEducation.

Mobile networks are:

Pervasive & Reliable

- Mobile networks are used in 219 countries and territories by more than 3 billion people¹
- GSM technologies also provide travellers with access to mobile services wherever they go – approximately 90% of the world's population are covered by GSM networks
- Mobile operators continue to invest heavily in their networks to build capacity to facilitate content-rich services
 - Global operator capex for LTE technologies is expected to be US\$24 billion in 2013 rising to US\$36 Billion in 2015²

Secure

- When using their mobile devices, users can be assured that the network will recognise them and then route calls made to their phone number correctly
- To do this, the network and the device use encryption algorithms and network generated 'challenges' to the device to make sure the device (and the phone number and associated subscription) that is being registered on to the network is who it says it is
- An inherently high level of security enables mobile networks and devices to be utilised even for sensitive transactions such as mobile payments and legally-binding mobile signatures

Flexible

- Many mobile devices are now also equipped with Wi-Fi connectivity as well as cellular, enabling consumers to use the best (and/or cheapest) connection available at any given time
- For example, students and teachers could make use of Wi-Fi networks within classrooms and their homes, while enjoying seamless connectivity when they leave a building via a mobile broadband network

Device & Platform Management

- Mobile operators have expertise in deploying and managing vast numbers of devices. This includes:
 - Managing device requirements
 - Sourcing and configuration
 - Device rental and insurance schemes
 - Device configuration and content updates
 - Device monitoring and support
- Mobile operators have experience managing large-scale interoperable IT platforms, such as databases that may store learning material, eBooks, student records, ePortfolios and digital lockers

Network APIs

- Mobile operators have the ability to expose APIs to partners or other stakeholders that would enable them to utilise network assets to deliver services to their customers
- For example, Location, Identity and Payment APIs would enable third parties, in secure circumstances, to locate a device, identify a user or process a payment using the operator's existing processes

Content & Cloud Services

- Mobile operators have expertise in delivering and maintaining content in different formats for various device and interaction types; in education, this would ensure that learning materials are compatible with different device types
- Many operators are also experienced in delivering Cloud Services, where the majority of content and data resides remotely in a central system rather than on the device; this is helpful for educational institutions who do not wish to manage large IT systems in-house

End-to-End Solutions & Partnering

- Most mobile operators have considerable experience of partnering with other organisations, including content providers, apps developers and vertical industry partners in different industries, to provide end-to-end services
- These skills can be used in the education sector to build end-to-end services on behalf of education institutions who prefer to liaise with only one partner to design and run their mEducation services
- Such end-to-end services could incorporate unified billing for content, applications and connectivity services



Customer Access

Large Customer Base

Mobile operators serve 3 billion people in 219 countries across the world¹. Mobile operators have a unique insight into the way their customers like to experience their services and what their preferences are. This is key to personalisation.

Retail Stores

Mobile operators have large physical distribution networks, enabling direct sales and customer service. This is important in markets where online purchasing is low or when users want to experience a product prior to purchasing.



Customer Care

Customer Support

Mobile operators already support their business and individual customers post-paid services such as on-line support, telephone help lines etc.; these could easily be extended to mEducation customers.

Dedicated Support

Many mobile operators provide large corporate clients with dedicated customer support teams; similarly tailored customer support could be provided to education institutions and their students.



Billing

Billing Mechanisms

Mobile operators already have billing mechanisms for both prepaid and post-paid customers which could be used to support educational content and services.

Multi-Client Billing

Operators have the capability to bill separately for different services running on the same device e.g. a school pays for a student's device and curriculum content, while the student pays for additional services such as games or entertainment.

Data Protection & Privacy

- In January 2011, the GSMA published a set of universal [Mobile Privacy Principles](#) that describe the way in which mobile consumers' privacy should be respected and protected when consumers use mobile applications and services that access, collect and use personal information.
- The Privacy Principles cover the areas of:
 - Openness, Transparency and Notice
 - Purpose and Use
 - User Choice and Control
 - Data Minimisation and Retention
 - Respect User Rights
 - Security
 - Education
 - Children and Adolescents
 - Accountability and Enforcement
- In February 2012, the GSMA published a set of [Privacy Design Guidelines for Mobile Application Development](#). These help ensure privacy is designed in from the outset. The GSMA is currently working with members to help them implement the guidelines.
 - In January 2013 a number of European mobile operators decided to adopt an [Accountability Framework](#) – a mechanism for companies to demonstrate that their business practices comply with the guidelines

Age-Sensitive Content & Services

- Mobile operators are taking a number of steps to encourage the safe and responsible use of mobile services, and to enable parents to manage the risk of their children being exposed to inappropriate content. Examples include:
 - Collaborating on national codes of practice
 - Classifying content and offering parental controls
 - Running education and awareness campaigns – for parents and children, as well as for teachers (e.g. TeachToday)
- The GSMA and its members participate in forums with stakeholders from across the ecosystem to promote the safe use of ICT by children. For example:
 - European Framework for Safer Mobile Use by Younger Teenagers and Children - a self-regulatory initiative of the mobile industry, which advises mobile operators on how to ensure that younger teenagers and children can safely access content on their mobile devices
 - ICT Coalition - members include mobile operators, ISPs, vendors, content providers and Internet players. The guiding principles are in the areas of content, parental controls, dealing with abuse / misuse, child abuse or illegal content, privacy & control, and education & awareness
 - The GSMA is a member of the International Telecommunication Union's Child Online Protection (COP) initiative, through which it contributes knowledge and experience of mobile phone safety to the ITU industry guidelines

Along with voice and data communications, mobile operators offer a variety of rich services which can complement mEducation offerings:

mIdentity

- Mobile operators have the ability to provide strong authentication to enable individuals and organisations to interact in a private, trusted and secure environment
- Types of mIdentity include:
 - Federated identity
 - Second factor authentication
 - Mobile digital signatures
- In the Education sector, mIdentity can be used to authenticate users in various scenarios such as for:
 - On-line tests or exams
 - Purchasing content, school meals etc.
 - Accessing student files
 - Submitting assignments or other content

Mobile Payments & NFC

- Mobile payments allow users to pay for goods, content or services via their mobile phone
- In some cases, 'operator billing', the purchase amount can be deducted from the mobile account or added to the user's mobile bill
- Coupled with Near Field Communications, 'NFC', mobile payments can be a smooth and powerful way to become cashless; promoting efficiency and deterring theft of physical monies
- NFC can also be utilised in other scenarios, for example:
 - Recording student attendance
 - Access to physical locations
 - Ticketing (e.g. bus tickets)

Rich Communications

- Rich Communication Services, 'RCS', is an operator-led communications service
- It delivers an experience beyond voice and SMS by providing users with instant messaging or chat, live video and file sharing across any device, on any network, with all the enabled contacts in their address book
- Rich Communications can benefit the Education sector in scenarios such as:
 - Distance learning or tutoring
 - Student & teacher collaboration



There are a variety of potential customers for different mEducation product offerings



	Schools	Higher Education	Workplace	Skills & Employment	Lifelong Learning
Formal	Public and private schools Gov't departments Central procurement departments	Public and private universities Gov't departments Central procurement departments	Corporations Training Centres	Students Colleges Training Centres	Students Education Institution / Service
Non Formal	Parents Students Education Institution / Service	Parents Students Education Institution / Service	Corporations	Students Employment Organisations	Students Education Institution / Service
Informal	Parents Students Education Institution / Service	Parents Students Education Institution / Service	Students Corporations Training Centres	Students Employment Organisations	Students Education Institution / Service
System Automation	Public and private schools Gov't departments Central procurement departments	Public and private universities Gov't departments Central procurement departments	Corporations Training Centres	Colleges Training Centres Employment Organisations	Education Institution / Service

 B2B: Business to Business – the mobile operator sells to a business or organisation (e.g. a school) whose stakeholders then use the service .

 B2C: Business to Consumer – the mobile operator sells directly to the individual end user of the service e.g. a student.

 B2B2C: Business to Business to Consumer – the mobile operator sells to another business which then sells the service to end consumers.

Examples of charging models

There are a variety of ways that mobile operators can charge their customers for mEducation products and services, including:



B2C Charging Models Examples

- Annual subscription
- Monthly subscription
- Pay as you go - volume / duration
- Pay as you go - event
- One-time payment e.g. device, fixed service



B2B and B2B2C Charging Models Examples

- Annual license – for the system or per user
- Monthly fee for operations & maintenance
- Capacity-based charges
- Event- or Usage-based charges
- One-time payment - e.g. devices, bespoke services

Charging could be based on one or a combination of the examples given above.



mEducation



mEducation – Operator Market Entry Process

A phased approach to developing and implementing mEducation solutions



mEducation initiatives will undertake different activities within each phase depending on the product offering.

Areas to address in an mEducation proposition



1. mEducation Product or Service Overview

1.1 Description

Describe the mEducation product/service.

1.2 End User Experience

Describe how end-users interact with the product/service e.g. types of devices, content, access.

2. mEducation Product or Service Delivery

2.1 Operator Role

What is the operator role in delivering the product/service?

2.2 Partners & Roles

Who are the service delivery partners and what are their roles?

2.3 Distribution

How is the product/service being distributed?

3. Business Model

3.1 Target Customers

Who are the target customers for this product/service?

3.2 Charging Model

How will the customers be charged?

3.3 Business Model with Partners

How will revenue be shared between delivery partners?

4. Regulatory Environment

How does the regulatory environment impact the service? Does action need to be taken

5. Stakeholder Benefits

For example, the benefits for students teachers, parents, vendors, operators etc..

Example 1: Proposition for 'mEducation for Schools' solution



1. mEducation Product or Service

1.1 Description

The solution encompasses supplying one tablet per child along with an LMS which carries approved curriculum, other learning content and a social/collaborative tool. The LMS can be accessed via the tablet or a PC, both in the classroom and remotely.

1.2 End User Experience

Students are able to access learning material, submit lessons/assignments and chat to classmates when remote. Teachers are able to assign lessons, assign marks and track individual student as well as overall class progress.

2. mEducation Product or Service Delivery

2.1 Operator Role

The mobile operator delivers the end-to-end solution, covering devices and device management, connectivity, LMS platform and learning content. The service is operator branded.

2.2 Partners & Roles

- Content supplier – supplies education content
- LMS vendor – licenses the LMS to the operator
- Device vendor – sells devices to the operator

2.3 Distribution

The solution is marketed to both individual schools and Regional School Supply Organisations (RSSO). All schools belong to an RSSO which maintains a list of pre-approved education services.

3. Business Model: B2B

3.1 Target Customers

Primary schools (with students ages 5-18) in the country, including state, independent and private schools.

3.2 Charging Model

Schools are charged an annual license fee per user type covering devices, content and connectivity. Each device comes with standard monthly mobile data included with charges for over-limit data usage.

3.3 Business Model with Partners

- Revenue share agreement with content provider
- Operator pays LMS vendor license fee per user
- Operator pays devices vendor per device

4. Regulatory Environment

There is a generally favourable view toward e- and mEducation. Schools have discretionary power to use mobile and other technologies for teaching and learning as long as curriculum requirements are met.

5. Stakeholder Benefits

- Students: latest learning material at fingertips both in and out of classroom, collaborative tools
- School: reputation for being a progressive school with modern teaching methods
- Teachers: variety of teaching materials to choose from, can personalise lessons and track individual and overall class progress
- Suppliers: increased revenue from mEducation services

Example 2: Proposition for 'Learning English' solution



1. mEducation Product or Service

1.1 Description

The solution encompasses delivering English language learning content to users on their mobile phones. Content is categorised by scenario (e.g. travel, food/drink, business) from which users can select.

1.2 End User Experience

Content is delivered via text message and voice messaging to all mobile phone types. To receive the next lesson, users text a special message to a standard service number. Users are allowed to revise lessons from any modules they have taken previously.

2. mEducation Product or Service Delivery

2.1 Operator Role

The mobile operator runs the full service end-to-end, from the platform hosting the content to the delivery to end users mobile phones. The service is operator-branded.

2.2 Partners & Roles

- Content Provider – provides language content to the operator

2.3 Distribution

The service is distributed directly to consumers who can sign up for the service on-line or in a retail store.

3. Business Model: B2C

3.1 Target Customers

Aspirational youth (15-35) who wish to improve their English to enable further employment opportunities.

3.2 Charging Model

Users are charged a fixed price per module of content. Users on the service operator's network are offered a significant discount compared to users from alternative networks.

3.3 Business Model with Partners

- Operator pays the content provider revenue share per module of content purchased

4. Regulatory Environment

The environment is positive towards services that will lift the employability prospects of its citizens.

5. Stakeholder Benefits

- Students: learning material provided on feature phone on-demand; ability to revise past lessons

- Mobile operator: revenues from service; reputation for providing useful content services
- Content provider: revenue from service

Example 3: Proposition for 'Collaboration Platform' solution



1. mEducation Product or Service

1.1 Description

The product is a platform that allows users to collaborate via voice, rich messaging, file sharing etc. across a range of devices e.g. mobile phones, desktop computers, tablets.

1.2 End User Experience

Users have one identity for sign-on and are able to access the platform from their various device types. History and saved documents are also visible from any device. There are alerts for new messages etc. which can be managed via the configuration manager.

2. mEducation Product or Service Delivery

2.1 Operator Role

The operator runs the collaboration platform.

2.2 Partners & Roles

- None

2.3 Distribution

The collaboration platform is marketed to on-line institutions which would like collaboration functionality.

3. Business Model: B2B2C

3.1 Target Customers

In the education sector, the target customers are on-line learning and training institutions.

3.2 Charging Model

The institutions are charged based on number of active users on the platform as well as volume of different message types generated each month.

3.3 Business Model with Partners

N/A

4. Regulatory Environment

The environment is positive towards services that will lift the learning and employability prospects of its citizens.

5. Stakeholder Benefits

- Students: collaborative platform where they can converse, message, share files and other content with teachers and other students
- Mobile operator: revenues from service
- Education institution: ability to add collaboration to their education offerings



mEducation



mEducation – Operator Case Studies

Operators are already offering a large range of mEducation services around the world



	Schools	Higher Education	Workplace	Skills & Employment	Lifelong Learning
Formal	Tsunami disaster area project, Japan ^(CS) Tablette Elève Nomade project, France ^(CS) Augmented Reality and eBooks project, UAE ^(CS) educ@Tion project, Italy ^(CS)	SWEEP project, Philippines ^(CS) Telstra/ University of Western Sydney trainee teachers' project, Australia ^(CS)	EsTeLa project, Latin America	Tamil Nadu Spices Community project, India	Jokko project, Senegal
Non Formal	Click2Learn project, Pakistan	Cyber University project, Japan ^(CS) App project at the Open University of Catalonia, Spain ^(CS)	Farmers' project, Spain ^(CS)	Tutor on Mobile project, India ^(CS) Spoken English project, India ^(CS)	Youth Empowerment through Mobile Learning project, Thailand
Informal	Community Radio project, India	Learning Hub, South Africa	Public Job Openings project, Brazil	Red UnX project, Latin America ^(CS) ABC Literacy project, West Africa	Enreda Madrid project, Spain ^(CS)

Bringing mobile learning to students in the Japanese tsunami disaster area



- A partnership between KDDI, Castalia Co Ltd and Shingakukai – unusual because in Japan private-sector companies are not allowed to be involved in formal education
- Helps 15-18 year old students affected by the earthquake (schools/homes destroyed) to prepare for high school/college entrance examinations in evacuation shelters using tablet computers
- Combines a social learning platform (iUniv) with tailored and focused content – students use and share the content with each other and get online advice from lecturers
- Fusen software allows the placement of notes on visual and auditory contents, which can then be linked to social media
- Will be turned into a educational service package for use in times of disasters



GSMA mEducation Toolkit

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- The diagram consists of four colored rectangular boxes arranged horizontally. From left to right, they are: a grey box labeled 'Device & Network Services', a red box labeled 'Tools & Platforms', an orange box labeled 'Content Services', and a teal box labeled 'Learning Services'. A large, light grey double-headed arrow is positioned below the first two boxes, spanning the width of both, indicating a bidirectional relationship or interaction between 'Device & Network Services' and 'Tools & Platforms'.

GSMA mEducation Toolkit

Etisalat: making learning innovative and relevant



- Etisalat is working with Ministries of Education and institutions in the Middle East, Africa and Asia
- Moving away from traditional textbook teaching to interactive learning is encouraged through the use of Augmented Reality, web-based materials and eBooks
- AR application – OGLE – allows learners aged 7-12 to interact with audio, video and 3D animations using any iOS or Android smartphone, device or tablet (e.g. in Biology the human body becomes 3D and starts to dance)
- Teachers are keen because new books are not needed, so can use familiar materials whilst introducing exciting new technologies
- eBooks allow the introduction of content in local languages, many of which are published for the first time

Device & Network Services

Tools & Platforms

Content Services

Learning Services



Etisalat: making learning innovative and relevant

Etisalat is working with Ministries of Education and educational institutions across the Middle East, Africa and Asia to enable the use of innovative technologies to enhance teaching and learning for students and teachers. They consider the use of computers, game platforms and mobile phones to be a natural part of students' lives today – part of a welcome transition from traditional textbook teaching to a more exciting way of learning through AR (Augmented Reality), web-based materials and eBooks. Their creative initiatives use interactive learning to improve understanding of complex and abstract issues and provide access to training materials in local languages through an intuitive interface enabled by state-of-the-art connectivity.

This case study focuses on Etisalat's projects with:

- Augmented Reality-based interactive learning in the United Arab Emirates (UAE). For more information visit www.ogle.ae
- distance learning and online books in the UAE and Sri Lanka.

Augmented Reality – making learning more exciting
Imagine visiting the outer reaches of the universe or dissecting a snail. Students can enhance their understanding of complex issues by learning through observation and investigation rather than by instruction.

Using Etisalat's Augmented Reality application – OGLE – students access a special interactive information layer by 'scanning' the pages of a schoolbook with the camera on their mobile device. OGLE automatically superimposes a virtual interactive layer over the printed materials enabling students to interact with audio, video and 3D animations using any iOS and Android smartphone, device or tablet. So, for example, learners using a schoolbook and phone/tablet for a biology

lesson can use the human body become 3D and start to dance.

OGLE is used by learners aged 7-12 in UAE schools which follow the UK national curriculum in subjects including history, music, maths, design, PE, geography, ICT, languages and physics. All the content is syllabus-based and Etisalat has a team working closely with schools and academies to develop new lessons tailored to individual schools. Teachers and students can also create their own content, such as videos and images created outside of school, and incorporate this directly into the lesson provided. All new content is immediately accessible and shared between schools – giving access to a constantly expanding collection of 3D models.

Teachers are particularly keen because expenditure on new books is not needed. They can use this technology to transform the use of existing schoolbooks. OGLE also allows teachers to continue using familiar traditional learning materials at the same time as introducing exciting new technologies.

Example of activities for students provided by Ogle in addition to the material printed in textbooks include:

- Pond Ecosystem – Explore the animals and fauna of a typical pond-water environment, with the ability to isolate individual life forms. Dissect creatures, examine lifecycles and study their place within their environment.
- Geology/Geography – Study an extensive range of geographical phenomena from the hydrological cycle to glacial formation, at a pace controlled by the user and with full interactivity.
- Physics/Engineering – View a fully working car model with an operating combustion engine. Study the actions of steering and suspension, highlighting the forces involved.



Telecom Italia S.p.A: educ@Tlon – a solution for sustainable collaborative and social learning



- educ@Tlon, from Telecom Italia, is a web application solution available to schools, for learners aged 6-18, designed to encourage sustainable, collaborative and social learning
- It is based on SaaS, supported by cloud computing, so just needs an Internet connection
- Students become an active part of their learning process in different applications – social reading (society@school); multimedia editorial mash-up (iSchool); virtual classroom (iBoard); classes having joint lessons (Lectio Repartita) and IWB-based lessons
- educ@Tlon is aligned with the Italian Government's Digital Agenda. A commercial offer for schools will be developed by 2014-15, when all Italian schools will need to be able to use digital content

Device & Network Services

Tools & Platforms

Content Services

Learning Services



Telecom Italia S.p.A.: educ@Tlon – a solution for sustainable collaborative and social learning

Overview
educ@Tlon from Telecom Italia is a web application solution available to schools and designed to encourage sustainable collaborative and social learning. Based on integrating open source modules and Telecom Italia developments that do not require users to buy third party licenses, it has an inclusive approach towards both content (multimedia, editorial, self-produced, available on the internet) and devices (not imposing hardware pre-requirements).

The prototype, available in the laboratories of Telecom Italia TLab innovation centre, is currently being tested in several Italian schools and a teacher training university with trainee teachers at their school placements.

For pictures and videos, see: http://www.youtube.com/embed/gL_JVzz8Mk

The learners
educ@Tlon has been designed and developed to offer a framework of tools for use in primary schools for children aged 6 to 10, in junior schools for children aged 11 to 13 and in senior high schools for learners aged 14 to 18.

A new approach to learning
educ@Tlon's goal is a new approach to learning based on the teachings of the well-known theorists Piaget and Vygotsky. It involves methodological innovation (constructivism, proximal development, positive interdependence, structuring of roles) designed to achieve:

- cooperative and participatory learning – with students as active agents in their learning, not just receiving content but also building their own knowledge
- peer education – starting a collaborative relationship between students during the educational process (the student is led to seek solutions and contribute to the learning/teaching process of others).

Key features
educ@Tlon is based on a SaaS (Software-as-a-Service) approach, supported by cloud computing. The system does not need to interoperate with other solutions; it just needs an internet connection that can be supplied via wired platform (e.g. ADSL at home, via Ethernet at school) or wireless (e.g. WiFi at school or home, or GSM everywhere else). There are no specific operating system requirements or device constraints, which means it can be used with interactive whiteboards, video projectors, PCs, netbooks, notebooks and interactive touchscreen tablets – all tools frequently used for teaching and learning in schools.

educ@Tlon aims to exploit innovative technology for the benefit of students, in particular to:

- establish social networks with an educational aim
- promote collaborative learning communities
- overcome time and space barriers to teaching
- exploit the benefit of connectivity (from 'school on the net' to a 'net of schools').

The applications share the same database, school content management, user authentication system and semantic search engine, and are integrated with an advanced administration data management solution. They allow collaborative creation, multimedia aggregation of contents, the sharing of lessons and knowledge, and the promotion of virtual communities. They can be integrated with dashboard data management and school administration systems.

All the applications accessed via a browser are based on HTML5 and, in the case of high graphic interaction for remote learning, have been developed in Adobe Flash/Air. Specific client apps for Android and iOS environments have been developed to allow a complete and enhanced user experience that permits the use of all educ@Tlon functionalities on all types of devices, using all the capabilities offered by new tablet environments.

Note: Although educ@Tlon tools can be used on smaller screens (such as smartphone, Android, iOS and Symbian equipped), they work best on mobile devices with 7-10 inch screens.



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SWEEP: Investing in the Philippines' future engineers



- The Philippines is experiencing a rapid population increase and lack of teachers, books and classrooms – Smart aims to contribute to nation-building and human-capital development
- Smart has developed an industry-education partnership – Smart Wireless Engineering Education Programme (SWEEP) - to prepare engineering students for work in industry or to become 'technopreneurs'
- Smart donates a wireless laboratory and equipment to schools. Their engineers provide training on 2-4G, LTE, broadband, hotspots and apps
- The SWEEP Innovation and Excellence Awards use Smart's platform to develop solutions to directly benefit their local communities

Device & Network Services

Tools & Platforms

Content Services

Learning Services

SWEEP: Investing in the Philippines' future engineers

Smart Communications, Inc. is a telecommunications company based in the Philippines, that is working to improve information technology and engineering education in the country. They have developed an industry-education partnership - the Smart Wireless Engineering Education Programme (SWEEP) that will prepare students for work in industry or to become technopreneurs (technology entrepreneurs).

Offering access to high-quality, up-to-date equipment and training SWEEP equips Electronics and Communications Engineering (ECE) students with the skills the telecommunications industry needs. They are also able to offer first-hand exposure to the Smart engineers who are building and operating the Philippines' most extensive digital mobile phone network.

Understanding and addressing local needs
In the Philippines, nearly all the school-age population attend state (public) schools but there are problems with a lack of qualified teachers, books and classrooms. These problems are exacerbated by the geographic character of the Philippines as an archipelago and the rapid increase in the population.

Smart aims to improve the situation and contribute to nation-building and human-capital development. They are developing basic education programmes in the community, integrating information and communications technology (ICT) into secondary education, and the SWEEP programme for ECE and IT students in tertiary schools.

The SWEEP Programme
The Programme was launched on 28 March 2003, with the first wireless lab at the Bulacan State University. The response was so positive that the original target of involving 20 tertiary schools (offering the equivalent of college/university education) was exceeded by 60%. To date, they have created a network of 32 private and state-run schools all over the Philippines, benefiting over 14,000 teachers and students.

The SWEEP programme has three parts - up-to-date hardware and software, expert lectures and training, and a platform for students to develop community-based, wireless apps. The training is integrated into existing course subjects.

Equipment
Smart donates a wireless laboratory and equipment to schools. The equipment consists of the GSM (Global System for Mobile Communications) and TACS (Total Access Communications System) from Europe and CDMA (Code Division Multiple Access) and AMPS (Advanced Mobile Phone System) technologies from the US. These give students a comprehensive knowledge of the development of cellular communications technology and the basics of a mobile phone network.

Their engineers provide training on 2G and 3G systems, WiMax (4G technology), LTE, smart broadband and setting up hotspots in students' own schools.

They also offer training on Android apps, providing the school with a smartphone called the Netphone - a low level smartphone that can support the development of Android apps.

"Through SWEEP, our school (Bulacan State University) has become one of the top universities producing quality graduates [in] the telecommunications field."
Olivier B. Martinez, Department Head, College of Engineering, Department of Electronics and Communications, Bulacan State University

Connected ICT – from Telstra and the University of Western Sydney



- A partnership project in Australia between Telstra and UWS with Acer
- Telstra's Next G® network offered easy access to e-Learning software, apps and data via an IPWAN service with cloud capabilities
- Involved 100 trainee teachers at UWS, who were supplied with notebook computers by Acer
- The study focussed on how ubiquitous access to ICT might change teaching; change learning; enhance the students' experience of learning to teach; and assist student retention. Also the infrastructure/capacity required for student support and the data used by the students
- From 2013 all first-year students will receive a tablet computer to assist with their studies



mEducation

Connected ICT– from Telstra and the University of Western Sydney

Using mobile technologies to create a sustainable future for universities and their students

Telstra is a leading provider of communication and managed services to large enterprise and government organisations in Australia and worldwide, facilitating communication access in more than 240 countries and territories.

The Telstra Next G® network provides coverage to 99.3% of the Australian population across over 2.3million square kilometres. This network has helped the University of Western Sydney (UWS) develop an 'Education Blueprint' through unified ICT infrastructure using mobile technologies to connect teachers, students and staff, providing a robust communication and collaboration framework offering easy access to e-Learning software, apps and data via an IPWAN (Internet Protocol Wide Area Network) service with cloud capabilities.

You can find more information about this at www.telstra.com.au/business-enterprise/enterprise-solutions/industries/education/index.htm

Creating a telecommunications-education partnership
UWS has used the Telstra Next G® network and Telstra services to identify the potential role of ICT-enabled learning in creating a sustainable future for UWS and its students. UWS is a multi-campus organisation, providing degree courses across a broad range of subjects, primarily in the Sydney basin. They aim to use technology-rich teaching environments to enhance the competence of teaching staff and offer teachers and students the chance to work remotely from different locations.

The pilot involved trainee teachers and focused on how ubiquitous access to ICT might:

- change teaching;
- enable learning;
- enhance the students' experience of learning to teach; and
- assist student retention.

It also looked at:

- what technology infrastructure and capacity would be required to support these students; and
- what kind of data, and how much, a typical student might use in the course of a year's study.

There were no regulatory or government hurdles to overcome.

Key partners
Telstra and UWS partnered with Acer Computers Australia (Acer) to supply notebook computers to the trainee teacher students in the pilot. Acer is one of Australia's largest computer brands; dominating the notebook and tablet computer markets and specialising in education requirements.

LEARNERS
The pilot involved a group of 100 trainee teachers drawn from the UWS School of Education main postgraduate Master of Teaching programmes (Secondary Education and Primary Education) and the Bachelor of Education (Birth to 5 years). The Early Childhood students were in the last year of their undergraduate courses and all took part in the pilot. The Primary and Secondary Education students were self-selecting after invitation from the lecturers, based on the units they were taking (in the case of the Secondary cohort, for example Teaching Methods of Science and English).

Full details of the teacher education programmes are available at www.uws.edu.au/education

Welcome to Japan's most innovative learning environment



Device &
Network
Services

Tools &
Platforms

Content
Services

Learning
Services

- Cyber University, a private undergraduate university offering all of its courses online, is a wholly-owned subsidiary of Softbank Corp
- Courses now designed for mobile access (eg iPads) in a cloud-enabled environment to enable learning and collaboration over the Internet
- Academics produce content, where the lifecycle is about 4 years. Students produce content too
- Biometric authentication via the Charge Coupled Device (CCD) camera identifies the students and provides authentication for exams and class attendance credits
- The combination of both fixed and mobile computing allows courses to suit students' needs, preferences and locations



University goes portable with tablet technology



- A partnership between Orange Spain, and the Open University of Catalonia (UOC) using iPads with 3G connectivity to access the virtual campus and educational materials using a specially designed app and study the learning possibilities
- RSS technology allows the scaling of the virtual learning environment (VLE) for multiple devices
- The study considered it important for all students to access learning, even those who have disabilities (eg visual and hearing impairments) via the use of screen readers, automatic subtitling of videos and Braille tables
- UOC will now develop interactive and subject specific native apps, following positive feedback from teachers and students



Using tablet computers in the agricultural sector in Spain



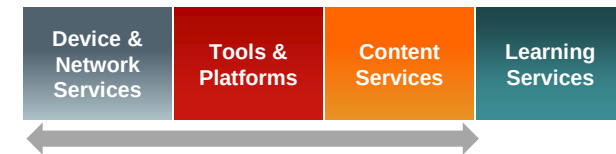
- A partnership project in Spain between Telefonica Learning Services (who managed the training programme) and ASAJA (Spanish young farmers association), subsidised by FTFE (Spanish foundation for training and employment)
- Farmers had repeatedly requested to know more about new technologies and their applications in agriculture
- iPads with 3G connectivity were used
- 3G was important because areas often not easily accessible and they work in different fields and farms
- TLS use eLearning training and tutorials using a training platform (a+ LSM) which allows both synchronous and asynchronous communication
- Farmers are expected to use their devices to organise farming calendars, control irrigation times and better record their farming outputs



Tutor on Mobile – Anytime, anywhere learning in India



- A partnership project in India between Tata DOCOMO and Voicetap Technologies
- Designed to connect people who want to learn and acquire knowledge with experts using mobile devices
- TOM users access content through WAP, IVR, SMS or Video IVR (3G video call) – thus meaning that learning content is provided in different forms and can be accessed using any phone/platform
- Most frequently accessed areas are career counselling, job market advice, support for the AIEEE (All India Engineering Entrance Examination) and Vedic maths
- Its strength is the self-sustaining business model. The knowledge provider receives revenue for the content, the operator for the use of the service and the seeker of knowledge pays only a nominal charge (eg content items typically cost Rs 2-10)



 mEducation





Tutor on Mobile - Anytime, anywhere learning in India

Tutor on Mobile (TOM) is designed to connect people who want to learn and acquire knowledge with experts in India through their mobile devices. Developed by Tata Docomo with technology partner Voicetap Technologies, it is a 'knowledge marketplace' that encourages the sharing of knowledge, and provides an opportunity for people to earn money at the same time by providing learning content. Since its launch in September 2011, users have accessed over 1.5 million pieces of content in various forms and the service currently has more than 200,000 active users.

How TOM works

Users of TOM can access content through WAP, IVR (Interactive Voice Response, a technology that automates interactions with telephone callers), SMS or Video IVR (3G video call).

They can:

- Learn from experts by joining in a live conference
- Listen to recorded podcasts on various subjects
- Connect on a one-to-one basis with subject knowledge experts by searching for them using the SMS or WAP platform
- View videos and other demonstrations on a particular subject
- Sell/register as an expert on the platform to offer their expertise through conferences or by allowing one-to-one connections
- Receive alerts on SMS and WAP for voice content on IVR
- Use text-based explanations on specific topics and concepts
- Undertake practice on sample questions and mock tests

The learning content is aggregated from over 73 content providers and remains accessible to the user until their subscription expires.

Content items can be purchased individually at a charge of Rs 2-10 (e.g. a video demonstration is Rs 5 or Rs 10) or as part of a pack containing several items (e.g. a pack of 30 videos can be sent to the user, one each day, for learning English at a cost of Rs 30, or Rs 35).

Key features

What makes the service so strong is that the user can use any phone/platform to access it and search for learning content. No longer do you need expensive mobile technology to be able to communicate with an expert. In India, there are more than 700 million mobile phones but only about 100 million have access to the internet – learning content, therefore, needs to be provided in different forms. The learning content varies considerably and covers topics ranging from learning to play a guitar, support for formal education overseas, jobs, employment and even career counselling advice.

How to access TOM

- Voice/SMS – Mobile phone users without internet access can use voice/SMS services to interact directly with experts (who are screened beforehand) on a one-to-one basis. SMS and Voice traffic is managed through a short-code series (5333300); users from other operators can also use the voice service by using a long-code (a traditional 10 digit MSISDN).
- WAP – Phones with internet access can use the WAP portal to browse for TOM and access content in the form of videos, explanation notes, mock tests, collage database, etc. Subscribers can also set up conferences using WAP if they want to share knowledge. The WAP traffic has been 'whitelisted' to make browsing free for Tata Docomo users.
- Web – Learning content videos can be uploaded through the web once the creator has registered on the system. They are then evaluated for quality and revised if necessary. The platform also allows content creators to propose a price for the piece of content they wish to share.
- IVR – Profiles can be created using IVR for person-to-person connections. For all live conferences, the platform provides the services of a moderator to organise and control the conversations.

To 'whitelist' something generally means to authorise access or grant membership. In this case, Tata Docomo authorises free access to browsing of the different forms of learning content on TOM WAP portal for its customers only.



Bharti Airtel: Offering mobile education to improve spoken English and enhance career chances



- A partnership project in India between Bharti Airtel, Aptech and Hungama Digital Media Entertainment Pvt Ltd
- The services are based on IVR, SMS or WAP and use the native language of the customer for different geographical locations
- The service offered is a 3-month voice-based course focussed on 'workplace English' designed for young learners who cannot afford the time or money, or both, to enrol for regular classes, and who want to improve their career opportunities
- Mirrors the classroom experience
- The daily subscription rate is Rs 5/day, and the customer conversion (acceptance) rate has been high

Bharti Airtel: Offering mobile education to improve spoken English and enhance career chances

Global telecommunications giant Bharti Airtel's mEducation services mirror a classroom experience on a mobile technology platform, making education more convenient, accessible and affordable. Spoken English is one such innovative service which has been launched in partnership with Aptech, one of India's leading training providers and Hungama Digital Media Entertainment Pvt Ltd, South Asia's largest digital entertainment company. A novel voice-based course for mobile customers, it has been designed for young learners who cannot afford the time or money, or both, to enrol for regular classes and uses the native language of the customer. It is available across India to all Bharti Airtel mobile customers allowing them access to affordable services on the go, anytime, anywhere, and has received an overwhelming response in a short timeframe.

LEARNERS
The Spoken English course is designed for young people (aged 18-30) in full-time entry-level jobs, such as secretary, junior government official and account executive, IT staff, trader, frontline staff, retail staff, medical representatives, insurance agent, and the self-employed in small and medium-sized companies. It is also relevant for first-time job seekers.

THE ADVANTAGES OF BHARTI AIRTEL SPOKEN ENGLISH:

- 3-month course on your mobile phone focused on 'Workplace English'
- mirrors a classroom experience with a real teacher taking classes
- short audio lessons with lots of practice, weekly recap of the lessons
- real-time speech recognition gives instant feedback and improves pronunciation
- voice-based question and answer sessions at the end of every lesson to test understanding
- voice-based regular assessment through weekly and monthly tests
- two SMS messages a day to reinforce vocabulary and/or application of the day's lesson
- live expert help available to answer questions.

These young people possess a basic knowledge of the English language and want to improve their career opportunities. They therefore need to improve their ability to converse fluently and confidently in English but lack the time and/or money to enrol in a classroom.

Key partners
Bharti Airtel Limited is a leading integrated telecommunications company with operations in 20 countries across Asia and Africa. Bharti Airtel launched their mEducation services in January 2012, offering mobile customers across the country easy access to a range of education services, including language skills, entrance exam preparation and career counselling from industry veterans any time, anywhere at affordable prices.

For more information see www.airtel.in/education/

Aptech is a leading IT education institute and pioneer in IT software and hardware training. They have trained more than 6.5 million students through a network of education centres in 40 countries for international certification exams held by major IT companies like Oracle, Java, Microsoft and Red Hat.

For more information see www.aptech-education.com/

Hungama Digital Media Entertainment Pvt Ltd, along with Aptech, powers education services on the digital platform. It is the largest aggregator, developer, publisher and distributor of Bollywood and South-Asian entertainment content in the world. As a Digital Media company it has partnerships with over 400 content creators, record labels, studios, broadcasters, game publishers and has licensed worldwide exclusive digital rights to over half a million music and video titles. Hungama serves content to consumers in 47 countries across mobile, internet, IPTV services and has more than 150 partners across the world. The business has built its expertise in the following areas - mobile content, mobile marketing and mobile media.

For more information, please visit www.hungama.org

Red UnX: From a MOOC Platform to a Mobile Learning Community for Entrepreneurship in Latin America



- A partnership between Telefónica Learning Services, CSEV, Santander, UNED, RedEmprendia and MIT to develop UnX
- UnX uses MOOCs to offer training in entrepreneurship skills using social tools, with 'connectivism' as its basis for lifelong learning
- Online badge-based accreditation indicates visual levels of achievement/skills/knowledge. Karma points awarded for participation in the fora, Q&A and blogs – reducing reliance on course professors
- Course professors and developers will develop both online and offline apps (with the potential to monetise MOOCs through freemium and paid apps), with geo-positioning and Augmented Reality to encourage social networks and improve sustainability



Learning about the history of Madrid using an Augmented Reality treasure hunt



- A partnership between Telefónica Learning Services, UNED and CSEV in Spain
- Developed an Augmented Reality treasure hunt to bring alive history, the arts, architecture and town planning with the customs of Madrid in the 17th Century – ‘Enreda Madrid’
- Combines game-based learning and the use of social media tools (eg Facebook and Twitter) to promote collaboration, learn and have fun
- Offered to university students and the general public, who use their own smartphones/tablets
- Users react in real time to learning materials on-site, eg solve tests, locate sites, collect evidence, solve puzzles and use blogs
- Much interest has been shown by the general public, including tourists and the citizens of Madrid

Device & Network Services	Tools & Platforms	Content Services	Learning Services

Learning about the history of Madrid using an Augmented Reality treasure hunt

Introduction to the use of the AR treasure hunt activity
 Telefónica Learning Services (TLS) has developed an Augmented Reality (AR) treasure hunt to bring alive the subjects of history, the arts, architecture and town planning, together with the customs of Madrid. It's called 'Enreda Madrid'. Discovery-based learning and gaming techniques are used to deliver information of general interest via different mobile devices and technologies – thus combining the two areas of technology and culture. This is a partnership involving TLS, the National Distance Learning University (UNED) and the Centre for Higher Virtual Education (CSEV) in Spain.

Enreda Madrid has two main aims:

- To offer university students new learning strategies that combine culture and innovative new technologies, including mobile, and achieve one credit towards their course
- To offer the general public (adults aged 18 and older) the opportunity to become familiar with the latest technologies, eg mobile devices, web 2.0 technologies and social networks.

The AR treasure hunt activity simulates 17th-century Madrid, which is well-known for its links with the renowned painter Velázquez. Examples of the activities undertaken by students during the treasure hunt include:

- Running down a street alongside two members of the nobility
- Walking with 17th century neighbours in the Velázquez district of Madrid
- Visiting ordinary homes to learn how people lived and what they ate, etc
- Strolling down famous streets in the Los Austrias district, eg down the Paseo del Prado, to see the former gates of the city or the prison
- Visiting one of the most famous printing houses of that time and understanding how books were published.

During the treasure hunt, students interact with learning materials on-site and in real-time via their mobile devices, and are required to solve tests, locate different sites on a 17th-century map (geo-localisation), collect evidence and decipher puzzles. They also complete a travel log, or blog, in which they share their experiences and what they have learned.

Augmented Reality (AR) is a live, direct or indirect, view of a physical, real-world environment whose elements are augmented by computer-generated sensory input such as sound, video, graphics or GPS data.

"Enreda Madrid has been very successful, because it offers people – not only students but also tourists and the citizens of Madrid – the opportunity to deepen their knowledge and understanding of our 17th-century traditions and social customs. It combines game-based learning activities, powered by technology including mobile, with social media tools and, most importantly, face-to-face participation, which promotes peer collaboration: people can learn whilst on the move and having fun!" Enreda Madrid Project Manager of Enreda Madrid, TLS



mEducation



GSMA mEducation

GSMA mEducation: www.gsma.com/connectedliving/meducation