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.

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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 research[1].
- 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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Source: 1. Enterprise IT Spending by Vertical Industry Market, Worldwide, 2008-2014, 2Q10 Update, Gartner

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"

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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.

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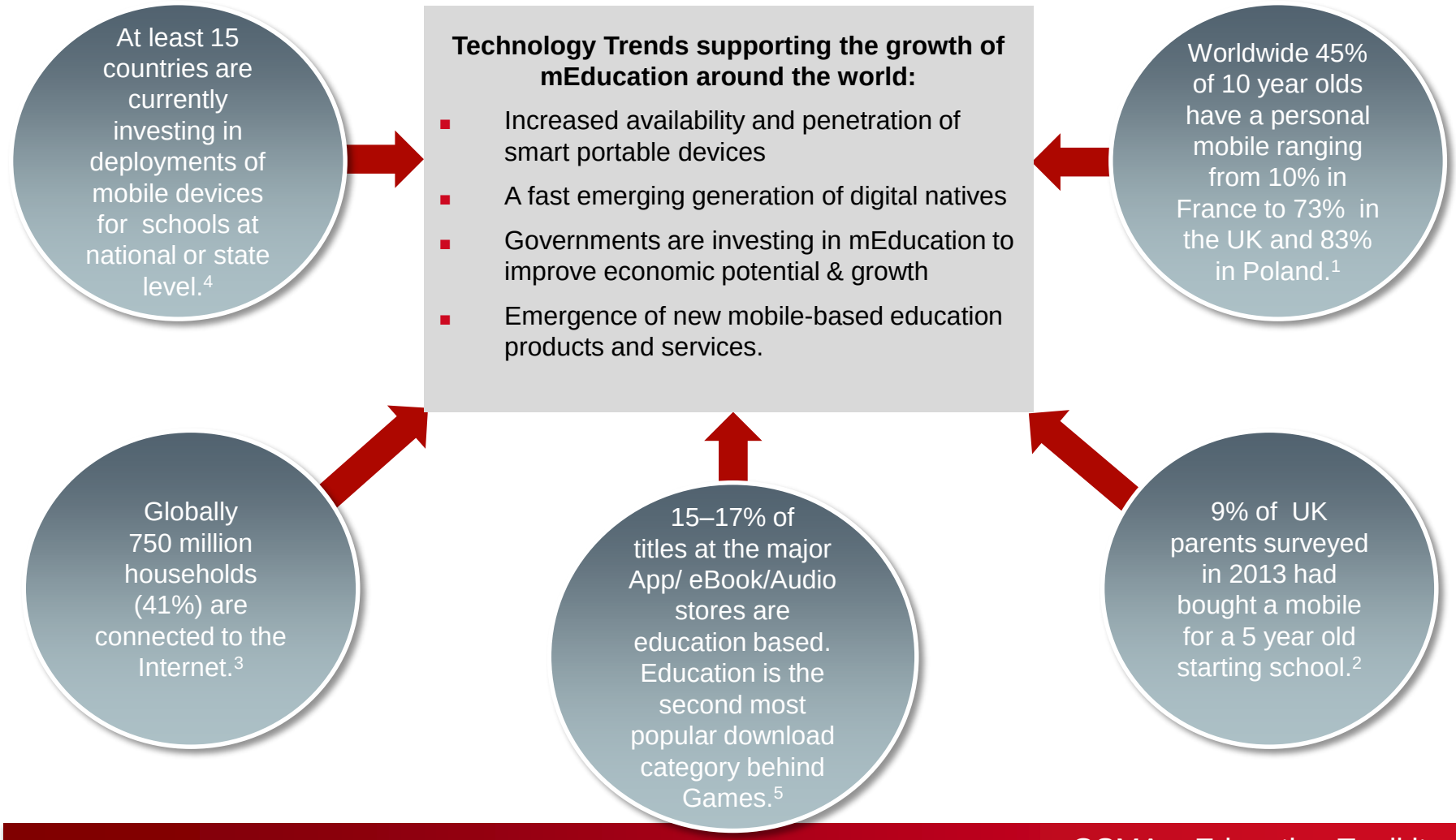
There are a number of technology trends which are supporting the development of mEducation today



Sources: 1. the Marketing Store, 2012, "New Definition of Childhood – A Global Kids Study"; 2. uSwitch.com 2013 3. "The World in 2013, ICT Facts and Figures, ITU 2013; 4. GSMA analysis; countries are: Argentina, Australia, India, Jamaica, Kazakhstan, Kenya, Peru, Portugal, Singapore, South Africa, South Korea, Thailand, Turkey, Uruguay, USA.; 5. "Connected Life" PwC 2013

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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 } System Automation				
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

Middle East

Overview of the market - **Middle East**

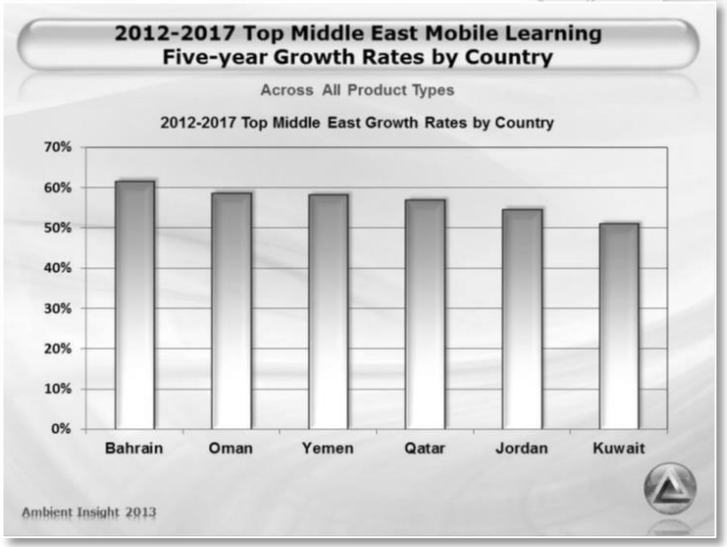
- The revenues for mobile learning products in the Middle East reached $88.3 million in 2012.
- The growth rate is 18.4% and revenues will more than double to $205.4 million by 2016. The largest buyers in the region are consumers, followed by academic buyers.
- This is a regional report with revenue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

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

Source: Ambient Insight

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.



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Source: Ambient Insight

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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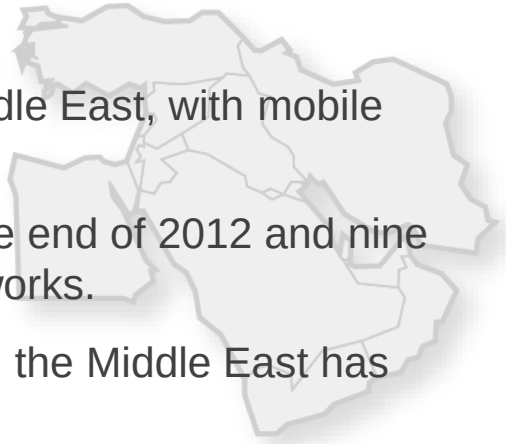
Further details on themes - **Middle East**



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%.

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Source: Ambient Insight

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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Source: Ambient Insight

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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Source: Ambient Insight

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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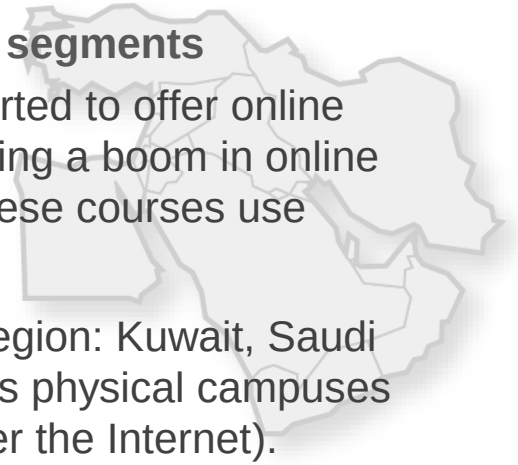
Source: Ambient Insight

Further details on themes - **Middle East**



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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Source: Ambient Insight

Government Engagement - **Middle East**

- 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."

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Source: Ambient Insight

Government Engagement - **Middle East**

- **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.

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Source: Ambient Insight

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.

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mEducation – Operator Offerings

The mEducation product landscape

Example products

Device & Network Services	Tools & Platforms	Content Services	Learning Services
▪ Provision of devices e.g. eReaders, tablets, connected whiteboards ▪ Device management e.g. profile, access, software upgrades ▪ Managed connectivity	▪ Learning management systems (LMS) ▪ Apps stores ▪ Authoring tools ▪ Rich communication & collaboration ▪ Data & video handling	▪ Approved curriculum & content ▪ Workforce & skills courses ▪ Free & open source content ▪ Premium paid-for content ▪ Learning apps & games	▪ Distance tutoring ▪ Homework support ▪ Test preparation support ▪ Reinforcement & reminders ▪ Adaptive assessment

Traditional operator competence

Non-traditional operator competence / Increase in Partnerships

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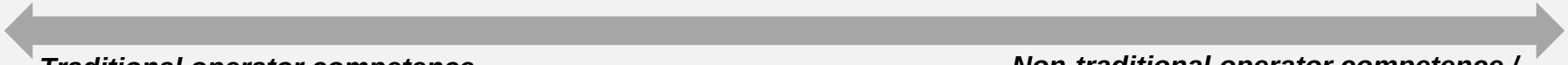
Depending on the operator service offering and role, partnerships may be required for service delivery

Device & Network Services	Tools & Platforms	Content Services	Learning Services
▪ Device vendors	▪ Software developers ▪ Platform providers	▪ Content suppliers ▪ Content developers ▪ Apps and games developers	▪ Teachers ▪ Tutors ▪ Education specialists ▪ Curriculum experts

Potential partners



Traditional operator competence

Non-traditional operator competence / Increase in Partnerships

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

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

5

Complementary Products & Services

- mIdentity
- Mobile payments & NFC
- Rich communication services

4

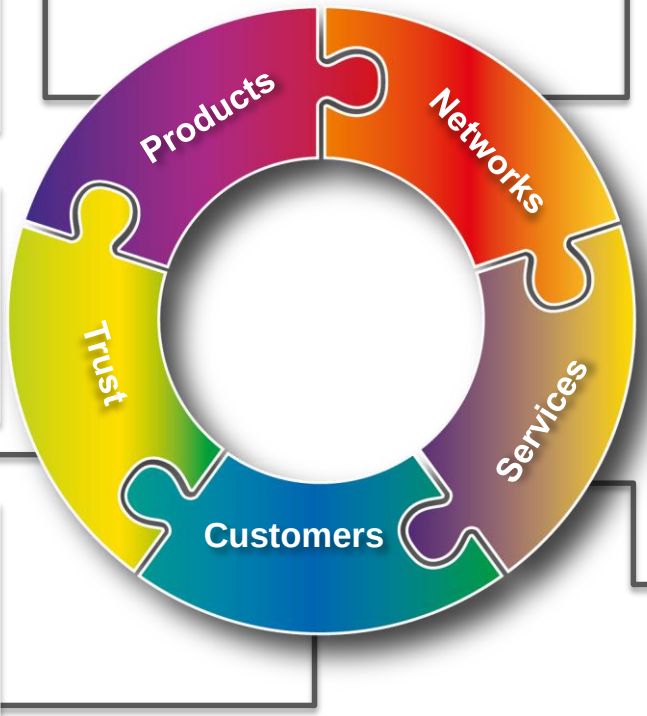
Trust by Design

- Data protection and privacy
- Access controls and safeguards
- Positive use of ICTs by children

3

Customer Access & Care

- Large customer base & distribution networks
- Customer Insight – Preferences, behaviour etc
- Customer care & technical support capabilities
- Billing mechanisms



1

Ubiquitous Networks

- Secure, high quality networks
- Mobile networks can be combined with other types of connectivity

2

End-to-End Service Delivery

- Experience in building scalable, interoperable end-to-end information & communications systems
- Device and platform management
- Content management & cloud services
- Network APIs

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

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1 Operator assets & capabilities: Ubiquitous networks

Mobile networks are:

Pervasive & Reliable

- Mobile networks are used in 219 countries and territories by more than 3 billion people[1]
- 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 2015[2]

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

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Sources: 1. GSMA Intelligence; 2. IHS, January 2012

2

Operator assets & capabilities: End-to-end service delivery

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

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

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

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

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3 Operator assets & capabilities: Customer access and care

Customer Access

Large Customer Base

Mobile operators serve 3 billion people in 219 countries across the world[1]. 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.

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Source: 1. GSMA Intelligence

4

Operator assets & capabilities: Trust by design

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

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5 Operator assets & capabilities: Complementary products and services

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

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

	Schools	Higher Education	Workplace	Skills & Employment	Lifelong Learning
Formal Learning 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	Students Colleges Training Centres	Students Education Institution / Service
	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
Non Formal Learning	Parents Students Education Institution / Service	Parents Students Education Institution / Service	Corporations	Students Employment Organisations	Students Education Institution / Service
Informal Learning	Parents Students Education Institution / Service	Parents Students Education Institution / Service	Students Corporations Training Centres	Students Employment Organisations	Students 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.

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mEducation – Operator Market Entry Process

A phased approach to developing and implementing mEducation solutions

1 Market Assessment	▪ Country and regional research ▪ Prioritise best opportunities
2 Stakeholder Engagement	▪ Reach out to stakeholders e.g. governments, potential partners, potential customers ▪ Agree on type of mEducation to develop
3 Solution Design	▪ Design mEducation solution covering education, technical, operational and business aspects ▪ Agree to solution design, implementation plan and business model
4 Development & Pilot	▪ Develop mEducation solution ▪ Undertake pilots to test and validate
5 Deployment	▪ Deploy mEducation solution and undertake marketing activities ▪ Undertake training and championship programmes
6 Management & Assessment	▪ Undertake day-to-day operational management of solution ▪ Regularly assess education, technical and business outcomes
7 Ongoing Improvement	▪ Develop enhancements / extensions/ updates as agreed

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

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Areas to address in an mEducation proposition

1. mEducation Product or Service Overview

1.1 Description	1.2 End User Experience
Describe the mEducation product/service.	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	2.2 Partners & Roles	2.3 Distribution
What is the operator role in delivering the product/service?	Who are the service delivery partners and what are their roles?	How is the product/service being distributed?

3. Business Model

3.1 Target Customers	3.2 Charging Model	3.3 Business Model with Partners
Who are the target customers for this product/service?	How will the customers be charged?	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..

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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

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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

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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

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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 Tablette Elève Nomade trials, France Augmented Reality and eBooks, UAE and Africa *e*duc@**TI**on platform trials, Italy	SWEEP programme Philippines Telstra/ University of Western Sydney trainee teachers' project, Australia	EsTeLa project, Latin America	Tamil Nadu Spices Community project, India	Jokko project, Senegal
Non Formal	Click2Learn, Pakistan	Cyber University, Japan App project at the Open University of Catalonia, Spain	Farmers' project, Spain	Tutor on Mobile service, India Spoken English service, India	Youth Empowerment through Mobile Learning initiative, Thailand
Informal	Community Radio project, India	Learning Hub, South Africa	Public Job Openings project, Brazil	Red UnX MOOC community, LatAm ABC Literacy project, West Africa	Enreda Madrid project, Spain

Bringing mobile learning to students in the Japanese tsunami disaster area

Device & Network Services	Tools & Platforms	Content Services	Learning Services

- 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

mEducation Castalia 信学会

Bringing mobile learning to students in the Japanese tsunami disaster area

In the wake of the Great East Japan Earthquake of 2011, students in Ishinomaki, one of the regions worst affected by the tsunami, have benefited from a learning environment that takes advantage of a mobile learning system supported by wireless networks and tablet devices to prepare for college and high school examinations.

Using iUniv, a social learning service, young people in Ishinomaki learnt and shared knowledge gained from lecture videos created by Shingakukai, a major Japanese educational institution.

Social learning

The project involved 120, 15–18 year-old students in Ishinomaki, Miyagi Prefecture, whose education had been badly affected by the earthquake; in many cases their school and homes had been destroyed. These students needed to prepare for the entrance examinations for high school and college that take place in February and March (April being the start of the academic year in Japan).

They were supplied with 100 tablet devices and access to the internet (students shared the devices). The education content was created by Shingakukai, one of the largest entrance examination preparatory institutions in Japan. A not-for-profit organisation ran the project and Ishinomaki Senshu University provided the setting.

Students were able to continue their studies from their evacuation shelters with the help of a wireless network and mobile devices. In other regions, the service can function as an 'educational backup' system, a countermeasure against future disasters.

Technology behind the project

Tablet device

The tablet device is a Motorola Xoom™ (Wi-Fi) TBi11M (KDDI) with a 10.1 inch TFT LCD display, 32GB of internal memory and 32GB of external memory. Nearly all (93%) of the students who responded to the project questionnaire thought the size of display was good and 84% thought it was easy or at least 'no problem' to operate.

Mobile learning platform

iUniv (pronounced ahy-yoo-nuh-v) is a service and platform for social learning. It uses visual and auditory content provided online by universities and other educational institutions. Students can use the content by themselves, share it with each other and get advice online from lecturers.

Fusen

Use of the Fusen allows students to place digital stickies (notes or comments) on both visual and auditory contents. These stickies can also be shared with other users and linked with Twitter, Facebook and possibly with other social media. This encourages sharing and exchange of knowledge and learning, and also reflective study.

Key partners

Shingakukai is one of the largest educational companies in Japan, with 16,000 students and 800 teachers, mainly in the Nagano prefecture. Shingakukai is responsible for creating the content.

Castalia Co. Ltd produces educational digital content solutions and operates web media for mobile and social learning. Based in Tokyo, they provide the mobile learning platform.

KDDI is a global ICT solutions provider that offers quality reliable mobile network services in 170 countries and operates 42 data centres throughout the world. They provide the wireless tablet devices and network.

"We worked on this project with the idea that the role of a communication company was to deliver the content that connects children to the future"

Takashi Tanaka, President of KDDI Corporation.

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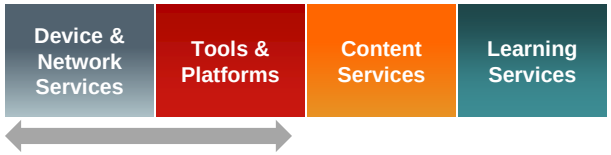
Introducing ‘always connected’ tablets into French schools – the Tablette Elève Nomade (student nomad tablet) project

- Orange provides a cloud-based environment to allow tablet computers to be used by 300 learners aged 11-12
- First trial in France involving 3G and the whole control and management system
- To embed technology effectively the teachers need to be fully involved, a control engine is needed (e.g. for filtering), as is a device management engine (to adapt tablets for use), 3G connections to maintain students interest in learning and the adaptation of content for Android and iOS devices
- Orange provides the technology, the learning content remains the responsibility of the educators
- Parental involvement in their children’s coursework and homework has increased



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Introducing ‘always connected’ tablets into French schools – the Tablette Elève Nomade (student nomad tablet) project

The French education system is making increasing use of digital environments to support education in schools. This began with fixed desk computers and has progressed to the installation of digital working environments. These are a form of intranet-based resources network that is dedicated to an individual school. It provides school management systems (for example, for assessment and absence recording) and allows users to share timetabling and homework assignments. Today, each classroom has an interactive whiteboard to facilitate the immediate sharing of digital teaching and learning contents.

Collectivités locales (local authorities) in France have recently made increasing investment in technology to encourage public schools to embed digital resources into education. This investment represents up to 5% out of a Department’s whole education budget and is steadily increasing: up by 25% in 2009–2010 and 9% in 2010–2011.

Orange believes that it would benefit the students to have their own tablet because:

- they are ergonomic and easy to handle
- they can easily fit into a student’s schoolbag/backpack – if e-books are stored on the tablet, the weight carried may even be reduced
- they can be considered an ‘always connected device’ in that they can be used anywhere – at home, in school, outside the classroom and for independent learning activities (assuming a 3G connection)
- they power up quickly once switched on, which makes them easier to use for activities
- the learning material allows the student to go beyond digital books, using the many applications (apps) and learning content specially designed for tablets
- content can be easily updated, so they can become an integral part of the students’ learning across many school years
- they can be used flexibly between student and teacher, with the teacher able to take control of the device to offer new activities, corrections or suggestions for new work tailored to the needs of the student.

Orange believes that tablets in the classroom are only part of the story

Orange believes that tablets have a real part to play in education. However, their use is only the ‘tip of the iceberg’. To embed technology effectively into the education system other key issues also need to be addressed:

a) **Involve teachers.** Teachers need preparation time – some teachers find the use of tablets intuitive but others do not, so teachers need time to become familiar with how they work, what they can best be used for, and how their use can best be applied in education. The changes that their use will bring to a whole-class learning environment need to be thought through, and teaching and learning materials adapted. Teachers also need to source relevant apps.

b) **Use a control engine.** Even though they are often thought of as ‘personal devices’, schools are responsible for students’ activities with tablets. Access to forbidden content and materials on the internet needs to be filtered out using a proxy control engine through which all requested data flows before reaching the internet. For the Tablette Elève Nomade (TEN) trial (see below), this is handled by the Academy of Versailles.

c) **Use a device management engine.** One of the benefits of tablets is that the environment can easily be changed – new apps can be installed and others deleted according to need. A device management engine can play a major role in adapting the tablets for use.

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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

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etisalat

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 see 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.

Examples 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 formations, 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.

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

- *educ@**TI**on*, 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@**TI**on* 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

GSMA 2013

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

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SMART LIVE MORE

sweep

Smart Wireless Engineering Education Program

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 52 private and state-run schools all over the Philippines, benefitting 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.

"Through SWEEP, our school (Bulacan State University) has become one of the top universities producing quality graduates [in] the telecommunications field."

Oliver R. Mariano, Department Head, College of Engineering Department of Electronics and Communications, Bulacan State University

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 (Advance 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.

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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

Device & Network Services	Tools & Platforms	Content Services	Learning Services

mEducation

acer

University of Western Sydney

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 focussed on how ubiquitous access to ICT might:

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

"Telstra's been great. They're not just a technology company as far as we're concerned with this project. Telstra has helped us by providing expertise and then followed up with providing boutique and bespoke plans for us, to enable us to do this pilot. And they provide us with back-end support in terms of monitoring the usage, so that we get some indication of what the students might actually use once they are able to be connected ubiquitously."

Shane Wharton, School Manager, School of Education and Programme Lead, UWS

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**

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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

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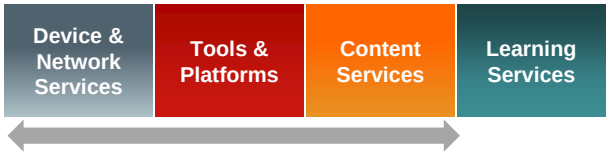
University goes portable with tablet technology

- 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



mEducation

orange

UOC Universitat Oberta de Catalunya

University goes portable with tablet technology

Developing and evaluating an Open University portable learning environment for mobile technologies

Enhanced Mobile Learning (iUOC) at the Universitat Oberta de Catalunya (Open University of Catalonia, UOC) is an initiative of the University in collaboration with mobile operator Orange Spain. It aims to take the UOC's virtual campus, My UOC, to new, interactive and portable devices.

The App is just the first step in the iUOC project: whilst it is initially just for the iPad, the project has defined a data model that can be used on any application for any device with an internet connection.

iUOC makes mobile learning a reality by providing access via Wi-Fi and 3G networks anytime and anywhere to both the student's virtual learning environment (VLE) and teaching content.

A study conducted by UOC assessed the importance of accessibility and autonomy with respect to an increase in learning productivity and efficiency. The main aim of the iUOC project was to study the learning possibilities offered by the iPad or any mobile device with 3G connectivity and a touchscreen.

The UOC Virtual Campus is already accessible from mobile devices. Students, professors and other members from UOC can log into the campus homepage via any mobile device. The mobile version provides access to the homepage, the virtual classrooms and other private areas of the main campus, allowing users to check their mail, activity in their classrooms, calendar, community forums and many other widgets without a computer but just their mobiles.

About UOC

The Universitat Oberta de Catalunya (UOC) is an on-line learning university based in Catalonia, Spain. It has more than sixty thousand students and three thousand teachers who learn and teach through a virtual learning environment (VLE) across 50 countries. The VLE has virtual classrooms with different collaborative functionality and applications implemented in order to enable students to learn.

The UOC's mission is to provide people with lifelong learning and education opportunities. The aim is to help individuals meet their learning needs and provide them with full access to knowledge, above and beyond the usual scheduling and location constraints.

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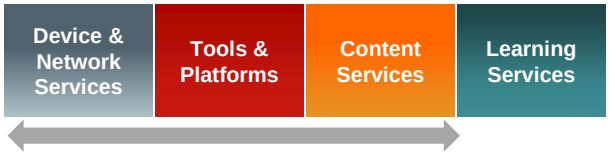
Using tablet computers in the agricultural sector in Spain

- 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



mEducation

Asociación Agraria Jóvenes Agricultores

Telefónica Learning Services

Using tablet computers in the agricultural sector in Spain

Telefónica Learning Services (TLS) has been working with the Agrarian Association of Young Farmers (ASAJA) in Spain to develop learning and training opportunities using tablet devices.

The key objective of the project was to introduce new technologies to boost farmers' computer skills and to help them become part of the information society, whilst at the same time enhancing their productivity and efficiency on the farm.

This training was subsidised by the Tripartite Foundation for Continuing Training (Spanish acronym FTFE) through its contacts programme. ASAJA contracted Telefónica Learning Services to manage the training programme.

Farmers study in Teruel – An example

In 2012, following repeated requests from farmers wishing to learn more about new technologies and their applications in agriculture, a study was set up in three municipalities in the province of Teruel: Tornos, Calamocha and Torralba. Forty-six farmers with a basic level of education and who lived in remote locations were given iPads with 3G connectivity. The iPads with 3G were found to be very useful for these students, who spend most of their time outdoors because connectivity is guaranteed anywhere. These students not only live in places which are not easily accessible, but also move from one place to another working in different fields and farms. They were motivated to learn and communicate with each other and the teachers. The teachers and students appreciated the high specification of the devices they had been given, and valued the ability to consult online training manuals.

About Telefónica Learning Services

Telefónica Learning Services (TLS) is part of the Telefónica group of companies. Launched in 2011, it is responsible for Telefónica's eLearning services in 20 countries.

TLS brings together a multiskilled team of educators, consultants, technology experts, web developers/designers, subject matter experts, teachers, tutors and student assessors to reduce the digital 'divide' in employees' skills and professional development

Their bespoke learning solutions for companies and public administrations include learning management systems, content and services for computers, tablets and smartphones and working with social media and augmented reality. They reach more than 500,000 students every year via many different organisations.

The Agrarian Association of Young Farmers

is an independent agrarian association that looks after the interests of its affiliates. It has more than 200,000 members working directly on farms, both as owners and tenants, including family members who work in operating activities. It is known as ASAJA, its Spanish acronym.
See www.asajanet.com.

1 SCORM stands for Sharable Content Object Reference Model – a collection of standards and specifications for web-based eLearning

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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)

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VOICETAP

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
- Self-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 75 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 in Rs. 5 or £0.06) 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 £0.35).

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 overtures, 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, college 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 prepose 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.

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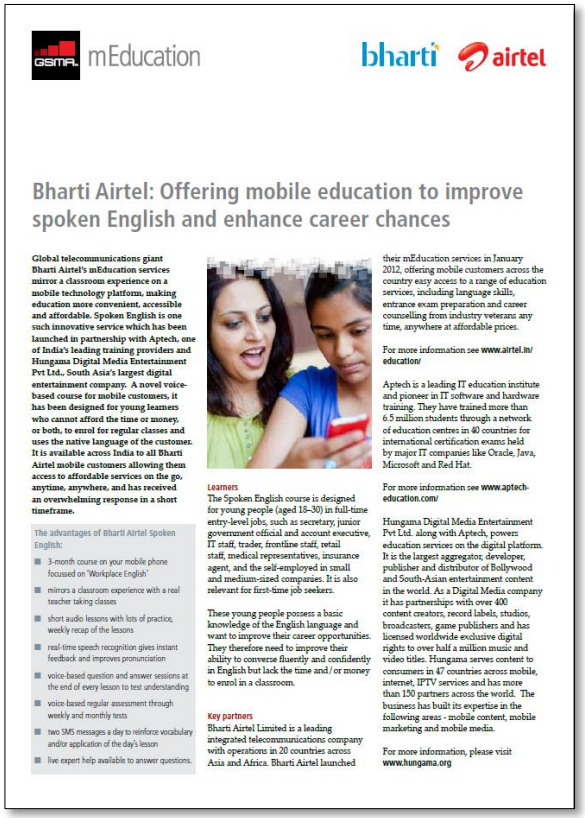
Bharti Airtel: Offering mobile education to improve spoken English and enhance career chances

- 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



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bharti airtel

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.

The advantages of Bharti Airtel Spoken English:

- 3-month course on your mobile phone focussed 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.

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.

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**

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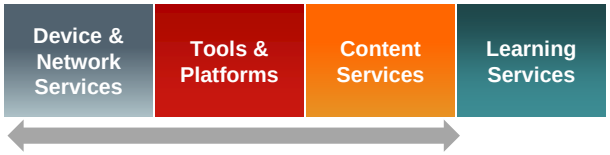
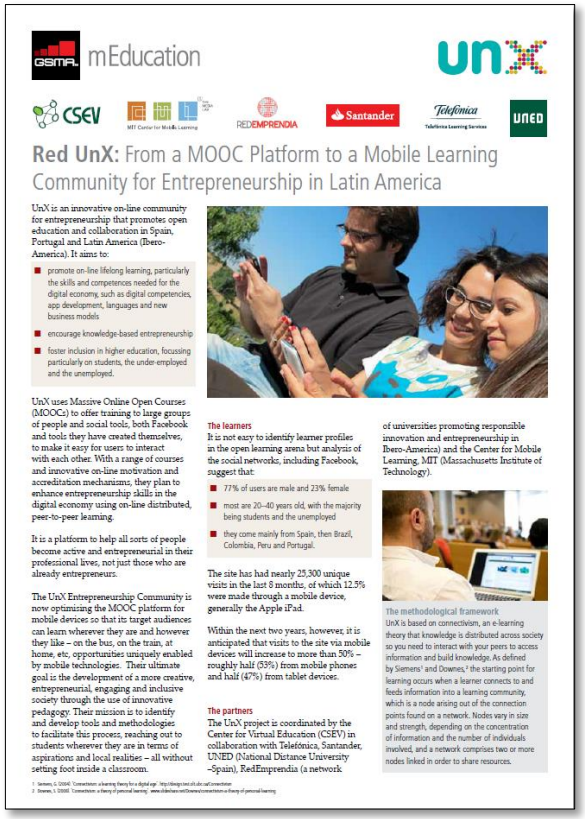
Red UnX: From a MOOC Platform to a Mobile Learning Community for Entrepreneurship in Latin America

- 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

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unx

CSEV

REDEMPRENDIA

Santander

Telefónica

UNED

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

UnX is an innovative on-line community for entrepreneurship that promotes open education and collaboration in Spain, Portugal and Latin America (Ibero-America). It aims to:

- promote on-line lifelong learning, particularly the skills and competences needed for the digital economy, such as digital competencies, app development, languages and new business models
- encourage knowledge-based entrepreneurship
- foster inclusion in higher education, focussing particularly on students, the under-employed and the unemployed.

UnX uses Massive Online Open Courses (MOOCs) to offer training to large groups of people and social tools, both Facebook and tools they have created themselves, to make it easy for users to interact with each other. With a range of courses and innovative on-line motivation and accreditation mechanisms, they plan to enhance entrepreneurship skills in the digital economy using on-line distributed, peer-to-peer learning.

It is a platform to help all sorts of people become active and entrepreneurial in their professional lives, not just those who are already entrepreneurs.

The UnX Entrepreneurship Community is now optimizing the MOOC platform for mobile devices so that its target audiences can learn wherever they are and however they like – on the bus, on the train, at home, etc, opportunities uniquely enabled by mobile technologies. Their ultimate goal is the development of a more creative, entrepreneurial, engaging and inclusive society through the use of innovative pedagogy. Their mission is to identify and develop tools and methodologies to facilitate this process, reaching out to students wherever they are in terms of aspirations and local realities – all without setting foot inside a classroom.

The learners

It is not easy to identify learner profiles in the open learning arena but analysis of the social networks, including Facebook, suggest that:

- 77% of users are male and 23% female
- most are 20–40 years old, with the majority being students and the unemployed
- they come mainly from Spain, then Brazil, Colombia, Peru and Portugal.

The site has had nearly 25,300 unique visits in the last 8 months, of which 12.5% were made through a mobile device, generally the Apple iPad.

Within the next two years, however, it is anticipated that visits to the site via mobile devices will increase to more than 50% – roughly half (53%) from mobile phones and half (47%) from tablet devices.

The partners

The UnX project is coordinated by the Center for Virtual Education (CSEV) in collaboration with Telefónica, Santander, UNED (National Distance University –Spain), RedEmprendia (a network of universities promoting responsible innovation and entrepreneurship in Ibero-America) and the Center for Mobile Learning, MIT (Massachusetts Institute of Technology).

The methodological framework

UnX is based on connectivism, an e-learning theory that knowledge is distributed across society so you need to interact with your peers to access information and build knowledge. As defined by Siemens[1] and Downes,[2] the starting point for learning occurs when a learner connects to and feeds information into a learning community, which is a node arising out of the connection points found on a network. Nodes vary in size and strength, depending on the concentration of information and the number of individuals involved, and a network comprises two or more nodes linked in order to share resources.

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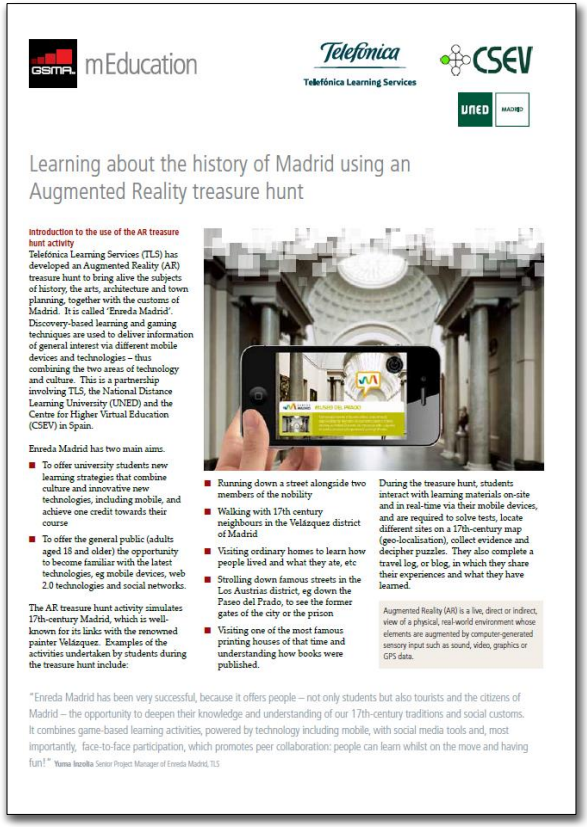
Learning about the history of Madrid using an Augmented Reality treasure hunt

- 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



mEducation

Telefónica Learning Services

CSEV

UNED MADRID

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 is 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!" Yuma Inzolia Senior Project Manager of Enreda Madrid, TLS

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