

**Perspectives on the use of
information and communication
technologies (ICTs) to benefit
education in developing countries:**

Excerpts from the World Bank's EduTech blog



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A considerable number of firms were displaying [datalogging](#) or probeware education products – these are devices that record data over time or in relation to location either with a built in instrument or sensor or via external instruments and sensors which typically can be connected to a computer (either via a USB cable or, increasingly, wirelessly). A sensor that you insert into soil to measure PH levels would be one example. This is a product segment that is often not on the radar screen of many ministries of education in developing countries that are considering ICT use in schools. This will no doubt change over time, as the utility of such devices are immediately apparent to science teachers once they are exposed to them, and they can inexpensively extend the utilization of existing computing facilities in schools in many useful ways.

The advanced technologies section at BETT did not appear to be of great immediate relevance to many delegations from developing countries, as most products relied on high end displays and/or processing power (to say nothing of reliable, abundant electricity!) that are simply out of the reach of schools in developing country environments.

I did not speak with any ministerial delegations that visited the section devoted to servicing students with special needs (and their teachers). This is a shame, as it is in this area that the most demonstrably positive impacts on learning performance and outcomes of students have been achieved through the use of ICTs in many places.

I spent a good amount of time investigating the small booths of small vendors, in the hopes of finding something I had not seen before. (I often enjoy these booths the most.) One notable product that I saw this year was a colored bracelet (looking much like those made famous by cyclist Lance Armstrong) that opened to reveal a USB memory stick, which contained a set of programs that could run directly off the USB stick once it is plugged into a computer. This sort of device would seem to have great utility in many developing country markets – they are inexpensive, can be used to facilitate the use of a small number of computer in a school (in a lab, for instance) by a large number of students, who could store their files on their individual USB sticks and wear them home.

A few things were notable to me by their absence. I expected to see many more small, unknown (at least to me) Chinese vendors with low-cost versions of various hardware products. I especially expected to see one or more such firms with a low cost IWB, but none was in evidence. I also saw almost no applications designed to run on mobile phones. This was a bit surprising, given the hype around the potential relevance of mobile phones in education contexts, and the increasingly ubiquity of mobile phones among schoolchildren in the UK. While there were lots of things that would fall into the category of ‘educational games’, there were only a few vendors of so-called ‘serious games’ – software applications with explicit educational contexts and objectives that resemble higher-end computer games.

Leaving BETT, I was left with the impression that the gamut of ICT devices and applications considered for use within the context of most large scale education projects in developing countries that seek to incorporate ICTs is quite narrow. While the ‘gee-wiz-wow-factor’ of a bleeding edge gadget like Microsoft Surface hints at where ICT use in education may be going in the coming years, (‘digital desks?’), it was variations on existing products -- lower cost laptops, multi-touch displays, devices for use in science and math classes that can be connected to computers, devices optimized for use by students with special needs – that made the strongest mark on me, and left me most hopeful that products are emerging that will help developing countries take advantage of the sizable amounts of money being invested in basic computer infrastructure in schools. Innovation in this area appears to be accelerating, and I can’t wait to see what BETT 2010 brings.

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FEBRUARY

4. *An update on the new \$10/\$20 computer for education in India*
5. *The Use and Misuse of Computers in Education: Evidence from a Randomized Experiment in Colombia*
6. *In with the Outsourcing Crowd: Learning from Nasscom*
7. *Cyberabad Dreams ...*

4. An update on the new \$10/\$20 computer for education in India

SUBMITTED ON FRIDAY, 02/06/2009 - 09:07



**the kingfisher arrived in India long ago ...
we'll have to wait a little longer for the R500 laptop**

En route to Mumbai, I thought I'd pass around some summary information about the new "\$10 education laptop" officially announced this week in India.

This has received a great deal of press attention, much of which appears to be (after doing some further investigation) ill-informed / speculative.

Lost in much of the hype has been what is perhaps the more interesting story -- the apparent [public commitment](#) by the Indian government to provide subsidized connectivity for schools, colleges and universities, and a related large investment in the development of "e-content", as part of a new "National Mission in Education through Information and Communication Technology (ICT)". Part of this includes the [development of a new national ICT in school education policy](#).

(And despite the sensational headline below, this thing isn't 'useless' -- just perhaps much

less useful than many had hoped.)

No doubt there will be more to come in this area.

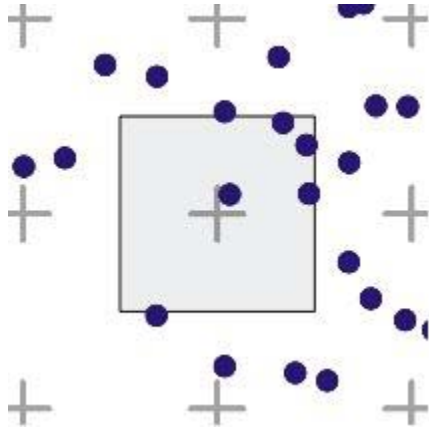
A sampling of news reports:

- [Fox: India's '\\$10 Laptop' Revealed as Nearly Useless Brick](#)
- [The Times of India: India showcases low-cost laptop to bridge digital divide](#)
- [The Hindu: 'Ultra-low-cost' access device introduced](#)
- [Rediff: India unveils \\$10 laptop!](#)
- [Times of India: \\$10-laptop proves to be a damp squib](#)

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5. The Use and Misuse of Computers in Education: Evidence from a Randomized Experiment in Colombia



super random sampling or random supersampling? you be the judge

SUBMITTED ON FRIDAY, 02/13/2009 - 19:17

World Bank Economist Felipe Barrera-Osorio, working with Leigh Linden of Columbia University, has just published a very useful and rigorous study on the impact of ICT use in Colombia.

[The Use and Misuse of Computers in Education: Evidence from a Randomized Experiment in Colombia](#) (PDF) looked at 97 schools and 5,201 children over two years of participation in the Computers for Schools program.

While some readers may immediately latch onto the finding that the program "had little effect on students' test scores", I found the potential explanation for this lack of positive impact to be even more valuable:

"The main reason for these results seems to be the failure to incorporate the computers into the educational process. Although the program increased the number of computers in the treatment schools and provided training to the teachers on how to use the computers in their classrooms, surveys of both teachers and students suggest that teachers did not incorporate the computers into their curriculum."

This points to a fundamental paradox in many, if not most, large scale roll-outs of computers in schools in developing countries: one of the primary rationales for their purchase and deployment is to bring about improvements in student test scores in core subjects, yet in practice they are typically used for basic 'computer instruction'.

This is the first in what is hoped to be a series of rigorous analytical studies sponsored by the World Bank examining the impact of ICT use in education in various ways.

Note: Public domain image from [Wikimedia Commons](#).

6. In with the Outsourcing Crowd: Learning from Nasscom



**an empty call centre in Florida ...
did all of the jobs leave for India?**

SUBMITTED ON FRIDAY, 02/20/2009 - 23:08

The Nasscom India Leadership Forum in Mumbai is the annual meeting platform at which senior representatives from firms in the Indian software and Indian BPO industries share information, discuss and debate issues. The Forum is well-covered in the Indian press, and increasingly internationally as well, and the event web site's [group blog](#) is a rich source of divergent opinions and perspectives. Key note speeches from people inside and outside of the industry (including [Narayana Murthy](#), [C.K. Prahlad](#) and [Shashi Tharoor](#)) were of notably high quality.

It is an interesting time for Nasscom: How will an industry that has only known good times deal with the current economic downturn? How will individual Indian firms fare? While the mood at the conference itself was notably serious (especially for an industry event), some tier one Indian companies actually expect to benefit from the downturn. Many European countries (far behind the US and the UK in terms of outsourcing) are expected to examine

costs more closely, which is expected to open up these markets more to Indian BPO providers. At the same time, new outsourcing destinations are emerging, within India and internationally. This is happening not just because of the hunt for lower prices and new talent, but also to gain a foothold in new emerging markets.

Three main drivers for outsourcing/offshoring from the customer side were articulated: (1) outsourcing to cut costs and access talent; (2) globalisation is impelling companies to consolidate regional back-office operations in regional hubs; and (3) companies in newly emerging economies are looking to outsource some of their work, especially to BPO firms that are close to them geographically.

To complicate matters, one common theme that ran through many of the talks was that India, a country of more than one billion people, is potentially facing increasing [IT talent shortages](#).

Discussion of IT-related skills development ran through many of the speeches and discussions. While the Indian outsourcing industry is facing challenges at a scale that it has not seen before, and it was notable that a number of firms are seeing the current economic crisis as an opportunity. By investing now in developing and retaining talent, some firms are looking to strengthen their position as the economic situation improves. Infosys Chairman N.R. Narayana Murthy, one of the industry's most respected figures, [announced](#) that his firm has not rescinded any of the 1600 job offers it had extended to new graduates, but rather has increased the training period for new graduates from 16 to 29 weeks. Investing now for the future -- by investing in skills development for their people -- may leave some Nasscom member companies in stronger positions as the world emerges from the current economic downturn. This commitment to investing in people, even in times of economic downturn -- perhaps especially in times of economic downturn! -- made a strong impression on many of African delegates at the Nasscom event.

Selected news reports:

- [BusinessWeek: Indian IT Commiserates at Nasscom Show](#)
- [CIO: Thrive, not survive in downturn](#)
- [NetworkComputing: Indian Software Industry Looks for Silver Lining in Cloud of Recession](#)
- [LiveMint: Infosys extends employees' training period to deal with crisis](#)

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7. Cyberabad Dreams ...

SUBMITTED ON FRIDAY, 02/27/2009 - 17:42



spotlight on Hyderabad

How do you develop the skills in your workforce necessary to compete in dynamic, fast-moving sectors of the global economy? I just returned from India, where I joined colleagues from Africa in a series of site visits, learning events and presentations in the Indian IT hubs of Mumbai, Hyderabad and Bangalore in seeking answers to this (and related) questions. More specifically, the trip provided a rich opportunity to learn more about the 'India success story' of the last 20 years in the areas of IT, IT-enabled services and business process outsourcing (BPO), gathering policy and practice lessons of potential relevance and application to Africa. In many countries, including many African countries, proposals for the widespread introduction of computers in schools is explicitly tied to goals to develop so-called 'knowledge workers' to work in nascent IT industries. How explicit is this link in reality?

During the two-week visit to India, we participated in the [NASSCOM India Leadership Forum](#), which brought together senior IT executives from India and around the world for presentations and agenda setting; visited what is possibly the world's largest call centre; learned about the development of the Indian School of Business, recently ranked as one of the top 25 business school's in the world by the Financial Times despite being on a decade old; toured Hi-Tec City, which launched the transformation of Hyderabad in '[Cyberabad](#)'; explored the sprawling campus of Infosys in Bangalore (where the phrase 'the world is flat' was coined); was briefed on cutting-edge applications of ICTs in rural India by teams at [Microsoft Research in Bangalore](#); and visited world-class institutions of higher education like the Indian Institute of Science (IISc, in Bangalore) and the new International Institute of Information Technology (IIIT-Hyderabad).

One key point made repeatedly throughout the trip, by private companies, government officials and education institutions alike, was that ICT skills and employability are key drivers of this industry's growth, but it is the simultaneous development and cultivation of the 'soft skills' that are the key differentiators for success. India has no shortage of technical people competent in ICT-related disciplines. What is more difficult to teach -- and identify -- are the 'soft' communication, management, cultural adaptation and sensitivity skills that don't necessarily have anything to do with ICTs. If this is indeed the case -- and it is not only Indian IT firms that are making this point -- a narrow focus on the large scale introduction of computers in many developing countries to teach basic (mechanical) ICT skills will only get you so far. What we are talking about here, of course, are the so-called '21st century skills' that education policymakers love to expound on. Watching workers stream into work at one of the the world's biggest call centres outside Mumbai, counting 42 buildings under construction from the roof of my hotel in Hyderabad to house IT professionals serving the outsourced needs of companies around the world ... these are much more persuasive testaments to the importance of the development of such skills than any policy document can be.

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11. From Nepal to the Nordic countries, innovations in digital learning resources

SUBMITTED ON FRIDAY, 03/20/2009 - 19:22

The recent [launch](#) of the [E-Pustakalaya digital library](#) in Nepal is one example of the innovative ways that countries are exploring how to provide learning materials to schools in electronic formats. [OLE-Nepal](#), an NGO affiliated with the [Open Learning Exchange](#), has been working with the Ministry of Education to develop interactive digital lessons aligned with the national curriculum in a pilot subjects. E-Pustakalaya will complement this work by bringing in digital content from a variety of publishers and organizations of relevance to learners in Nepal. This is just one example (among hundreds) of a project seeking to help answer a question confronting many countries as they accelerate the speed at which they are looking to utilize computers in their schools: How can we provide useful educational content in local languages?

Many countries, especially those with limited resources and whose language of instruction is not one of the major international languages for which there is already a great deal of education content available in digital formats (English, Spanish, French, Chinese, Russian, etc.), are beginning to explore the use of so-called '[open education resources](#)' (OER) as one way to develop relevant education content.

Following up on its own successful [OER initiative](#), the results of which are collected in the excellent [Giving Knowledge for Free: The Emergence of Open Educational Resources](#), the OECD is currently sponsoring a project that it is calling 'Digital [Learning Resources as Systemic Innovation](#)'. This work is attempting to take stock of policy innovations and a variety of discrete initiatives promoting "the development, distribution and use of digital learning resources for the schools sector", with a specific focus on experiences in the Nordic Countries. Individual reports (all in PDF) on the current situation in [Denmark](#), [Finland](#), [Iceland](#) (disclaimer: I was part of the team that put together this report), [Norway](#) and [Sweden](#) are now available on the OECD web site.

The experiences and lessons learned documented from these countries -- considered by many to be world leaders in this area -- suggests that that system-wide innovations in this area are still the exception and not the rule. Innovation related to digital learning resources, where it is occurring, appears to be happening largely at the level of specific programs and schools, and even classrooms. It will be interesting to see just what generalized guidance will emerge for policymakers from the synthetic report from the OECD on this topic, due out later this year.

12. ICT & Education @ TED

SUBMITTED ON FRIDAY, 03/27/2009 - 09:14



TEDtalk: Alan Kay

With the buzz from this year's influential [TED](#) (Technology, Entertainment, Design) conference (9-13 February) now starting to fade, I thought it might be interesting to re-visit some of the highlights from past conferences on topics related to ICT and education. While presentations at the conference cover a wide variety of topics, some 'TEDtalks' provide quite illuminating, and sometimes quite provocative, glimpses and insights into how technology *might* be used in various innovative ways to enhance education in the future. I am regularly amazed at the number of times that people in ministries of education all around the world ask me about something they first learned about through TED. While we were, yet again, not in attendance this year, the conference

organizers have done the wonderful (and laudable!) job of making available the 'TEDtalks' through the TED web site for free.

TED participants often have a strong technology bent, and this is reflected in a number of the well-regarded talks on cutting-edge, and just plain cool, technology applications. [Jeff Han](#) unveiled his work on multi-touch technology before the days of the iPhone. [Pattie Maes](#) (& Pranav Mistry) showed off technology that you can wear, turning the whole world into your (or in this case, Pranav's) interface. [Tod Machover and Dan Ellsey](#) demonstrated the power of technology to liberate the music inside people's head, and [David Merrill](#) showed off his set of 'toy blocks that think'. (The gasp of delight, and subsequent applause, from the audience, when the blocks appear to perform a math computation on their own is a reminder to many of us why we are involved in the field of ICT and education.) While not speaking directly to education, [Jan Chipchase](#) spoke eloquently about the way we relate to the piece of technology that many of us increasingly carry with us everywhere we go -- the cell phone.

[Richard Baraniuk](#) shared experiences of the Connexions project with 'open source learning', as did [Sugata Mitra](#) from the Hole-in-the-Wall project, an experiment from India in 'minimally invasive education' that has strongly influenced (in ways good and bad) the thinking of many involved in working with ICTs in the education sector in developing countries, including many of the proponents of the OLPC project. The [One Laptop Per Child](#) initiative itself has been featured at TED many times; less known to many is the talk that its leader, [Nicholas Negroponte](#), made at TED 25 years ago that anticipates much that has happened since. In the eyes of many, all those those who work at the intersection of education and technology owe an intellectual debt (consciously or not) to the pioneering work of [Alan Kay](#).

Finally, no list of great TEDtalks would be complete without a nod to [Hans Rosling](#), for you don't have to be a data geek to be alternatively entertained and inspired by his influential talk 'debunking third-world myths with the best stats you've ever seen'.

I look forward to drinking in the flood of 'ideas worth spreading' as talks from the 2009 version of TED (and its sister conferences around the world) are slowly made available online.

TEDtalks:

- Jeff Han: [Unveiling the genius of multi-touch interface design](#)
- Pattie Maes (& Pranav Mistry): [Unveiling the "Sixth Sense." game-changing wearable tech](#)
- Tod Machover & Dan Ellsey: [Releasing the music in your head](#)
- David Merrill: [Siftables, the toy blocks that think](#)
- Jan Chipchase: [Our cell phones, ourselves](#)
- Richard Baraniuk: [Goodbye, textbooks: hello, open-source learning](#)
- Sugata Mitra: [Can kids teach themselves?](#)
- Nicholas Negroponte: [One Laptop Per Child](#) & [From 1984, 4 predictions about the future \(3 of them correct\)](#)
- Alan Kay: [A powerful idea about teaching ideas](#)
- Hans Rosling: [Debunking third-world myths with the best stats you've ever seen](#)

(image at the top of this blog post used according to its Creative Commons license; image courtesy of TED)

APRIL

13. The Use of ICT in Education Reform: Sharing the experiences of Jordan and Indonesia -- and Singapore

14. What do we know about using mobile phones in education?

15. Are they really using Nintendo in schools in Japan? (and why might developing countries care?)

13. The Use of ICT in Education Reform: Sharing the experiences of Jordan and Indonesia -- and Singapore

SUBMITTED ON FRIDAY, 04/10/2009 - 22:01



screenshot from ICT and education videoconference, Indonesian speakers

Earlier this month, the World Bank and the Global Distance Learning Network (GDLN) helped to facilitate a "South-South" dialogue on the use of ICT as part of larger education reform initiatives. The video for the event is [now available online](#). This dialogue, mediated by one of Indonesia's leading talk show hosts and watched live by groups in eight Asian countries, included exchanges between the ministers of education in both Indonesia and Jordan, as well as contributions from other leading figures involved in education and technology in those two countries. Dr. Thiam Seng Koh of the National Institute of Education in Singapore brought in perspectives from the [experiences of Singapore](#), considered one of the world leaders in thinking -- and action -- in this field.

While the conversation was too rich to adequately summarize here, HE Dr. Tayseer Al-Nahar, Jordan's Minister of Education, provided one of the most useful, succinct sets of practical lessons and guidance

for senior policymakers that I have heard delivered by a senior education official on the use of ICTs, and which is worth transcribing here:

1. *We have to be patient ... it takes time*
2. *ICT can not fix a bad education system*
3. *It's not about purchasing computers to schools but upgrading skills and knowledge of teachers*
4. *Education systems have to develop e-content materials ... if there is no e-content developed ... it is like building roads without cars on the road.*
5. *[You must have] change management at the school level ... involvement of school principal in training and all aspects of ICT integration is very important.*

Jordan's experience with introducing technology in schools is perhaps not long, but it's well worth our attention.

For more information about the use of ICTs in schools in Jordan:

- [Jordan Education Initiative \(JEI\) web site](#)
- [Jordan Education Initiative \(JEI\), from the World Economic Forum web site](#)
- [Evaluation of the Jordan Education Initiative](#) (by EDC and RTI International)
- [McKinsey report on the Jordan Education Initiative](#) (pdf)
- World Bank project in Jordan: [Education Reform for Knowledge Economy \(ErKfE\) I](#)

14. What do we know about using mobile phones in education?

SUBMITTED ON FRIDAY, 04/17/2009 - 12:47



Perhaps the most well known, and biggest, program exploring the use of mobile phones in education in a developing country is the text2teach project in the Philippines (part of the larger 'BridgelT' initiative).

28% of Africans now have a mobile phone subscription, according to data [released](#) by the ITU earlier this year, part of a larger trend that sees two out of every three mobile subscribers around the world living in a developing country. The flagship ITU publication [Measuring the Information Society](#) (pdf) notes that two-thirds of the world's cell phone subscriptions are in developing nations, with Africa, which has a 2% subscriber rate as recently as 2000, growing the fastest. And it is not only adults who are making use of this new technology. [Survey work](#) at a low-income high school in South Africa's Samora Machel township suggests that mobile penetration among youth in some places might be higher than one might suspect.

While the explosive use of mobile phones in developing countries is well-documented -- and undeniable -- and evidence is emerging that phones are slowly making their way into the hands of teens, just what this might mean for the delivery of education in developing countries is a little less clear. This topic first started to get serious attention among small groups of people in international donor agencies around 2005, with a 'mobile

learning' [workshop](#) in Tokyo sponsored by ADBI and UNESCO serving as a sort of landmark event for the topic. The workshop report (published as [Mobile Learning for Expanding Educational Opportunities](#)) is in many ways typical of work around this time, focusing largely on the possible usage models and relevance for using mobile phones in a variety of ways to support new teaching and learning processes. Further afield, Dfid began to support work in this area in Africa, and papers written on mobile learning in Africa sounded similar notes to what was being discussed in Asia, as revealed in titles like [The Potential for Using SMS to Support Learning and Organisation in Sub-Saharan Africa](#) (pdf) and [Transforming learning through technology: the case of using SMSs to support distance students in South Africa](#) (pdf). While the evidence base is still quite spotty, some lessons (largely of the anecdotal variety) and usage models are slowly emerging from pilot projects in places as diverse as [Thailand](#) and [Mongolia](#). The increasing ubiquity of mobile phones has helped enabled pilots looking at [mobile gaming](#) to support literacy in India. Even the World Bank has got into the act, through Development Marketplace funding for a small pilot in [Bangladesh](#).

Perhaps the most well known, and biggest, of these pilot programs is the text2teach project in the [Philippines](#) (see video at the top of this blog post), which provides a way for teachers to request educational videos via text message, with the videos delivered to a television at the school via satellite.

Exploring what might be possible should smartphones drop greatly in price in the coming years, projects like [Dunia Moja](#), a joint initiative of Stanford University (USA) and partner universities in Southern and Eastern Africa, are exploring how communication and joint research between students and faculty on environmental issues can be facilitated and supported.

A slew of new publications and resources are emerging to help us sort through all of the initiatives. Canada's Althabasca University (editor: Mohamed Ally) has just published a very useful general survey on [Mobile Learning: Transforming the Delivery of Education and Training](#) (free e-book available). IRRODL has published a short article by Scott Motlik reviewing what we know about [Mobile Learning in Developing Countries](#), which serves as a nice complement to a short article on the same topic by [John Traxler](#) that the Commonwealth of Learning [published](#) back in 2005.

When we talk about the use of mobile phones in the education sector, it is clear we are still in the very early stages of developments, and I expect that this will be an area of major research interest and activity in the coming years -- and a recurring topic on this blog.

15. Are they really using Nintendo in schools in Japan? (and why might developing countries care?)

SUBMITTED ON FRIDAY, 04/24/2009 - 06:20



¿Nintendo en la escuela?

**Other* mobile devices in education - thinking beyond netbooks, mobile phones and PDAs*

Last week's blog entry on ['What do we know about the use of mobile phones in education?'](#)

generated a lot of email. Some correspondents (rightly) noted that a variety of mobile devices in multiple [form factors](#) are being tested for use in educational settings outside of the three categories most people commonly think about: PDAs, phones and netbooks.

A case in point: Last month reports emerged in the [Japanese media](#) (English re-cap [here](#)) about the 'mandatory' use of Nintendo DS portable video gaming devices in a set of schools in Osaka.

(Please note that the word 'mandatory' does not appear in the Japanese article linked to here; the English re-cap may or may not be based on other sources.) Reports about use of the DS

(and before that the Nintendo GameBoy) in education in Japan appear [sporadically](#) in the press.

The DS is not the only consumer ICT device that is showing up for sanctioned use in schools. Duke

University (USA) has received a lot of attention for the widespread, officially-supported use of the iPod by its teachers and students, and [lessons](#) learned from this experience are starting to circulate -- and have begun to be [submitted](#) (pdf) to academic journals.

Consumer products like the DS and the iPod have large installed user bases already familiar with their use (and who offer the opportunity for large-scale, on-going usability testing) and libraries of education content (Nintendo has licensed over 200 titles under its 'education' category, and [iTunes U](#) consolidates academic lectures from many universities for free download). Whether things like the DS or iPod find their way into the formal school sector -- or if, as is more likely, their impact in the near term may be more as aids to support informal learning -- some people question the need for purpose-built ICT devices aimed specifically at the education sector when there are already sets of ICT devices in growing use outside the classroom that could potentially be utilized within schools. 'Why reinvent the cart when you can just retrofit the wheel?', such people may ask.

(Of course these aren't the only small mobile ICT devices that pop up in schools. [Probeware](#) (dataloggers) and graphing calculators have been in long use in many places. Interactive response devices as part of [interactive whiteboard](#) solutions are becoming increasingly common in schools in some OECD markets. The point here is to be illustrative, not comprehensive.)

So just what, you might ask, does all of this have to do with education in developing countries?

First, let's be clear: With rare exceptions, things like iPods and Nintendo portable gaming machines are not viable ICT devices for consideration in school systems in developing countries based on their current price points, no matter what you think about their educational uses.

For many if not most Ministries of Education with which I speak, "ICTs" are synonymous with computer labs and laptops. Slowly, this is being challenged (rhetorically at least, although not yet in practice) by those who say that it is the mobile phone that we should be thinking about when we are talking about widespread use of ICTs in schools in developing countries, especially given (1) their increasing ubiquity in many societies (2) lower price point (3) that they are becoming more powerful every year. It is possible to view this as a sort of race. Is the question, then, whether we should be about 'dumbing down' (increasingly inexpensive) laptops, or 'smartening up' mobile phones?

These options aren't mutually exclusive, of course. But there are other options.

We are seeing sets of very interesting pilot projects emerging to explore the uses of inexpensive mobile ICT devices in education systems in Africa. Consciously or not, many of these projects build off the (very successful, in many places) legacy of the use of ['interactive' radio](#) to aid instruction in countries from [Nicaragua](#) to [Malawi](#), [Sudan](#) to [Haiti](#). Initiatives in this area include the [Talking Book Device](#) (video of talk at Google [here](#)) from the Literacy Bridge NGO, a very low cost audio player and recorder for children and adults in the developing world to use for literacy learning and knowledge sharing currently being pilot tested in Ghana, and the [One Media Player per Teacher](#) project . Not all of these new pilots feature products specially engineered for a 'developing country context'. The PDA-like [TeacherMate](#), for example, which has been used in Chicago (USA) schools, is now being tested in Africa (have a look at the video [here](#) -- it sure reminds me a lot of the Nintendo DS!).

The point I guess I'm trying to make here is that just as talk about the use of mobile phones in education is in many ways challenging the old orthodoxy, we shouldn't be looking to replace it with another. Many of the lessons learned from creative deployments of handheld devices like the Nintendo DS (and the iPod, the Kindle, etc.) may well be more relevant to many education systems in developing countries than what has been learned from computer-centric ICT deployments in OECD countries. As the universe of ICT options for schools expands, and as lines blur between them (is an iPod Touch running Skype a 'phone?'), we would do well not to focus too much on form (factor), but rather on function. In the end, of course, we are putting the cart before the horse (to extend the metaphor from the beginning of blog post) by talking about the technology before we talk about the education objectives that we are trying to address with such technologies. This is a point made by Eric Kibinkiri in a [recent comment on this blog](#), and, no matter how we might feel individually about certain specific technologies, one with which I think we can all hopefully, collectively, agree.

(Special thanks to Hana Yoshimoto for the article in Japanese!)

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MAY

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16. Education and Technology in an Age of Pandemics



transforming
education?

SUBMITTED ON FRIDAY, 05/01/2009 - 14:00

For some people in other parts of the world, it was the [picture](#) of two top Mexican futbol teams playing earlier this week in an [empty Estadio Azteca](#) (one of the world's largest capacity stadiums) that made clear the severity of the current swine flu outbreak. While the sporting passions of the 100,000 missing spectators could presumably be satisfied by watching the game on TV, it was less clear how to

immediately satisfy the learning needs of over [seven million students](#) who were sent home after their schools were ordered closed.

Many educational reformers have long held out hope that computers and other information and computer technologies (ICTs) can play crucial and integral roles in bringing about long-needed changes to education systems. Indeed, many see the introduction of ICTs in

schools as a sort of [Trojan horse](#), out of which educational reform and innovation can spring once inside the walls of the traditional (conservative) education establishment. While not denying the potentially transformational impact of ICT use to help meet a wide variety of educational objectives, history has shown that bringing about positive disruptive change isn't achieved by simply flooding schools with computers and related ICTs.

As a result of swine flu, many Mexican schools are experiencing quick, disruptive change of a different sort right now. How might technology be relevant in cases like this? Given the status quo, the use of technology in schools isn't enough to bring about systemic change. But: How might ICTs be useful, even transformational, when this status quo is severely disrupted by some other exogenous factor ... like a pandemic disease outbreak?

While it is certainly too soon to say anything about what type of answers the current crisis in Mexico might provide to such a question, there is another place we can look for clues to possible answers. Like Mexico (through its [Telesecundaria](#) program), China has a long history of using [educational television](#) for a [variety](#) (pdf) of [purposes](#). And like Mexico, China recently was faced with another swift and large-scale disease outbreak that closed schools: SARS.

When the magnitude of the SARS epidemic became widely acknowledged, China Educational TV, through its 'Classroom on the Air' program, [moved quickly to help fill some of the void](#). While perhaps not transformational, initiatives like Classroom on the Air did provide a large-scale, short-term substitute for students (and their parents) looking to continue their education while confined to their home during the outbreak.

As Robert Fox relates in his short paper on the [SARS epidemic: Teachers' experiences using ICTs](#), pockets of more transformational uses of ICT occurred in Hong Kong, where computer use at home, and access to the Internet, was much more widespread than in the rest of China. But even where transformational uses of ICTs were employed successfully by some individual teachers, many more found that a reliance on ICT-centric teaching and learning styles left them frustrated, and less convinced of the value of ICTs in the education process than they had been before.

As the rising incomes and affordable air travel continue to hasten the movement of hundreds of millions of people (and viruses) around the world more quickly than ever before, we will most likely see many more future outbreaks of disease that threaten and disrupt normal life. Students and education systems will unfortunately be on the front line of many such outbreaks, and it is in such circumstances that the usefulness, and potential transformative power, of ICTs in the teaching and learning process will be put to their real test.

(Image at the top of this posting used according to the terms of its Creative Commons license; image courtesy of [Edgar Antonio Villaseñor González](#) via Flickr)

17. What have we learned from OLPC pilots to date?



hundreds of
\$100 laptops

SUBMITTED ON FRIDAY, 05/08/2009 - 00:01

It's been four years since the The One Laptop Per Child (OLPC) project (known then as the '\$100 laptop') was announced. According to recent [unconfirmed news reports from India](#), one quarter million of the little green and white OLPC XO laptops are now on order for use in 1500 hundred schools on the subcontinent. Four years on, what have we learned about the impact of various OLPC pilots that might be of relevance to a deployment in India? Thankfully, preliminary results are starting to circulate among researchers. While nothing yet has approached what many consider to be the [gold standard](#) of evaluation work in this area, some of this research is beginning to see the light of day (or at least the Internet) -- and more is planned.

The Australian Council for Educational Research has produced perhaps the most useful literature review of the [Evaluation of OLPC programs globally](#).

Most of the evaluations to date have been of very small pilots, and given the short duration of these projects, it is difficult -- if not dangerous -- to try to extrapolate too much from the findings from such reports. This is especially true given the 'hothouse flower' nature of most high profile ICT in education pilots in their initial stages, where enthusiasm and statements about expected future changes in behavior and perceptions substitute for a lack of rigorously gathered, useful hard data.

In **Ethiopia**, GTZ sponsored an evaluation of the OLPC pilot project, [Low-cost devices in educational systems: The use of the "XO-Laptop" in the Ethiopian Educational System](#) [pdf], and Eduvision has done similar work, [OLPC Ethiopia Implementation Report, September - December 2007](#) [pdf].

The OLPC program is being closely evaluated in **Nepal** by Open Learning Exchange (OLE-Nepal), which posts preliminary findings on its [blog](#) from time to time.

A small pilot OLPC program in **Russia** has also been evaluated (see [Evaluation report : Introduction of XO laptops for \(visually impaired\) school students in Pskov and Nizhny Novgorod, Russia](#)).

Evaluation work has begun for the OLPC program in **Oceania**. The OLPC wiki is the best source of information about this, including two documents from the **Solomon Islands** ([Terms of Reference - Evaluation of One Laptop Per Child \(OLPC\) Pilot Project](#) and [Measurable Objectives and evaluation framework - Solomon Islands example](#)).

It is encouraging to see that serious attention is starting to be paid to some of the larger OLPC implementations. In **Mongolia**, the World Bank has proposed an evaluation framework for the [Mongolia READ](#) program, which includes a component that utilizes the OLPC. It is from the large OLPC implementation in **Uruguay** that we can perhaps expect the best set of first results from a large-scale project. [Ceibal](#) has partnered with [IDRC](#) to evaluate the OLPC initiative there and compare results with similar (non-OLPC) programs in three other countries. Uruguay's Universidad de la Republica produced a report of the first stages of the implementation of the Ceibal project (see [Proyecto Flor De Ceibo: Informe de lo Actuado \(agosto - diciembre 2008\)](#)). Most encouraging of all is that [Inter-american Development Bank](#) (IDB) is proposing a rigorous randomized evaluation of the OLPC project in **Peru**, the world's largest OLPC implementation to date. Indeed, it is from the IDB that we can probably expect to learn the most about the demonstrated impact of the OLPC initiative, given the seriousness and analytical rigor that it is bringing to its work in this area.

(Inspiration for this posting came from a thread on the [OLPCnews.com](#) web site started by [GeSCI's Roxana Bassi](#).)

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18. What do we know about using mobile phones in education? (part 2)

SUBMITTED ON FRIDAY, 05/15/2009 - 00:36



mobile phones: soon to move front and center?

[Recent posts](#) to this blog about the use of mobile phones in education in developing countries have generated a *lot* of page views. News earlier this year that firms in the United States are beginning to [make a pitch](#) for greater use of mobile phones in the education sector highlights the increased attention that this topic is now receiving in OECD member countries as well.

Examples of this increased attention are popping up all over the place. ISTE recently published [Toys to Tools: Connecting](#)

[Student Cell Phones to Education](#) ([author web site](#)). Announcements about [conferences](#) and [events](#) devoted specifically to issues related to 'mobile learning' (m-learning) are becoming more frequent. Scholars are paying increased attention to the topic (a quick search for 'phones' in the [ERIC database](#) yields over 275 articles), building upon over a decade of piloting and research into

how various handheld devices (especially PDAs) have and can be used by educators and learners. Even mainstream publications like [BusinessWeek](#) are paying attention, as a result of high-profile pilot projects like what Qualcomm has funded in North Carolina (USA) with [Project K-nect](#).

Not all of this attention is new, of course: [MOBlearn](#) was a worldwide European-led research and development project earlier this decade exploring informal, problem-based and workplace learning through mobiles. A half-decade ago the UK's Learning and Skills Development Agency published a report on the EU-funded [m-learning project](#) (pdf). Starting in 2002, the IEEE convened a [series of workshops](#) on wireless, mobile and ubiquitous technology in education. Given all of this activity, it is perhaps not surprising that there is an [International Association for Mobile Learning](#) (IAMLearn)! In Korea, they are even thinking beyond the mobile phone, with a great deal of rhetoric around the concept of '[ubiquitous learning](#)'. All of this builds on a long history of experimentation and research into the use of a variety of handheld devices like PDAs.

So: Experimentation has been going on in this area for quite awhile, but might we be reaching a [tipping point](#) in some places that could lead to quick, widescale utilization?

While mobile devices will no doubt play an integral role in education practices in some places in the near future, we remain a few steps removed from mass adoption, even in affluent, education-obsessed, technology-saturated societies like Korea and Japan. At the most recent British Educational Training and Technology Show (BETT), billed as the world's largest trade show of its kind (earlier [blog post on BETT](#)), I was surprised at how *little* application development I saw for the mobile phone. The three great limitations of mobile phone use in education (small screen, battery life and difficulties with input, to which I would add the 'distraction issue') apparently remain major impediments -- at least in the case of how we currently conceive of traditional educational delivery.

(image at top courtesy of [kiwanja.net](#))

You may wish to check out the online [EduTech debate](#) that recently kicked off, sponsored by *infoDev* and UNESCO, inspired by the [Oxford-style exchange](#) between Sir John Daniel and Bob Kozma sponsored by *The Economist* a few years ago.

19. "ICT is both an icon and an engine of innovation"



it's my turn to innovate!

SUBMITTED ON FRIDAY, 05/22/2009 - 01:01

At the end of last week's [blog post](#) I mentioned the new [Educational Technology Debate](#) web site sponsored by *infoDev* and UNESCO. Every month, this site will offer up a topic for consideration, and two discussants will stake out positions on (roughly) opposite sides to kick off what is meant to be a lively on-line 'back-and-forth' in the subsequent weeks. The first question for debate asks,

Given the limited resources available in educational systems in the developing world, and the lack of any great will to change the situation, is it better to invest in known teacher aids like textbooks, chalkboards, or basic school supplies or do new technology options, like ebooks, smart boards, computers really offer a paradigm shift in educational efficiencies?

[Tim Kelly](#) begins things by arguing that ICTs are a 'pretty good' investment (if not quite the best). [Wayan Vota](#) responds that our emphasis should be on the teacher, not the technology. Both have now posted amended positions, having considered 40 or so comments from people around the world over the previous week. *Have a look.*

My favorite comment is actually made by Ed Gaible on [his blog](#), where he writes (among other things) that :

The motivational impact of ICT in schools turns out to be,

(a) among the first impacts ever demonstrated;

(b) still cropping up in studies today, despite the increased presence of computers outside of school;

(c) one of the few impacts that is as strong, or stronger, in developing-country schools.

It IS easier to engage the imagination with computers, precisely because IMHO students imagine the use of computers to do impossible things--write to a kid across the world, find out about China or the USA, make a web page that tells about your own life. No one in the real world does those things with chalk and slate.

For students in those poor countries, ICT is both an icon of and an engine of innovation. It motivates and it enables. [emphasis added]

"ICT is both an icon and an engine of innovation" -- quite a deft turn of phrase, Ed!

In my interactions with ministries of education around the world, with parents, community leaders, and with students, it is clear that there is a large and undeniable **aspirational** component to investment decisions to put computers in schools. For many, especially in developing countries, an investment in ICTs in schools is a tangible way to signal belief in the future. With potential returns to investments in education by definition long-term (and [hotly debated](#)), there is perhaps no more fundamentally optimistic endeavor in which we regularly engage than educating our children.

Critics of ICT use in schools are often quick to cite the very shaky evidence base upon which decisions in this area are often made. (Some commenters in the United States like to joke that the large-scale investment in ICTs in schools is one of the great 'faith-based' initiatives in the education sector!). They -- we -- are right to [ask for proof](#).

But, for better or for worse, this lack of evidence does not appear to deter increasingly large scale investments to promote ICT use in schools to aid a wide variety of developmental objectives. Ed's aphoristic comment points to why this might be the case.

Follow-up: A few people have written in to say that they have had troubles accessing the online debate between Sir John Daniel and Bob Kozma on technology and education sponsored by *The Economist* back in October 2007 to which I [linked](#) last week ("This house believes the continuing introduction of new technologies and new media adds little to the quality of most education"). Indeed, a log-in box does appear when you try to access [this URL](#); just hit [cancel] and you should be fine. The

archived debate is as relevant today as it was back in 2007, and something that I enjoy re-reading every few months. In addition to the statements by Bob and John and moderator Robert Cottrell, there are guest appearances by Linda Darling-Hammond, Kevin Bushweller and Don Knezek -- and 370 others!

20. Computers in secondary schools: Whither India?



weighing the options

SUBMITTED ON FRIDAY, 05/29/2009 - 23:39

The German scholar Max Müller famously remarked that "If I were asked under what sky the human mind has most fully developed some of its choicest gifts, has most deeply pondered on the greatest problems of life, and has found solutions, I should point to India."

No doubt there are many other countries also deserving of similar sorts of accolades, but the challenges that India currently faces related to providing universal access to a relevant and quality education for everyone -- and the solutions it deploys to meet such challenges -- are of increasing interest and relevance to people around the world. This is especially true as it relates to the use of ICTs to meet a variety of educational and developmental objectives.

All education systems are complex and varied, and India's is as complex and varied as any education system in the world. Only China rivals India in the vast scale of its education sector. While it is true that many schools in India are just now being introduced to computer use, India's first formal educational technology scheme started way back in 1972, during the government's fourth five-year plan. Radio has been used effectively for many years to reach tens of millions of learners throughout India. The EduSat program to deliver educational television content by satellite officially launched in 2004, and, from its first use in schools in the south Indian state of Karnataka, EduSat now reaches over 100,000 secondary schools. In the state of Punjab alone, there are positions in schools for over 7100 dedicated ICT teachers!

For two days this past week, representatives from national and state governments, civil society, international organizations, academia and the private sector [met in New Delhi](#) as part of an on-going consultation process to help inform the development of policies and implementations arrangements related to ICT use in secondary schools in India over the next decade.

Subhash Khuntia, the Joint Secretary for Secondary Education in the Ministry for Human Resource Development (MHRD), set the stage for the two days by outlining the potential relevance and use of ICTs within the government's ambitious new 'scheme for universalisation of access to and improvement of quality at the secondary stage', formally known as *Rashtriya Madhyamik Shiksha Abhiyan* (RMSA).

[Please note: Links to the event web site are not currently working; they will be reposted once the site is back online]

Depending on one's definition, the ICT component of RMSA may well become the world's largest ICT/education project (a title currently bestowed by many on the 'Distance Education to Eliminate Rural Poverty' initiative in China). There are currently over 169,000 secondary schools in India, a number that will increase as the success of the government's push for universal primary education results in greater and greater demand for secondary school education.

One recurrent question discussed over the two days of meetings sponsored by MHRD and the World Bank centered on the relevance of the *school computer lab model* for ICT deployment to India. To a notable extent, some presenters and commenters called into question the appropriateness of creating special 'computer labs' within schools. Better, these people felt, would be to have a smaller number of computers introduced directly into classrooms -- at least if the goal is, in the words of one participant, to 'transform teaching and learning through ICTs'. The fact that the impact of ICT use to date on learning outcomes is negligible in most places, or at least a matter of much debate, is (according to this line of thinking) at least partially attributable to the fact that, in most places, computers are only used to teach 'ICT literacy'. Putting computers into computer labs, overseen by computer teachers, pretty much ensures that they will *not* be integrated into normal teaching and learning processes. (A recent world Bank paper on [school computerization in Colombia](#) was cited in support of this argument.)

Notwithstanding some notable cases where computer labs are used regularly and creatively in direct support of a variety of subjects (like I have seen done well in schools in Thailand, to cite just one example), this argument has some very real merit. Indeed, one consistent message emerging from OECD countries is the

importance of providing ICT access to learners within their learning environment, and not segregating computer access to special parts of the school building. (This sentiment is prominent in many educational initiatives promoting things like '1-to-1 computing' and 'ubiquitous learning', although these terms can mean different things to different people.)

That said, ambitious, complicated programs like RMSA typically have multiple goals. One counterargument to the 'no computer labs' sentiment goes something like this:

"Broadening access to ICTs, especially in rural areas, can be an important goal as well. In fact, this is not an either/or issue, and there is not one model of computer use in schools that will be relevant for all of India. ICT deployment into schools might be more usefully seen to happen in stages. In rural areas where there is currently little or no exposure to computers, and/or where there are not teachers competent in computer use, it would be inappropriate to simply put computers into classrooms immediately. Only once teachers and students (and school administrators) get more comfortable and adept at using computers does it make sense to begin to introduce them directly into classrooms. A very efficient way to achieve this sort of level of 'comfort' is through the delivery of ICT literacy courses. And it is important to note that putting computers directly into classrooms is an expensive deployment model!"

This discussion -- and many others -- will no doubt continue to pick up steam in the coming years as India makes increasingly large investments related to the use of ICTs in its education sector. If the high quality of discourse at this week's event is any evidence, there will be much from this experience from which all of us can learn.

Documents and presentations from the event are beginning to be posted on the World Bank's eDevelopment Thematic Group [web site](#).

For addition background information on the related consultation process that concluded last year in India, you may wish to visit the [National Policy on ICT in School Education web site](#).

The event kicked off with a screening of the latest version of the popular short "[Did You Know?](#)" video that presents a series of provocative statistics related to education, technology, economics and demographics. If you haven't seen it, you may wish to view the latest version on [YouTube](#).

JUNE

- 21. Mobile Phones: Better Learning Tools than Computers? (An EduTech Debate)*
- 22. Why we need more (not fewer) ICT4D pilot projects in education*
- 23. Sugar on a stick, and other delectables (praise for the lowly USB drive)*

21. Mobile Phones: Better Learning Tools than Computers? (An EduTech Debate)

SUBMITTED ON FRIDAY, 06/05/2009 - 23:12



exploring appropriate technologies

infoDev and UNESCO have teamed up to sponsor a series of monthly on-line discussions on low-cost ICT initiatives for educational systems in developing countries. The debate for June is titled [Mobile Phones: Better Learning Tools than Computers?](#) To help get things started, [Dr. Robert Kozma](#) has staked out a position that "Computers are More Capable than Mobile Phones", while I counter that "Phones Are a Real Alternative to Computers". Moderating the discussion is Wayan Vota, the creator of the independent [OLPCnews.com](#) site.

You are welcome to join what we hope will be a lively discussion on the [EduTechDebate.org](#) site. No doubt some commenters will feel

that this debate is built on a false premise, as it starts with a discussion of technologies, and not educational goals and objectives. Others may say that there is room for both PCs and computers in discussions of educational technology. Fair enough -- please feel free to add your voice to the debate!

You may also be interested in a similar debate between Iqbal Qadir, the founder of Grameenphone, and Nicholas Negroponte, the founder of One Laptop per Child, that was sponsored by GOOD Magazine back in December 2008, which they called [Communication Breakdown](#).

22. Why we need more (not fewer) ICT4D pilot projects in education

SUBMITTED ON FRIDAY, 06/12/2009 - 22:14



a different kind of pilot ...

One message that is heard consistently at many ICT4D gatherings is that 'we have too many pilot projects', and that this is especially true for the education sector. 'What we need', or so the sentiment usually goes, 'is to scale up the pilot projects that have been on-going'. Indeed, 'scaling up' seems to be the answer to the funk that many prominent ICT4D organizations currently find themselves in these days, with changes in funding priorities in international donor organizations, foundations and the international private sector provoking many groups to re-examine many of their current practices. *Scaling up* is then a way to demonstrate (and re-affirm)

the relevance of what many organizations have been doing since their inception, and by pursuing *no more pilot projects* such organizations can better orient themselves to working at

scale. Or so the story goes.

I would like to sound a contrary note:

What we need are more ICT4D pilot projects, not fewer, especially in the education sector!

When many people talk about 'pilot projects', they are in fact talking about things that just aren't very big. We shouldn't confuse 'small projects' with 'pilot projects'.

The purpose of a pilot project is to test something -- a process, a concept, a technology solution, an incentive system, a hypothesis, an implementation arrangement, etc. -- in order to see if it is worth supporting over time and/or at a larger scale. By its very nature, a pilot project is meant to have a component of *experimentation*.

In order to know *if* something works, *how* and *why* it works (or doesn't), it is necessary to systematically (and dispassionately) *document* the activities and lessons learned from the pilot. Small projects, in contrast, are just things done at a small scale. There is nothing wrong with small projects, of course ('small is beautiful', as E.F. Schumacher remarked). Lots of good can come from them, and lots of NGOs do excellent work in supporting myriad valuable small projects utilizing ICTs in the education sector. But there is an important distinction here that many ICT4D organizations, and their funders, might do well to note.

Many developing countries are now moving implement ICT-related activities in education at scale -- many (regrettably) without being informed by pilot projects at all. Some NGOs are big enough to attempt pilot projects at scale ... but only a few ... and corporate social responsibility initiatives seldom reach scale. Many times, ICT-related small projects in the education sector are supported by groups with a strong (if not exclusive) ICT focus. Scaling up ICT-related initiatives in the education sector is typically done within the education sector itself. Not only is there a clash of cultures often at work here (NGO versus government, or, in CSR activities, private sector versus government), but the levers for change are quite different. For better or for worse, when we talk about doing things at scale in the education sector in most developing countries, we are talking about government action. Based on my experience, it is remarkable, and perhaps a bit depressing, that the lessons learned from so many small ICT4D projects seem to have little or no impact on government planning for such projects at scale in the education sector. The [Stockholm Challenge](#) annually recognizes innovative and successful ICT4D projects in a number of sectors, including education. To what extent are lessons from such projects being understood by policymakers planning for ICT-related interventions at scale? Not often enough, many would argue. This is both unfortunate ... and a missed opportunity.

(I do realize that not all of the education projects shortlisted for the Stockholm Challenge are small -- witness initiatives like TOPIC64 in Vietnam -- but a quick scan of all 1272 projects in the [education category](#) shows this to be an outlier in terms of its scale.)

If you buy this argument (and I'll be the first to admit that there are some holes* in it), then an important role for some NGOs currently looking to do things at scale might be, instead, to orient themselves on supporting and pursuing true pilot projects, exploring and testing solutions and implementation arrangements in ways that governments are often ill-equipped to do. Things are changing so quickly in the IT and ICT4D industries, and the demands and challenges confronting education systems are increasingly urgent (and daunting), that a focus on continuous learning is vital to help avoid large 'white elephant' ICT-related investment in education. Pilot projects can and should play an important role here.

How can we help to transmit lessons from small projects to the people making decisions at scale? When the World Bank's [infoDev](#) program was re-organized a few years ago from a small grant facility to an [ICT4D 'knowledge shop'](#), it was expressly to get at this issue (with mixed success). [GeSCI](#) is consciously deciding to work upstream in the ICT/education policy and planning process in a few key countries. Many NGOs working on e-content or digital learning materials issues (like the [Open Learning Exchange](#) and [IADP](#), to name just two) are consciously trying to pilot things that are potentially relevant to policymakers planning for ICT-related educational initiatives activities at scale. There is room for many more. There are certain things that you can learn only at scale. But you can also learn things from small projects that are very relevant to discussions to scale up the use of ICTs in education -- if you are serious about treating them as real pilot projects. This involves taking risks (and in some cases even *experimenting*), and accepting that not all small projects can (or should) be deemed a 'success' at the end of their initial funding period and sustained over time. This may put some NGOs in conflict with their donors, for whom project 'sustainability' is often a key criterion for whether an NGO continues to receive funds for its initiatives. But as we move from an era of many small projects to (expensive) projects at large scale in many developing countries, these are risks that groups have to be willing to take.

- **One such hole --> A legitimate counterargument to all of this goes something like this: A focus on 'top-down' approaches to ICT-enabled change is all wrong. One of the great advantages of increased ICT use is that it can enable change to happen virally, with small pockets of people and activity infecting other groups, spreading innovation incrementally and broadly from the bottom up (witness the development of the World Wide Web, or Linux). Fair enough. But in many places, the formal education system is one of the country's most conservative institutions, and has demonstrated over decades that it can be quite resistant to changes from the bottom-up. In such cases, change from 'below' may need some help from 'above'.*

This blog entry was inspired by provocative discussions this week at the [International Institute for Communication and Development](#) (IICD), a Dutch NGO well-known in ICT4D circles for its support of grassroots partner organizations in Africa and Latin America. [*Disclaimer: I serve on the IICD International Advisory Board.*]

IICD has been sharing lessons from some of the projects (some small pilots, some pilot projects) it has helped to support in a number of sectors, including education.

Many of these were collected in a publication with the (perhaps unsurprising) title, [ICTs for Education: Impact and lessons learned from IICD-supported activities](#) [pdf]. Additional IICD briefing sheets that might be of interest include:

- [Leveraging the National ICT Programme for Education in Bolivia](#)
- [ICT for Education in Burkina Faso](#)
- [ICT in education in Tanzania](#)
- [Enhancing the Zambian Education Sector with ICT](#)
- [Lessons learned from the Education Support Network Project \(ESNet\) in Zambia](#)

23. Sugar on a stick, and other delectables (praise for the lowly USB drive)

SUBMITTED ON FRIDAY, 06/26/2009 - 02:04



another innovative USB stick

What's peripheral? In the case of the use of technology in schools around the world, it is becoming increasingly hard to tell.

In many developing countries, for better and/or for worse, the traditional way to approach large-scale ICT procurements is to divide such undertakings into four primary components: hardware; software (which often includes 'e-content'); connectivity; and peripherals. (Thankfully, 'training' is showing up as a fifth component more and more ... although in most instances we are still only talking about 'technical training').

The category of 'peripherals', a catch-all category where one typically finds things like printers and projectors, is often treated as the poor cousin of the other, 'flashier' components. But this may be changing.

(The category itself is rather malleable. In some places, for example, [interactive whiteboards](#) are treated as peripherals, in other places they are in a category all their own -- for cost and other reasons.)

Why should we care, you might ask? This categorization is actually quite important in some places, as many systems seek to impose rough numerical targets to guide purchasing decisions (e.g. x% of ICT hardware costs can be used for 'peripherals'). From a strategic perspective, this sort of segregation by category may also limit the imagination of policymakers as they look to promote 'innovative' teaching and learning practices through the use of technology.

This week's [release](#) of version 1 of 'Sugar on a Stick' highlights the utility, and the power, of one peripheral -- the lowly [USB stick](#).

[Sugar](#) is an innovative piece of software developed originally for the OLPC XO laptop, also known by many as the '\$100 laptop'. For the past year, Sugar's development has been led by Sugar Labs, an organization founded by former OLPC president Walter Bender. Sugar, which its creators describe as a 'learning platform', is an innovative piece of software meant to encourage critical thinking and other related skills and attitudes in children. More information on Sugar can be found the [Sugar Labs web site](#), where you can download it for free.)

Scores of organizations that work directly with teachers in developing countries have long known that small investments in a 'USB stick for every teacher' often can be an important key to unlocking the value in the higher profile, much costlier investments in school computer equipment. In places where one-to-one computing is simply too expensive to consider, and where 'storing your files in the cloud' is still a long way off, the idea of every teacher or student having their own, personal USB stick, holding their personal files, which they can carry with them from classroom to computer lab, from Internet cafe to home, offers a degree of data portability and ownership that is a few steps removed from the oft-stated ideal of 'one laptop for all', but still quite valuable. And in some small ways, even revolutionary.

Educational policymakers are slowly beginning to understand that these cheap devices can be used not only to store files, but that you can actually run programs off them. For the tech-savvy readers of this blog, this may be very old news, of course. Things like [Computer-on-a-Stick](#) have been around for quite awhile, and even many non-tech-savvy people working in restrictive corporate computing environments have long known that it is possible to run portable versions of Firefox off a USB stick (as I am doing right now!), something made quite easy with the assistance of tools like [PortableApps](#).

From an educational technology perspective, what's peripheral, and what's central, is becoming increasingly blurred. As USB, bluetooth and wi-fi allow us to connect devices together in new and inventive ways, and as devices at the edge proliferate, and become more powerful, the idea of peripherals as simple 'add-ons' to other ICT devices is more and more tenuous.

The use in schools of various things now classified as 'peripheral' in many places -- things like dataloggers or [probeware](#), things like graphing calculators, things like Sugar on a Stick -- should be debated on their merits as tools for learning, and not dismissed simply because of arbitrary budget categorizations.

Whether or not you tend to think of such tools as peripheral or not, in the end it should come down what is really central -- the learner.

The image used at the top of this blog posting is used according to the terms of the [GNU Free Documentation License](#), Version 1.2 and comes courtesy of the [Wikimedia Commons](#).

JULY

- 24. *Tweet tweet -- Twitter in education*
- 25. *How to measure technology use in education*
- 26. *Extending Reach and Increasing Impact*

24. Tweet tweet -- Twitter in education



this one tweets
instinctively

SUBMITTED ON FRIDAY, 07/03/2009 - 01:04

[Some Professors' Jitters Over Twitter Are Easing](#), announced an article in *The Washington Post* last week, reflecting the explosion of interest that this relatively new communications tool is experiencing this year. As with discussions of any new technology, reporting on Twitter is often a combination of breathless enthusiasm and snarky criticism, as well as a fair amount of befuddlement and misunderstanding.

(For those unfamiliar with [Twitter](#), the related [Wikipedia article](#) might be helpful.)

While discussions about the use of a tool like Twitter are now, suddenly, quite mainstream in many places, educators have been exploring the tool for awhile. [Search Google](#) and you'll find lots of useful references, like [this one](#) from way back <grin> in 2007.

(Or better yet, [search on Twitter](#) itself!) As occurs with any potential new innovation in education, response to this exploration and experimentation has at times been rather heated (have a look at the comments to the article from U.K.'s Guardian newspaper in March when it announced, with just a touch of hyperbole, [Pupils to study Twitter and blogs in primary schools shake-up](#)).

So what, you might ask, does all of this have to do with the use of ICTs in education in developing countries?

Personal ownership and use of mobile phones is greatly outpacing the use of computers in pretty much all developing countries (a topic of [many previous posts](#) on this [blog](#)). One of the [criticisms](#) against the use of mobile phones (and similar small devices) in education is that their displays are far smaller than those of computers, and that it is difficult to type long messages using the telephone keypad. These are obviously legitimate observations. Twitter is demonstrating how such a limitation can, possibly, in certain circumstances, be an actual strength. Looked at one way, because of Twitter's 140 character restriction -- a restriction dictated by the limitations of [SMS](#) -- we are in a sense witnessing a very interesting, large-scale, real-time experiment in how to use texting (and thus low-end mobile phones) in a variety of inventive ways, many of them relevant to education.

The point here isn't to debate the merits (or lack of them) in using a tool like Twitter in schools. (That debate is occurring in lots of places on-line already; some key elements of this debate are noted in the Washington Post article.) Rather, it is to highlight the fact that, once you put an easy-to-use technology tool in the hands of *lots* of people, interesting things happen, good and bad, for which we are usually unprepared. The large scale roll-outs of ICTs in schools in developing countries, coupled with the massive, quick adoption of mobile phones in society more broadly, will offer new opportunities for teachers and learners, and will put new stresses on education systems. How can, or should, ministries of education plan for such disruptive change? Can they be anything *but* reactive? These are hot questions in many policy circles.

Will we still be talking about the use of Twitter in education two years from now? (Who knows?) Whatever the answers to these questions, its use today is in some ways re-shaping the debate about the potential utility of devices like the mobile phone.

Where all of this will eventually lead us, nobody knows, but we should be prepared to be surprised.

The image at the top of this blog entry comes courtesy of the [Wikimedia Commons](#) and is used according to the terms of the [GNU Free Documentation License](#).

Miscellaneous items:

1. You can follow this blog on Twitter [@WBedutech](#). I am [@trucano](#). The World Bank's tertiary education group is [@WBtertiaryed](#). The new Twitter feed for the World Bank's education statistics group is [@edstats](#).

EduTech

2. The July installment of the online [EduTech debate](#) has now begun. This month, [Walter Bender](#) of [Sugar Labs](#) (former president of the [OLPC](#) initiative and former executive director of the [MIT Media Lab](#)) and [Mark Beckford](#) of [N-Computing](#) will discuss issues related to 1-to-1 computing vs. computer labs.
3. The presentation and archived video from the event at the World Bank earlier this week on "eBooks & Affordable Access to Digital Content for Teachers, Health Care Workers & Agricultural Extension Agents in Southern Africa" are [now available on-line](#).
4. Background documents and presentations from the May event in New Delhi co-organized by the World Bank on "ICT Support for Universalisation of Secondary Education" are [now available on-line](#).
5. UNESCO, the World Bank and KERIS recently announced an [ICT/education event in Hangzhou, China](#) on 15-17 November 2009

25. How to measure technology use in education



one way to measure

SUBMITTED ON FRIDAY, 07/17/2009 - 15:15

ICTs are increasingly being used in education systems around the world. How do we know what the impact of such use is? How should we monitor and assess the use of ICTs in education? How can, should and might answers to these questions impact the policy planning process?

Questions such as these are complicated in many countries by a lack of consensus on what can and/or should be measured, and how this measurement can and should take place. Lack of common sets of methodologies and indicators in this regard also

hampers cross-national comparison of developments and the impact of related initiatives.

To help address such challenges, many organizations have begun to develop, or propose to develop, common sets of 'ICT in education indicators' to help guide their activities, and those of their developmental partners, in this area.

To promote harmonization of related efforts, representatives from the World Bank, KERIS, the Korean Ministry of Education, Science and Technology, UNESCO Institute of Statistics (UIS), UNESCO-Bangkok, the Inter-american Development Bank, the OECD (CERI), and the European Union - CRELL, joined by experts from universities in South Korea, the Netherlands and Canada, and representatives from the international initiative on the 'Assessment & Teaching of 21st Century Skills' met to:

1. share information about current and upcoming efforts sponsored by key organizations in this topic;
2. provide critical feedback and advice to colleagues leading initiatives in this area;
3. assess potential areas of cross-donor collaboration;
4. identify gaps in existing or proposed initiatives; and
5. propose areas for collaboration and joint activity going forward.

Proceedings from this event are [now available on-line](#).

The UNESCO Institute of Statistics (UIS) has been perhaps the leading organization building consensus in this area to date, through its leadership role on education issues within the [Partnership for Measuring ICT in Development](#). Informed by work done by other groups, including the pioneering work of [UNESCO-Bangkok](#) in the Asia-Pacific region, UIS has proposed, and reached general agreement on, a set of nine initial 'core indicators' which are largely infrastructure-related. Building off this core set, of indicators, UIS has brought together a group of 25 countries as part of a *Working Group for Information and Communication Technology Statistics in Education* (WISE) to expand and test a set of around fifty indicators, covering a wider variety of 'conceptual domains' (i.e. topics). A useful short summary of this work [is available here](#) (in PDF), including the full list of extended indicators, together with some useful context and explanation. This set of indicators is due to be discussed in Montevideo this December.

Global indicators of the sort that UIS is proposing will only get us so far, however. At a project level, there are widely divergent approaches to monitoring (and ultimately evaluating) the activities and impact of a specific initiative. Now, 'widely divergent approaches' can of course be a good thing, as individual indicators may be more or less relevant, given the particular objectives of a project. That said, some agreement on conceptual frameworks to help guide such work could be useful, and last week's workshop featured spirited discussion of proposed frameworks from the Inter-american Development Bank, the European Commission's Joint Research Centre - CRELL, the OECD, and Korea. More commonalities in approach emerged than differences; joint work on a commonly-endorsed framework should be out by the end of the year.

The workshop also featured presentations on the IDRC-sponsored work to build and maintain a ['Pan-African observatory' on the pedagogical use integration of ICTs](#) and work jointly sponsored by Cisco, Microsoft and Intel to fund academic research on the [assessment and teaching of 21st century skills](#) (about which more in subsequent posts).

Also of potential interest:

- Results from the recent CRELL International Research Workshop on ["Assessing the effects of ICT in education - indicators, criteria and benchmarks for international comparisons"](#)
- *infoDev's* [Monitoring and Evaluation of ICT in Education Projects: A Handbook for Developing Countries](#)

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26. Extending Reach and Increasing Impact



ICD09

SUBMITTED ON FRIDAY, 07/24/2009 - 12:56

The recent release of the World Bank's new flagship publication on ICT for development (ICT4D) contains much food for thought for educational policymakers. [IC4D 2009: Extending Reach and Increasing Impact](#) takes an in-depth look at how ICT, and particularly broadband and mobile, are impacting economic growth in developing countries.

How can education systems help develop the type of workers increasingly needed for jobs that increasingly require familiarity (and in some cases mastery) of ICTs -- a challenge complicated by the fact that many of these jobs may not yet even exist?

This new report offers a compelling case that the IT and ITES sectors offer opportunities to drive economic growth in many developing countries -- but governments need to act (and/or get out of the way, depending on the current context) if the

opportunities for such growth are to be realized.

Consider that:

- The global market for IT and IT-enabled services (ITES) represented \$475 billion in 2007, with less than 15 percent of the market being exploited
- Jobs in IT/ITES sector will account for 27% of all new jobs in the Philippines by 2010

The education sector will have a key role to play in this regard in many cases, by promoting not only basic types of digital or [ICT literacy](#), but, more fundamentally, the sets of [21st century skills](#) increasingly considered to be critical drivers for success in the modern workplace, whether you are in Munich or Manila.

As new stresses and challenges are placed on education systems around the world, new tools and opportunities are emerging that potentially offer new ways of tackling old problems. The report notes, for example, that *mobile networks, with over 4 billion connections, [currently] constitute the world's largest distribution platform*. How might such connections be utilized to help provide increased access to educational opportunities in ways not previously possible?

The World Bank will be hosting a series of on-line discussions around these and related issues in the coming days.

All next week, you can interact with the authors on [World Bank Publications' Facebook page](#)

In addition, principal author Christine Zhen-Wei Qiang will be online Tuesday, July 28 at 11 a.m. EDT to answer questions as part of the World Bank's [SpeakOut series](#).

AUGUST

- 27. Surveying the use of mobile phones in education worldwide*
- 28. Making ICT and education policy*
- 29. Finding (useful) research on ICT use in education in developing countries*

27. Surveying the use of mobile phones in education worldwide



mountains o' mobiles

SUBMITTED ON FRIDAY, 08/07/2009 - 00:03

The Central Board of Secondary Education (CBSE) schools in India has just announced a [mobile phone ban](#), echoing similar calls in many other places (from [Sri Lanka](#) to [South Korea](#), from the [UK](#) to the [Philippines](#) to [France](#)) to restrict student access to what are often seen as 'devices of distraction'.

Why then will the World Bank will be kicking off a study next month looking at "The Use of Mobile Phones in Education in Developing Countries"?

While the explosive use of mobile phones in developing countries is well-documented -- and undeniable -- and evidence is emerging that phones are slowly making their way into the hands of teens, just what this might mean for the delivery of education in developing countries is a little less clear.

Despite growing hype, there are still precious few widespread examples of the use of phones for education purposes inside or outside of classrooms in developing countries that have been well documented, and fewer still that have been evaluated with any sort of rigor.

This study is intended to help to raise awareness among key decisionmakers in the public, private and civil society sectors about the potential importance of the use of low cost mobile devices -- especially mobile phones -- to help benefit a variety of educational objectives. By documenting the existing landscape of initiatives in this area and emerging 'good practice', it is also hoped that this work will serve as a common base for further analytical work in this area, and inform the impending explosion of development of new hardware, software and business services occurring on mobile devices, to the benefit of these educational objectives.

Much of what has been documented to date falls into one of three categories: (1) advocacy pieces about how phones *could* be used in education; (2) 'studies' of how phones have been used in a small pilot by one teacher somewhere; or (3) conceptual (often academic) discussions of the potential utility of mobile phones within various learning environments (often drawing on rich existing research into the use of PDAs for learning).

This study proposes to:

1. Map the existing universe of projects and initiatives exploring the use of mobile phones in education, with a specific attention to developing countries.
2. Map the existing and potential uses of mobile phones in this regard, comparing and contrasting such uses with other ICT devices, relevant to specific education challenges, needs and contexts found in a number of developing countries
3. Document lessons learned so far from key initiatives in this area, proposing tentative guidance for policymakers and various stakeholder groups in this fast moving area.
4. Propose a conceptual framework and way forward for further analytical work to aid in the documentation and rigorous impact cost and impact assessment of the use of mobile phones in education.

We'll be using this blog to post preliminary findings for discussion and comment as they are available.

Where are good sources to turn to learn from actual practice? All suggestions are welcome.

More information:

- [Background on the upcoming World Bank study](#)
- [Previous blog entries on the topic](#)

Note: The image at the top of this blog posting comes courtesy of the [Wikimedia Commons](#), sourced from [Flickr user saschapohlepp](#), used according the terms of its [Creative Commons license](#).

EduTech

This month's on-line Educational Technology debate from infoDev and UNESCO looks at issues related to "[Can eBooks Satisfy? Creating Content for ICT-enabled Classrooms](#)". [Angus Scrimgeor](#), the president of the International Association for Digital Publications, will be facing off against [Richard Rowe](#), the Chair and CEO of the Open Learning Exchange (and former Associate Dean of Harvard's Graduate School of Education).

Everyone is invited to join in the discussion!

28. Making ICT and education policy

SUBMITTED ON FRIDAY, 08/14/2009 - 00:04



[India](#) is currently engaged in a consultative process to formulate a new ICT and education policy. The United States is doing the same to prepare its new [National Educational Technology Plan](#).

In the context of a discussion of ICT/education policies, GeSCI's Jyrki Pulkkinen takes a step back and asks, [who really needs policy?](#) While he doesn't provide answers to this question himself in his note (yet -- I suspect this is coming), he follows up with a set of high-level, practical guiding questions for people involved in these processes.

When thinking about the questions that Jyrki poses, I had a few questions of my own: What are best practices for the development of such policies and plans? Where can we turn to for examples of such policies and plans to help inform work in this area?

Thankfully many groups have been thinking about and contributing to our global comparative knowledgebase on this topic.

As with many topics related to ICT use in education, UNESCO's regional office in Bangkok did some of the earliest comparative work on this topic as part of a multi-year initiative looking at [ICT in education policies](#) in the Asia-Pacific region. Out of this work was born the [ICT in Education Toolkit for Policymakers, Planners and Practitioners](#), jointly supported by a number of partners led by UNESCO (*infoDev* later joined the project to support the completion and maintenance of the on-line toolkit), which has been used in 28 countries to date to aid in systematic planning processes related to the use of ICTs in education. In principle author Wadi Haddad, the toolkit drew on a wealth of educational planning experience over three decades of work in the sector, as well as the lessons presented in the pages of the influential online journal [Technowlogia](#) (which has, unfortunately, suspended publication but whose [archives](#) are available in full online).

The Toolkit is meant to suggest and support processes that could lead to best practice policy development. But what do we know about actual ICT in education policies?

Many academics have written about the issue, but unfortunately much of this work sits -- rather frustratingly for many policymakers in developing countries unable to afford access -- behind firewalls at scholarly journals (Bob Kozma's [Comparative Analysis of Policies for ICT in Education](#) [pdf] is one exception).

One could root around the various regional ICT and education country surveys that *infoDev* and UNESCO-Bangkok have sponsored (in Asia-Pacific, Africa and the Caribbean) for links and references to such policies, but this is a laborious process. Thankfully, UNESCO-Bangkok has collected [summaries and links to policy papers of Asia and the Pacific](#) on its web site (although many of these links are a bit dated). More recently, and broadly, GeSCI has done a very useful job in collecting examples from around the world in a [single document](#) [warning: this is a link to a Word document; hopefully GeSCI will post a PDF of this at some point?]. As GeSCI's Mary Hooker has remarked, it is noteworthy just how varied these policies are!

One can roughly put ICT and education policies into one of three categories:

1. a national ICT in education policy
2. a national education policy that includes ICT
3. a national ICT policy that includes education

(The Communication Initiative Network has done a good job of cataloguing and analyzing [some of these](#).)

(Some would rather cheekily argue that there is actually a fourth category: *de facto* policies that remain in perpetual 'draft' status.)

This is all well and good, you might say, but it is the link between policy and action (and ultimately impact) that is really what is important. One good example of how a country's ICT in education policy was fleshed out into a practical implementation plan [can be found in Namibia](#) (and here's the [web site](#)).

Jyrki would no doubt agree that this is all useful information, it is useful to know what has come before us. But what about what lies ahead? How can and should such policies enable the use of ICT and innovative methods in schools going forward?

EduTech

As infoDev's [Knowledge Map on ICT and education policy issues](#) [pdf] notes,

"Even within a particular educational reform process, or indeed where no reform process is on-going, the pace of technological innovation outruns the pace of institutional innovation."

If this is the case, what's a policy maker to do?

29. Finding (useful) research on ICT use in education in developing countries

SUBMITTED ON FRIDAY, 08/21/2009 - 00:17



I am often asked to recommend "useful research on ICT and education issues in developing countries".

While there are resources to which I inevitably turn (and which I recommend time and again, a topic for future consideration on this blog), there is a question which I have a more difficult time answering:

"How do I find, and stay in the loop on, useful research, documentation and lessons learned on ICT and education issues in developing countries?"

Seven or eight years ago, there was, comparatively speaking, very little research attention to this area beyond the excellent work done related to interactive radio instruction and educational television, and on distance education in general. [UNESCO-Bangkok](#) and the [Commonwealth of Learning](#) were real outliers in their attention to the topic in a high quality and consistent way (as were a few regional groups like [SAIDE](#)). The World Bank, while continuing to devote [occasional though largely uncoordinated research attention](#) to the topic, ceased publication of its [Education and Technology Technical Notes Series](#) [warning: link is to a PDF] in 2000.

Subscribing to a handful of listservs, many related to ICT4D and 'digital divide' issues more generally (like [Bytes For All](#) and the now defunct [GKD listserv](#)) was enough to ensure that you stayed largely 'in the loop'. A small handful of donor-funded initiatives, like Dfid's [Imfundo](#), [World Links](#) at the World Bank Institute, and USAID's [dot-EDU](#), helped contribute to the global knowledgebase by making documentation an important component of their activities. [TechKnowlogia](#) was a must-read, although it went on hiatus after publishing its first quarterly issue in [2003](#), perhaps a victim of being too early into the marketplace. Picking up the slack (a little) from TechKnowlogia, [i4D's first issue devoted to education](#) came out in February 2004, and a companion publication devoted exclusively to [digital learning](#) debuted three years later. Beginning in 2003, MIT's pioneering ICT4D Journal [Information Technologies and International Development \(ITID\)](#) devoted occasional attention to the topic as well. Notably, the [International Review of Research in Open and Distance Learning](#) (IRRODL, beginning 2000) and the [International Journal of Education and Development using Information and Communication Technology](#) (IJEDICT, beginning 2005) provide free and open access to all of their content. ([More journals are listed here](#), although most don't provide open access.) One way or another, most items on this topic eventually found their way into the on-line catalogue of e-learning resources maintained by the [Development Gateway](#) (which rebranded as 'Zunia' earlier this year), although [separating the wheat from the chaff](#) could be difficult at times.

Now, with the explosion of activity in the area, increased scholarly attention as a result, and especially the explosion of personal publishing through things like blogs, information is both more abundant and more diffuse.

As with most information retrieval these days, knowing your way around Google is absolutely essential to finding and navigating such content, and mining Twitter, Delicious, and Technorati is perhaps even more profitable. Setting alerts at Google to help flag relevant news items is another must.

RSS is somewhat helpful, although many groups active in this area still do not make RSS feeds of their content available, outside of blogs -- a situation I find rather perplexing, and surprising, given the subject matter. (I am not only criticizing others here: We don't, for the most part, utilize RSS as part of our publishing platform at the World Bank -- but I am told it's coming! -- although [infoDev](#) does.)

Donor institutions continue to commission research consultancies on ICT/education-related issues, but unfortunately much of this work is for internal consumption, and/or never made available on the Internet (because, frankly, there is little incentive to do so; one of the goals of this blog is, over time, to provide an informal mechanism for disseminating some of this work.). USAID is notable in that it requires the work it funds to be made publicly available (kudos to USAID in this regard).

Increasingly, the private sector is funding very useful work in this area by reputable researchers and consultants, although the results of this work, to the extent that it is published, is often treated with scepticism in some quarters.

[ERIC](#), the online digital library of education research and information sponsored by the U.S. Department of Education, contains a wealth of articles on the topic, provided you are savvy and patient enough to formulate your search terms in multiple ways so that you can locate them.

Finding papers and presentations from conferences and workshops can be quite difficult unless you know exactly what you are looking for. The ~~irregularly updated~~ list of 'Educational Technology Conferences' maintained by [Clayton R. Wright](#) and updated twice a year [note: revision by author on 26 Aug] (and re-posted in various places around the Internet) is a good place to start.

That said, much of the scholarly attention to this topic remains locked behind pay-to-view firewalls, rendering it essentially inaccessible to practitioners, policymakers and scholars in many (if not most) developing countries. The online Education & Information Technology Library, [EdITLib](#), contains many journals and conference proceedings which contain occasional papers on the topic, although subscription runs US\$150/year. The collections of journal articles obtainable through outlets like [Science Direct](#) and the [IEEE Xplore Digital Library](#) are also behind a pay-to-view firewalls. In contrast, high quality research on ICT/education topics is increasingly being made available for free as [NBER working papers](#). Papers submitted for publication of varying degrees of quality are also being posted with increasingly regularity in draft versions on the personal web site of authors. (These can be difficult to find. If you know the name of the author of a journal publication and a word or two of the title, try Google and you might get lucky!).

I get regular queries from people doing research on ICT/education topics in developing countries as part of their PhD work. Unfortunately, accessing the results of such research is quite difficult. This is changing, though: Edward Caffarella has done a great service by compiling indices of [dissertations on this topic](#) (and Google Scholar is slowly indexing all dissertations). A [few services](#) have sprung up to host dissertations in a free and open manner on a voluntary basis, but these have yet to gain much traction. Endeavors such as these will slowly help to free up knowledge on this topic produced by the academic community to those without access to pay services like [ProQuest](#).

How much of it is actually policy-relevant is another matter entirely ...

The image of pressed papers in Insadong, Seoul, Korea used at the top of this blog post comes from Flickr user Jared, used under the terms of the Creative Commons by attribution 2.0 license (via [Wikimedia Commons](#)).

SEPTEMBER

30. Uruguay's Plan Ceibal: The world's most ambitious roll-out of educational technologies

31. Checking in with BridgeIT in Tanzania: Using mobile phones to support teachers

30. Uruguay's Plan Ceibal: The world's most ambitious roll-out of educational technologies?



OLPC in Uruguay

SUBMITTED ON FRIDAY, 09/18/2009 - 23:19

"It is the most profound and irreversible of revolutions" said Uruguayan President Tabaré Vázquez of the myriad changes that information and communications technologies are having on societies. President Vázquez was speaking at [an event sponsored by the Inter-american Development Bank](#) in Washington earlier this week to highlight his country's accomplishments under what may be the world's most ambitious nationwide roll-out of computers in a country's education system.

[Plan Ceibal](#), the education reform initiative that is aiming (most famously) to provide one laptop for every student and teacher in Uruguay, is set, according to project director Miguel Brechner, to achieve 'full deployment' at the primary level by the end of this month, and is now targeting secondary education as well. Brechner's very informative presentation provided insight into the context, scale and ambition behind the initiative, and included some very

intriguing preliminary results. (Unfortunately the archived video of Brechner's speech is not yet available on the IDB web site, but his presentation is now [available for download](#); please note that this link is to a PowerPoint file.) Noting the changes that have occurred since the project began to roll-out just a few years ago in partnership with the One Laptop Per Child (OLPC) initiative, Brechner stated that, when it came to individual access to personal computing for all students in Uruguay, "What was a privilege in 2006 is a right in 2009". The Uruguayan example, Brechner continued, shows that it is indeed possible to provide a laptop (for free) to every student, and how this can be done. In the case of Uruguay, "costs are manageable", he said, and "impacts are immediate". Uruguay's interest in serving as a global model for educational transformation enabled in large part by 1-to-1 computing for students is laudable, and Brechner's presentation was rather unique in that it shared cost data of the sort that is rarely published officially. (No doubt others will be sifting through this cost data with a fine-toothed comb in the months and years to come; you can have a look for yourself on slides seven and eight of his presentation.)

When Brechner spoke of 'impact', what was perhaps most notable (at least to me) was not the reports of early impact so far (in fact, most large ICT in education initiatives self-report positive impacts of various sorts quite quickly), but the caveats that accompanied them. Showing a slide that showed increased school attendance since Plan Ceibal kicked off, Brechner was quite honest in commenting that "Can we say this is the direct impact of Ceibal? No. Can we say it is not? The answer is also: no." Announcing that Uruguay is "open for research", Brechner made very clear the keen interest of project proponents in exploring the nature and extent of the impact of the many changes being brought about through Plan Ceibal. In a [press release the following day](#), the IDB announced related activities to evaluate the effectiveness of computer use in classrooms. Let's hope that the [book on Plan Ceibal due out next month](#) in Uruguay is just the first in a series of rigorous documentation of what has worked, what hasn't, how, and why, during the course of this ambitious initiative. As more people become aware of what is being done in Uruguay, no doubt interest will grow among policymakers and political figures around the world in learning from this experience.

Is Uruguay's the most comprehensive roll-out of computers to students in the world? Quite possibly, but there is another strong contender for this crown: Portugal, through its ['Magellan Plan'](#). At the same IDB event, Portuguese Deputy Minister of Education Jorge Pedreira sketched out the ambitious agenda being pursued by his

country in this area. There are notable differences between the two initiatives, with the Portuguese emphasis on the use of public-private partnerships the most immediately obvious. [Here's a [direct link](#) to Dr. Pedreira's PowerPoint file.] That said, if you are looking for the first complete roll-out of 1-to-1 computing and connectivity for all of a country's students, you would be technically accurate in saying that the [small Pacific island nation of Niue](#) has both Portugal and Uruguay beat, although with only one primary and one secondary school serving a population of under 1500 total inhabitants, the size of the Niue roll-out is a rounding error when compared to the vast scope of the Uruguayan and Portuguese initiatives. However you do your calculations, there is no denying that neither Niue or Portugal has a [postage stamp celebrating the use of education technology like Uruguay does!](#)

More information about Plan Ceibal and OLPC in Uruguay:

- [official Plan Ceibal web site](#)
- [blog about Plan Ceibal](#)
- [OLPC Uruguay page on the OLPC wiki](#)
- [independent reports on OLPC Uruguay deployment from OLPCnews.com](#)

(note: this is an independent site not associated with the One Laptop Per Child project)

31. Checking in with BridgeIT in Tanzania: Using mobile phones to support teachers

SUBMITTED ON FRIDAY, 09/25/2009 - 02:31



A [recent event at the World Bank](#) focused on "Mobile Innovations for Social and Economic Transformation: From Pilots to Scaled-up Implementation" included an interesting session on the use of mobile phones in development. Following on an opening talk by Dr. Mohamed Ally of Canada's Athabasca University (you can [download a free copy of his book on mobile learning](#)), Kate Place of the International Youth Foundation provided an update on activities and emerging lessons learned from the [BridgeIT project in Tanzania](#) ("Elimu kwa Teknolojia" in Kiswahili), which provides access to digital video content in classrooms 'on demand' via mobile phone technology.

The Tanzania project, which has been running for over a year, is an extension and adaption of the "[text2teach](#)" project in the Philippines, which began in 2003 and is currently in its third iteration. A key difference between the two projects is that text2teach initially utilized a hybrid mobile/satellite solution that allowed teachers to request video content via SMS; this request was then relayed to a satellite, which delivered education content to a DVR to be displayed on a television at the front of the classroom. The Tanzania project eliminates the satellite portion of the delivery system, allowing for request and delivery of video content entirely over local 2.5G/3G mobile networks, for display on a television in the classroom.

Some observers have criticized the original technical set-up in the Philippines as too expensive and complicated, and there is merit in such comments. That said, when the Philippines project (which is moving to the Tanzania model of content delivery over existing mobile networks -- something possible in 2009 that was not possible in 2003), is seen as 'proof-of-concept' of a model for the potential use of mobile phones to support teachers at scale in the classroom, things get a bit more interesting. Yes, the high-end Nokia smart phones used by teachers here are too expensive to consider for mass purchase in most places, and satellite connections are not cheap. That said, if the past is any guide, the costs of handsets with this sort of functionality will fall precipitously in the coming years, and the availability of reliable broadband mobile networks will so also increase. So, if inevitable technology advances move us to place where the hardware and airtime become affordable, what else can BridgeIT tell us about the potential use of mobile phones to support classroom teaching?

Interestingly, Kate said that most of the project's efforts went to teacher professional development and on-going pedagogical support, and that this focus has been key to the project's success, as has the attention to the development of learner-centered lesson plans and teacher's guides. In other words: While the technology gathers the headlines, it is attention to the particular needs and circumstances of classroom teachers that has been key to the program.

Programs like BridgeIT point to intriguing emerging practices in how ICTs of various sorts can be utilized to help overcome specific challenges. Despite the overheated rhetoric of some proponents of ICT use in education in developing countries, it is clear that there is no 'silver bullet', or 'one-size-fits-all' technology solution to the myriad challenges that students face as they endeavor to get a quality education in often challenging circumstances. As the program ownership increasingly is transferred to local partners and activities move to scale in both Tanzania (currently in 150 schools) and the Philippines (290 schools) using a model, it will be interesting to see what programs like BridgeIT can show us about how combinations of various information and communication technologies might provide alternative options to existing educational practices. As mobile technologies become increasingly affordable for teachers, what might initiatives like BridgeIT tell us about the potential to provide support for things like in-service teacher training, a key challenge in many countries whose exploding school populations have stressed the capacity of many education systems to hire, train, retain and support quality teachers?

Leigh Jaschke from [MobileActive](#) led off the session's discussion by wondering if the current state of "mobile education and mobile learning" is about where mHealth was about five years ago. As huge numbers of people in rural communities -- who previously had no possibility to access the Internet -- continue to acquire mobile phones connected to high-speed networks, the opportunities for phones and other affordable handheld devices to serve as a basic platform for literacy will no doubt increase, especially in the informal sector. It is clear that, at this stage of developments, we have more questions than answers, but the profusion of pilot projects in this area hopefully will help to provide answers to these questions. And if the past developments tell us anything, it is that the answers may not always be what we expect.

For more information on BridgeIT and text2teach:

- archived video of the BridgeIT presentation, including Kate's PowerPoint files, can be accessed through the [event web site](#)
- background information on BridgeIT and text2teach from the [International Youth Foundation web site](#) (note: there are actually a large number of pages on this site devoted to these two projects, but they are for the msot part not linked to each other; search Google using the phrase *site:iyfnfnet.org "text2teach" or "bridgeit"* to find them)

Please note: The image used in this blog post comes courtesy of the International Youth Foundation. It is used with their permission.

OCTOBER

- 32. Low-cost ICT devices in education: An update*
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- 34. Tracking ICT use in education across Africa*
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32. Low-cost ICT devices in education: An update



it takes fewer pennies to buy these things (but the cost is still too high in many places)

SUBMITTED ON THURSDAY, 10/01/2009 - 17:02

Back in 2005 when I was with *infoDev*, we started maintaining a list containing *A short inventory of known projects related to 'low cost ICT user devices for the developing world', with special attention to the education sector'*. While the One Laptop Per Child Project was dominating much of the discussion around this topic in many circles, it was clear that there were lots of other interesting initiatives sprouting up that might be worth tracking (scores of them, in fact), but there was no consolidated list of them anywhere. Many people found the list we cobbled together to be useful and it started to circulate quite widely via email, so we thought it might be a good idea to publish it on the web. So we did. For a good while it was (after the home page) by far the most downloaded item from the *infoDev* site, and we regularly saw versions of the list (usually without attribution) appearing in reports from consulting firms and in conference presentations.

The list was never meant to be comprehensive, but rather representative of the varied developments that were occurring in this area. As we said at the time:

The projects and products included in this idiosyncratic list run the gamut from small research projects at universities to field-based experiments run by NGOs to commercial products from small start-ups and large multinationals. Products are in various stages of development; while most are still in the prototyping and/or beta-testing stages, some are already in the market (and some, it should be noted, have been discontinued).

The products listed here come in many form factors: Some look like conventional PCs or laptops, others look more like PDAs or phones, and some are somewhere in between. The lines are blurring between many categories of device. We have deliberately excluded from this list devices that most people would call a 'PDA' or a 'phone', even though mobile phones are perhaps the 'low-cost ICT device' in widest use. We have also not included various examples of 'probeware' (purpose-built data collection devices), even though this category of low-cost 'computing device' is increasingly being found in many educational settings, nor various types of 'e-book readers' (with one exception).

A lot has changed since we first put this list together: From a fringe novelty idea, low-cost 'netbooks' have become a retail category all their own, and we appear to be on the verge of a similar growth in low-cost 'e-readers'. The iPhone has demonstrated the potential for educational applications on smartphones, and the spread of the Android operating system (and the inevitable downward pressure that innovation exerts throughout the IT sphere) portends a proliferation of low-cost smartphones in the not-too-distant future. Cheap MP3 players are able to draw on the increasingly large number of educational podcasts, and low-cost devices like the Talking Book are demonstrating how audio content can be utilized in inventive ways. The catalog of educational software available for things like the Nintendo DS points to the potential for portable game devices to be used in education, and game-like devices purpose-built for education markets (e.g. the Teachermate) are appearing. At the same time, embedded chips, USB ports and wireless networking capabilities are appearing in all sorts of objects (scientific equipment, toys) in ways that may them relevant to teachers and students.

It should be no surprise that, five years on, the list is beginning to show its age, and *infoDev* is now updating it. (There are no plans to resume the [popular database of related news articles](#).) Given the explosion in low-cost ICTs devices in the past few years, it will be interesting to see how this update process works. Firm believers in the wisdom of the crowds, *infoDev* has decided to crowdsource the creation of the new list, and they are inviting contributions from far and wide. **Please do feel free to send in your suggestions.**

(Observant tech-savvy readers may note that this survey is actually built using Google docs, and that it is possible to embed it on your organization's web site -- or indeed your own personal site or blog. The [OLPCnews.com site has done this](#); other groups are welcome to do this as well.)

EduTech

On a related note: The latest monthly online Educational Technology Debate from *infoDev* and UNESCO has just kicked off. This month's question is "[What is "Sustainability" in ICT for Education?](#)" As always, wide participation is welcome.

Note: *The image used at the top of this blog post comes from [PD Photo.org](#) and has been released into the public domain by its author and copyright holder, Jon Sullivan. It was obtained via [Wikimedia Commons](#).*

33. On-line safety for students in developing countries



just how safe and secure?

SUBMITTED ON FRIDAY, 10/02/2009 - 00:01

When participating in discussions with officials planning for the use of computers and the Internet in schools in many developing countries, I am struck by how child Internet safety issues are often only considered as an afterthought -- if indeed they are considered at all. Yet these issues almost *always* present themselves during implementation, and schools (and education systems) then scramble to figure out what to do.

What do we know about child Internet safety issues in developing countries?

[Preliminary work](#) done by the Berkman Center up at Harvard, in partnership with UNICEF, suggests: **Not much.**

The first response, when a student or teacher runs into a problem as a result of her Internet surfing at school, is typically technical: We need to install filters to block access to [insert problem here]. (Sometimes officials just lock the computer room and/or turn off the Internet altogether.) This is perhaps not such a surprising response: When you are confronted with what appears at first to be a technical problem, it is only natural to search for a technical solution. But do these responses really work? What are the actual dangers of life on-line for students in developing countries? Are they the same as those of young people in, say, Australia or the United States? Should the responses to on-line threats -- real, perceived, and potential -- be the same in Nairobi as they are in New York?

A comparison between Nairobi and New York may actually be instructive here. At one point not too long ago, it was famously observed (by Thabo Mbeki at a G7 meeting in 1995) that [there were more telephone lines in Manhattan than there were in all of sub-Saharan Africa](#) (this is, thankfully, no longer true, if indeed it was at that time: here's an [interesting discussion](#) of this topic). Whatever the case, it is undeniably true that, until recently, Internet connectivity in Kenya, as throughout East Africa, has been slow, expensive, and not terribly reliable. With the landing of [Seacom](#) and [TEAMS](#), and with other submarine cables not far behind, this situation is due to change rapidly, and discussions about providing Internet connectivity to large numbers of Kenyan schools have greatly accelerated (here's [one example](#)).

What do we know about the dangers students in Kenya will face when broadband connections come to their schools? Should we be worried? Are they the same as those faced by children in the United States who go online? It is these sorts of questions that the folks at Berkman and UNICEF are investigating.

This work builds on a recent study that Berkman led for the Internet Safety Technical Task Force on "[Enhancing Child Safety and Online Technologies](#)", focusing on the United States. (The report had its genesis in the legal and law enforcement issues faced by companies like MySpace.) The report generated controversy in some quarters, as it asserted, among other conclusions, that "Bullying and harassment, most often by peers, are the most frequent threats that minors face, both online and offline. (The point here is not to debate or comment on the findings, which are too complex to be quickly summarized here; if you are interested in them, it is best to [read the report](#) and/or watch the [authors discuss the findings on YouTube](#).)

While many people have taken this report as representative of the dangers of children face in other places, the folks at Berkman are a bit more circumspect. The Berkman researchers should be releasing the results of a preliminary literature review of the existing body of research on these issues in the not too distant future. While they note that "studies in developed nations indicate that the biggest risks to children online are cyberbullying, exposure to inappropriate or illegal material, and sexual or other abuse either over the Internet or in-person", their literature review of the situation for students in developing countries does not permit them to make similar conclusions -- at least not yet. Noting the difference contexts for students (compare, if you will, New York versus Nairobi), the Berkman researchers assert that "One of the next steps should be identifying identifying the problems children in developing nations are facing and map these issues in the respective technological, social, and economic context; from there, we will be better equipped to develop tangible, accessible targeted solutions and resources."

This sounds reasonable enough: Absent such work, there is a potential for internet safety practices based on experiences from Europe and North America to be taken as *de facto* models for circumstances and actions in other places -- this of course may not be a good thing. Berkman, UNICEF and their partners are looking for help in exploring these issues. More information on this project, and how people and organizations can get involved, is available on the related [project wiki](#).

Preliminarily, the researchers have flagged one issue of particular emerging interest going forward:

The mobile market has taken off in developing countries, and there are many indications that mobile Internet is soon to follow. This is predicted to be the easiest, most accessible and cost-efficient way to provide Internet access in areas where the information environment is often underdeveloped because of a barriers like lack of infrastructure for fixed-line broadband, lack of accessible computers and electricity, competition, literacy requirements, regulations, and high costs. If the trend develops as expected, this could be a good opportunity to take actions to ensure children use this medium safely as many of them encounter it for the first time, encouraging the spread of best practices.

Another question: Do measures taken in response to protecting children on-line actually make children safer -- and what are the related costs and trade-offs?

Given Berkman's on-going work related to [Internet filtering around the world](#), I would expect that this topic will receive considerable attention in upcoming iterations of its work. To paraphrase von Clausewitz, (in some places at least) 'internet safety is censorship by other means'. Security, and perceptions of security, always involve trade-offs. To what extent might policies and actions taken under the guise of 'protecting kids online' erode academic (and other) freedoms -- and will such erosions of academic freedom actually make kids any safer? With the explosive spread of ICTs in many education systems around the world, these are questions that are quickly becoming very relevant to policymakers. Hopefully projects like the one started by Berkman and UNICEF will help provide an evidence base that will help us answer such questions in thoughtful, informed ways.

For more information:

- [Child online safety in the developing world](#) (includes many links to additional resources).
- The [ITU](#) and [UNESCO](#) are also doing work in this area.

Note: The public domain image used at the top of this blog post comes courtesy of Membeth at the German Wikipedia project via [Wikimedia Commons](#).

34. Tracking ICT use in education across Africa



watching you
watching him

SUBMITTED ON FRIDAY, 10/02/2009 - 01:27

The announcement from the World Bank earlier this week about [a new \\$215 Million Central Africa Backbone Program](#) that will bring low cost, high speed Internet to the region is the latest in a series of good news about improving connectivity across the continent, and between Africa and the rest of the world. Kenya is just one of many East African countries which can expect a decrease in costs and improvement in quality in the not too distant future as a result of the recent landing of the [Seacom](#) and [TEAMS](#) cables, and two projects which the World Bank supports, the [Regional Connectivity Infrastructure Project](#) (RCIP) and (through the IFC), the [EASSy](#) cable.

What does, or might, all of this improved connectivity mean for students and teachers in Africa? How can we keep track of all of the related changes happening throughout the continent?

It is certainly true that low-income countries throughout the continent continue to face daunting challenges as they attempt to ensure that all children complete a full cycle of primary education by 2015, something which the so-called [Fast Track Initiative](#) is meant to help address. But there is room for optimism too.

Many people see great potential for advances in information and communication technologies to help provide new tools and approaches to educational practices going forward, and indeed the 'potential' is undeniable. Moving beyond the rhetoric, however, it is a challenge to keep track of what is actually happening.

As *infoDev's* [Survey of ICT and Education in Africa](#) said back in 2007, "ICT use in education is at a particularly dynamic stage in Africa, which means that there are new developments and announcements happening on a daily basis somewhere on the continent". *infoDev's* country-by-country surveys were meant to help document these developments, joining existing resources like Schoolnet Africa's [African Education Knowledge Warehouse](#) and the long-standing knowledge work of the [Commonwealth of Learning](#) and [SAIDE](#). The annual [e-Learning Africa](#) conference (whose next offering will take place in Lusaka in May 2010) is just the most prominent example of the increasing regional academic and networking opportunities for policymakers and practitioners throughout the continent to stay abreast of the latest developments.

To these efforts we can add that of the [pan-African Observatory on ICT use in education](#), an open knowledge-sharing resource for research on the pedagogical integration of ICT. This on-line information repository is supported by an IDRC-funded project with quite a long name, the "[Panafrican Research Agenda on the Pedagogical Integration of ICT](#)" (rather surprisingly for a donor-supported project, it carries no convenient acronym, so it often goes by the shortname "PanAf"). This project, coordinated by ROCARE/ERNWCA and the University of Montreal, working with universities in eleven countries, provides perhaps the best one-stop-shop on the web to monitor the news and many of the more prominent initiatives emerging across the continent. Monitoring its regularly updated, blog-style front page (unfortunately there is no RSS feed available) is, together with strategic monitoring and searching of the [AllAfrica.com](#) news portal, a convenient way to stay in the loop on interesting debates, such as that which occurred at the recent recent items of note include proceedings from the [Acacia Research & Learning Forum](#) on the role of the private sector in all that is happening in this area. The growing interest in public-private partnerships to support action is undeniable, and the recent announcement that the government of Kenya is teaming up with USAID and a consortium of private sector partners on an ambitious joint project to "[enable 21st-Century education in Kenya schools](#)" is just one example of such activities. In different ways, groups like PanAf and gatherings like [TED Africa](#) and the recent [African Maker Faire](#) in Accra showcase a dynamism that is largely unreported by most of the global news media.

Where all this will lead, no one knows, but there is no denying that we are witnessing encouraging developments. For those interested in the potentially transformative value of the use of technology in education, there will be much to learn from the experiences of African educators and students in the coming years.

Please note: The image at the top of this blog post comes courtesy of the [World Bank Photo Collection](#), which has made available over 1500 of its images via [Flickr](#).

35. A (digital) library ... in your pocket?



are paper-bound books destined to go the way of the card catalogue?

SUBMITTED ON FRIDAY, 10/23/2009 - 16:26

Amazon, the company behind the Kindle, perhaps the world's most famous e-reader, recently announced an international version of its digital book reading device that will allow users to connect via 3G to download content in over 100 countries. The early success of the Kindle, together with products like the Sony Reader, and the excitement over recently announced products like the Nook and Plastic Logic e-reading devices (Wikipedia has a [nice list](#) of these things), portends profound changes to the way we

consume and distribute reading materials going forward. The excellent (and highly recommended) [Mobile Libraries blog](#) explores what all of this might mean for one of most venerable of all information gathering, curation and dissemination institutions: the library. While *Mobile Libraries* documents issues related to how e-books and the like may transform the roles of the library in the

industrialized countries of Europe, North America and Asia, there is no clear equivalent information resource highlighting what such advances might mean for developing countries. But, in various ways, many people and projects are hard at work exploring such issues.

The release this week of the [WikiReader](#), a low-cost, battery-powered device that aims to out the 'wikipedia in your pocket', is just one example of the flourishing innovations relevant to developing world contexts that are stretching the concepts of what an 'ebook' or 'e-reader' is -- or might be in the future. Together with netbooks, smartphones and some devices for which we don't yet have names, products like WikiReader are challenging many long-held assumptions about what types of ICTs should be considered for use in schools, especially in developing countries. In some ways, the WikiReader can be seen as a miniaturized version of [eGranary Digital Library](#), an offering of the WiderNet project out of the University of Iowa (USA). WiderNet has been working for a number of years with universities and communities in Africa (and elsewhere) to provide millions of digital educational resources (not just the Wikipedia) to institutions lacking adequate Internet access. While the pace of the roll-out of broadband Internet is quickening throughout much of the developing world, it will take many many years for this to impact rural areas in most countries in any substantial way. Therefore, the eGranary folks believe, it might be more cost-effective and impactful in the short run to drop in massive amount of digital content via a drive stored on a university or community network than to undertake the costly and time consuming process of improving connectivity in many areas.

There is indeed a compelling logic to such beliefs. While improvements in broadband are happening quickly, improvements in storage are happening even more quickly -- and it is perhaps this trend of increasingly cheap memory that will be more immediately relevant to education systems in many places for the near future. Back in 2007, [a vice president at Google noted](#) that, since 1982, the price of data storage has fallen by a factor of 3.6 million, and that "if this trend continues, and the cost of storage continues to decrease, we estimate that somewhere around 2020, all the world's content will fit inside an iPod, and all the world's music would sit in your palm as early as 2015."

Whether or not this comes to pass as predicted, the trendline here is clear. So: If the costs of storing digital content continue to drop precipitously, and if you believe (as many do) the the ICT device of choice for most people in the developing world will be a mobile phone (or some such small device) what might this mean for the future of libraries in these places?

Some people question whether this is a relevant question at all, skeptical why anyone would want to read anything at length on a small device so small that it fits in the palm of your hand. Developments in diverse parts of the world suggest that people are indeed willing to do this. The most cited example comes from Japan, where [five of the top ten best-selling novels in 2007](#) were *keitai shousetsu*. These "[cell phone novels](#)" were originally written and published to phones via text messaging, for the most part by and for young adults. This phenomenon began in 2003, and has been slowly spreading to other countries in Asia such as South Korea and [China](#). An incipient trend is now in evidence [in South Africa](#) as well. While it has remained a decidedly small niche in other markets, *keitai shousetsu* and equivalents demonstrate that people are indeed willing to read content on devices as small as a mobile phone.

It is interesting to note that many of these novels, at least in the early days, were actually written (via SMS!) as well, pointing to the fact that small handheld devices like this are potential authoring tools as well. The potential of people to author content on their mobile phone is something being explored by the [International Children's Digital Library](#), an innovative initiative started by researchers at the University of Maryland (USA) to build "a digital library of outstanding children's books from around the world and supporting communities of children and adults in exploring and using this literature through innovative technology designed in close partnership with children for children." The ICDL has been working as part of a [World Bank project in Mongolia](#) to explore the potential relevance of digital content for children and young students in the this country of three million people sandwiched between Russia and China. Noting the increasing ubiquity of mobile phones in places like ICDL recently released a free iPhone app called [StoryKit](#) as a way to investigate how such devices can not only be used to consume digital content, but to create it as well. Research around issues of how children and students use mobile phones to read is on-going and we hope to comment on preliminary results (from ICDL and other thought leaders in this area, like the [Shuttleworth Foundation and Meraka Institute](#) in South Africa) on this blog as they emerge.

Where this all of us may lead, no one knows, but the idea that students might be able to come to school with a (digital) library in their pocket is, with each passing month, less and less the stuff of science fiction. ***Le livre est mort, vive le livre!***

Note: The image at the top of this blog posting of the card catalogue files at the University Library of Graz (Austria) taken by Dr. Marcus Grossler comes via [Wikimedia Commons](#) and is used according to the terms of its Creative Commons Attribution ShareAlike 3.0 license.

36. Linking up with Enlaces (Chile)

SUBMITTED ON FRIDAY, 10/30/2009 - 00:03



With apologies in advance to initiatives in a handful of other countries considered world leaders in this area (including [Costa Rica](#), [Namibia](#), [Thailand](#), Mexico and Brazil):

Of all the programs in middle income and developing countries that have sought to introduce ICTs systematically into the education, the Chilean experience is perhaps the most lauded. [Enlaces](#) has been the subject of much scholarly and policy attention since its inception almost two decades ago (including [a publication from the World Bank](#) back in 2004 [pdf]).

The fact that Chile and Enlaces is considered by many to be a global model of good practice presents policymakers in Chile with a(n enviable) challenge:

Where should Chile look for inspiration as it continues to evolve its programs exploring the effective use of ICTs in education?

Like many national ICT and education programs, Enlaces ("links" in Spanish) started primarily as a connectivity pilot project. Unlike many such projects in other countries, its strong links from the beginning with universities ensured it was about more than just the technology, however, and the project included components focused on (for example) teacher professional development and digital content long before many other middle income countries fully recognized the importance of viewing the use of educational technologies holistically.

(This is not to underplay the focus and enormity of the connectivity challenge that confronted Enlaces in its early stages -- schools in Antarctica and Easter Island were connected as part of this initiative!)

The success of the Enlaces pilot led to its formal acknowledgement as the national education technology program for Chile; a decade later it was officially absorbed under the Ministry of Education. This evolution -- from pilot to national program to official incorporation by the MOE -- established a rough model that was realized later in many other middle income and developing countries, from Thailand to Uganda.

Today almost 11,00 schools in Chile participate in Enlaces in various ways, and over 110,000 teachers have participated in its professional development programs.

The [national education portal](#) is considered a model by many other countries. By next year, the government projects that it will have a student: computer ratio of 10:1.

Many other countries look at such figures with envy.

Being an early model does not always easily translate into sustained leadership over time, however, especially when new, disruptive technologies threaten to compel a paradigm shift in the way we conceive of the use of technologies in education. Indeed, despite its early 'lead', Chile is no longer such an outlier in these respects in the Americas.

[Uruguay](#) especially has captured a great deal of the 'mindshare' and attention due to its ambitious roll-out of 1-to-1 computing for all primary students under [Plan Ceibal](#) (and has already begun plans to extend this to all secondary schools students). A large installed base of computers -- and computer labs -- may, for example, complicate a transition to the widely-predicted pervasive use of handheld devices (like mobile phones) for educational purposes by teachers and students going forward, offering other countries an opportunity to potentially 'leapfrog' (to use a popular term -- but not one I particularly like) Chile. If lessons from OECD countries are any guide, increasing densities of computers inside (and outside) of schools will no doubt make [child online safety](#) issues more acute, and issues related intellectual property rights and privacy will gain greater prominence. While changes in technological advances will

Whither Chile, then?

For more information about Enlaces in English (a quick Google search will yield lots of useful information in Spanish, beginning with [the official program web site](#)):

- [Technology in Schools: Education, ICT and the Knowledge Society](#) [pdf]
- [Chile: Building the National Learning Network "Enlaces"](#) [pdf]
- [Enlaces: The Chilean ICT Experience in Education](#) [pdf]

(Many thanks to [Enrique Hinojosa](#) for his many reports on Enlaces and Chile.)

Miscellaneous

- The United States has been engaged in a broad consultation process as part of the development of a revision to its [National Education Technology Plan](#). The process has been a model of inclusiveness in many ways -- especially when compared with how such processes roll out in many other parts of the world. Much like the current on-going process in India, the public is welcome to contribute comments and suggestions on-line -- and to see what others are saying about this as well. (No doubt there is a related Twitter hash tag, but I haven't been able to locate it.) Whether it is a gimmick or true innovation (or just a curious experiment) readers of this blog with reliable broadband access may wish to pop in on a scheduled meeting in Second Life on 5 November (at 6pm SLT -- that's '[Second Life Time](#)' for those unfamiliar with the acronym), organized by [ISTE](#) and the University of Michigan (USA).
- Those interested in the One Laptop Per Child (OLPC) project may want to have a look at a working paper recently published on the website of the Inter-american Development Bank, [OLPC Pre-Pilot Evaluation Report \(Haiti\)](#). This is one in a series of publications that will be surfacing in the coming months on this well-publicized global initiative.
- Following on the publication earlier this year of [Pockets of Potential: Using Mobile Technologies to Promote Children's Learning](#) [pdf], the Joan Ganz Cooney Center at Sesame Workshop has announced a [new prize](#) designed "to push the current boundaries of mobile learning". This announcement came at the [Breakthrough Learning in the Digital Age](#) event that occurred earlier this week at Google.
- Next month the World Bank, together with its partners the Korean Education Research & Information Service ([KERIS](#)) and [UNESCO-Bangkok](#), will co-sponsor two ICT/education events for policymakers in East Asia, the first in [Seoul](#), the second in [Hangzhou](#) (China).

NOVEMBER

37. *Television for a change (revolution in a box)*
38. *The Maine thing about 1-to-1 computing*
39. *An international digital library for children*
40. *A Talking Book for Africa*

37. Television for a change (revolution in a box)



SUBMITTED ON SATURDAY, 11/07/2009 - 00:13

A quick check of the user logs for the World Bank's EduTech blog shows that postings on the [use of mobile phones in education](#) consistently draw the most readers. While highlighting the new and innovative appears to grab the attention of visitors, there is no denying the impact that 'old' technologies like radio and television continue to have on education around the world. In an optimistic cover story in the most recent edition of *Foreign Policy* magazine, my World Bank colleague Charles Kenny makes the case in *Revolution in a Box* that, despite the recent hype around new Web 2.0 tools (like Twitter or Facebook), it is not the computer, but the TV that ["can still save the world"](#).

The power of television to bring about societal change (for better and for worse) -- and provide new educational opportunities -- is of course nothing new to readers of this blog (nor indeed to most people on this planet). It is still relatively new, however, to millions of people in developing countries, especially in rural areas, and the effects are no less profound than they were for other people in other places in other times. Noting the explosion of viewership that is still occurring ("150 million-plus households will be tuned in by 2013"), Charles writes that

"It's not earnest educational programming that's reshaping the world on all those TV sets. The programs that so many dismiss as junk [...] are being eagerly consumed by poor people everywhere who are just now getting access to television for the first time. That's a powerful force for spreading glitz and drama -- but also social change."

While this topic has been the subject of scholarly attention for nearly a half-century -- Wilbur Schramm's [Mass Media and National Development](#), published by UNESCO in 1964, is a touchstone for many in this area -- the fact that this phenomenon is not new makes it no less powerful.

Charles continues:

"TV is its own kind of education -- and rather than clash with schooling, as years of parental nagging would suggest, it can even enhance it. U.S. kids with access to a TV signal in the 1950s, for instance -- think toddlers watching quality educational programming like I Love Lucy -- tended to have higher test scores in 1964, according to research by Matthew Gentzkow and Jesse Shapiro of the University of Chicago. Today, more than 700,000 secondary-school students in remote Mexican villages watch the Telesecundaria program of televised classes. Although students enter the program with below-average test scores in mathematics and language, by graduation they have caught up in math and halved the language-score deficit."

As we approach the fortieth anniversary of the first appearance of Sesame Street (a birthday receiving wide exposure on the web with the [modification of the logo on the Google home page](#)), it is perhaps worth noting that 'earnest educational programming' is still influential in many places (even if it is often drowned out by programming aimed at school-age children -- an important distinction). Serious attention to the role and place of ICTs in educational development starts for many people with the birth of Sesame Street, a television program that from the beginning sought to identify specific learning outcomes for children that could be measured. ["G" is for growing: thirty years of research on children and Sesame Street](#), quotes Sesame Street co-founder Joan Ganz Cooney as saying that "Without research, there would be no Sesame Street".

The birth and early output of the [Children's Television Workshop](#) is just one marker of the recognition of the potential power of television as an educational tool. [China](#) and [India](#) have nearly four decades of experience in using broadcast television to provide distance learning opportunities to large numbers of their citizens. Perhaps the most engaging account of the use of educational television in a developing country (and one whose lessons still resonate today) is Wilbur Schramm's [Bold Experiment: The Story of Educational Television in American Samoa](#), which details how the hope and promise of this educational innovation sometimes clashed with the messiness of implementation on-the-ground in the Pacific in the 1960s. (One hopes that we'll see a similar sort of document emerging from the [OLPC](#) experience!)

EduTech

One issue that Kenny does not address in his article is the trend of television viewing transitioning from a largely communal to an increasingly personal experience. Indeed, just as tens of millions of families are purchasing their first TV, so too are tens of millions of individuals now starting to view broadcast video (for lack of a better term) on personal mobile devices. Viewing television on your mobile phone, a phenomenon that began at scale [in South Korea in 2005](#), is starting to be possible in many developing countries as well ([like India](#)). This is not only happening on phones, of course (the video podcasts available through [Apple's iTunes U](#) are just one notable example of opportunities for mobile learning via video on another sort of handheld device). Re-conceptualizing educational television as a personal, and not communal, experience may challenge some of the fundamental tenets we have about the utility and delivery of video to meet learning objectives. Where this will lead, no one knows (although [work by folks like Jan Chipchase and his colleagues at Nokia](#) will no doubt be instructive here), but the optimistic note struck by Kenny's article can be tempered by remembering the optimism of Thomas Edison back in 1922, when he said that

"I believe that the motion picture is destined to revolutionize our educational system and that in a few years it will supplant largely, if not entirely, the use of textbooks."

Promises of revolutions in a box have been with us for awhile, and the results of such revolutions are decidedly mixed. There is no denying, however, that ICTs remain powerful tools for education and change, and discussions of their potential use and utility will only grow more animated and integral to the work of educational policymakers around the world.

More:

- The article by Charles Kenny mentions Telesecundaria. This program was the focus of one of the World Bank's first [technical notes in its series of short briefs on Education and Technology](#) [pdf] in the 1990s. The World Bank has looked at this topic a few other times, including a [short briefing sheet by infoDev](#) on the use of television in teacher professional development. The World Bank has also been involved in the [Escuela+](#) educational television project in Latin America. Before she came to the World Bank, education economist Yidan Wang examined the [Chinese experience in providing teacher training through educational television](#) [pdf] for USAID.
- Kenny's article also mentions the notable findings of Robert Jensen and Emily Oster on [The Power of TV: Cable Television and Women's Status in India](#) [pdf]. Those interested in the power of ICTs in developing country contexts may also be interested in Jensen's widely-cited work on [The Digital Divide: Information \(Technology\), Market Performance, and Welfare in the South Indian Fisheries Sector](#), published back in 2007 in *The Quarterly Journal of Economics*.
- The U.S Department of Education's online database of education research (ERIC) lists [339 papers](#) on Sesame Street (and over 22,000 on the educational impact of television all together!).
- Wilbur Schramm re-visited *Mass Media and National Development* in a [1979 publication from UNESCO](#).
- The quotation from Thomas Edison that concludes this blog posting is often cited by one of the leading and most influential chronicles of education technology in the United States in the 20th century, Larry Cuban. Professor Cuban's book *Oversold and Underused: Computers in the Classroom* is highly recommended; his blog can be found at <http://larrycuban.wordpress.com>.

Please note: Public domain image of the Braun HF television from 1958 used at the top of this blog entry comes courtesy of Oliver Kurrms via [Wikimedia Commons](#).

38. The Maine thing about 1-to-1 computing

SUBMITTED ON FRIDAY, 11/13/2009 - 15:22



these days Maine is famous for more than just lobsters

*A personal digital device,
at the point of learning,
as defined by the student.*

The [Magellan Plan](#) in Portugal, [Plan Ceibal](#) in Uruguay and other various [One Laptop Per Child](#) (OLPC) initiatives around the world ... before all of these well-publicized large scale national educational technology programs came the 'granddaddy' of all such 1-to-1 computing initiatives: the [Maine Learning Technology Initiative](#) (MLTI) in the northeastern corner of the United States.

The Maine Learning Technology Initiative web site catalogues a number of Maine "firsts" :

- first state to seize the potential of technology to transform teaching and learning in classrooms statewide
- first state with a plan to equip all students and teachers in grades 7 to 12 with personal learning technology statewide
- first state to equip every 7th and 8th grade student and 7th through 12th grade teacher statewide with personal access to learning technology
- first state to empower every 7th through 12th grade teacher in every school statewide with professional development and support to fully tap the potential of computers and the Internet
- first state to provide the option of home Internet access to every 7th and 8th grade student in every school statewide

For those looking to learn more about the potential of and practical lessons from 1-to-1 computing initiatives for students, Maine is the longest-running and most-studied such program.

Jeff Mao, the Learning Technology Policy Director for the Maine Department of Education, provided an insightful presentation on the Maine experience at a [recent Global Symposium on ICT and Education in Seoul](#) sponsored by the Korean Ministry of Education, Science and Technology, the Korean Education & Research Information Service (KERIS) and the World Bank (working with a variety of other partners).

What is now known as the Maine Learning Technology Initiative was born of conversations between then-Maine governor Angus King, without whose strong and unwavering support the program would not have happened, and [Seymour Papert](#), whose [constructionist educational philosophy](#) provides the intellectual underpinnings for the program (initial successes in Maine gave impetus for the One Laptop Per Child initiative for developing countries, with which Papert is often more famously associated).

After a brief history lesson, Jeff went on to describe what they are learning from almost a decade of experimentation and implementation, which flows from the guiding vision for the project. The vision for 1-to-1 computing in Maine may appear at first glance to be relatively straightforward:

"A personal digital device,
at the point of learning,
as defined by the student."

Unpacking each component, it is clear that this vision is actually quite radical in many ways:

a personal digital device | This is quite simple to understand: it is indeed the definition of 1-to-1 computing, although with a slight twist (Maine references 'digital devices' and not 'computers' or 'laptops', essentially acknowledging that this vision is not dependent on the use of specific ICT devices or form factors most commonly used today, but rather anticipates the potential inclusion of other useful devices in the years ahead).

at the point of learning | It is interesting to note that Maine identifies the 'point of learning', which presumably goes far beyond use restricted only 'in schools' (as is typical in many other places).

These two ideas, related to the fact that we are talking about personal devices used for learning, are roughly analogous to the visions one finds in other places.

as defined by the student | Here's where things get radical. The Maine philosophy is that it should be the learner (and not the teacher or school principal) who makes the decision to use her laptop in support of whatever she is learning, whenever she thinks it most appropriate or useful. In practice, of course, there are limits to such use, but as a guiding vision for how the technology is to be used -- and for who makes the decision regarding such use -- Maine stands in stark contrast to how most 1-to-1 programs are conceptualized in other parts of the world. Placing the student at the center not only of learning is not all that uncommon, of course -- many education systems do this, at least rhetorically. The Maine Learning Technology Initiative differs in that it goes one step further, putting the learner at the center of the decision on what tools to use in support of such learning. This has lots of important implications for what actually happens inside (and outside) of the classroom in Maine.

Of course, when it is translated into what actually happens 'on-the-ground', the purity of the Maine vision gets a little messy at times, and Jeff was able to descend quickly from high-level discussions of vision and educational philosophies to practical discussions of the nitty-gritty of what it actually means to administer such a program -- and to teach in it. "In the 20th century", Jeff said, "much time in schools was spent answering questions of *who, what, where, and when*. In the 21st century in Maine, we are more interested in preparing our students to answer questions related *how and why*." The introduction of 1-to-1 computing, and all that this brings with it (especially the focus on teacher professional development and digital learning content at the core of the program), is Maine's attempt to provide the tools and strategies for learning and teaching to help answer such questions.

This only scratches the surface of Jeff's engaging presentation, and indeed of the lessons learned from the Maine experience. For more information about what has been happening in Maine with 1-to-1 computing, the following resources are recommended:

- [The MLTI web site](#) is the best first source of information on the program.
- Of specific interest may be the various [evaluation reports](#) on the program, many of which have been led by a [special center at the University of Southern Maine](#).
- The MLTI has helpfully (and laudably!) [archived all RFPs](#) on its web site (this is certainly a model for transparency that other programs would do well to emulate!).
- Jeff's presentation, together with supporting documentation (including related podcasts he has recorded), will be made available on a [special page on the MLTI web site](#).

The presentation on the Maine experience was just one from around the world at the recent *Global Symposium on ICT and Education in Seoul (Measuring Impact: Monitoring and Evaluation of ICT in Education Initiatives)*. All presentations are being made available on the [event site maintained by the World Bank](#) -- and are worth a look.

Please note: The public domain image at the top of this blog entry comes [via Wikimedia Commons](#).

39. An international digital library for children

SUBMITTED ON FRIDAY, 11/20/2009 - 03:14



reading times, they are a-changing ...

What will reading be like for children around the world in the digital age?

Ben Bederson thinks this is a question we should be asking children themselves.

[Bederson](#), a professor at the University of Maryland (USA) and the co-founder (with [Allison Druin](#)) of the [International Children's Digital Library](#) (ICDL), was the keynote presenter at an [event in Hangzhou, China](#) earlier this week sponsored by UNESCO, the World Bank, the Korean Education & Research Information Service and a number of other partners. The ICDL (not to be confused with the [International Computer Driving Licence](#), which shares the same acronym) is dedicated to building a collection of "outstanding children's books from

around the world and supporting communities of children and adults in exploring and using this literature through innovative technology designed in close partnership with children for children". The ICDL, which is [part of the World Bank-funded READ project in Mongolia](#), currently features children's books in over 50 languages and receives over 100,000 visitors a month to its web site.

At the heart of Bederson's wide-ranging talk (and indeed at the heart of the ICDL itself) is a belief in the value and importance of child-centered design. Notably (and rather famously, in some quarters) the ICDL utilizes children as design partners in the development of the digital library, and how it is used. Adopting this approach sometimes yields approaches that, at least for many in the audience in Hangzhou, were rather surprising.

How should collections of children's books be organized to enable children to find the book(s) they want? A typical way to do so is by author's name and by level of reading ability. The ICDL is finding that children don't look for books this way. "I want a book that makes me happy." "I want a blue book about dogs that isn't too long." "I want a book from where grandma's from." These are representative questions of some of the desires for books that children express to the ICDL, and its on-line presence is organized and searchable in a way that can help meet such demands. Observing that children are not well served by most existing dictionaries, Bederson and his colleagues use definitions from children themselves, and then enable children to rate each other's definitions. By incorporating teams of children into all stages of the design and development of the various component parts of the library, the ICDL team is able to be guided by what children want, and how children act. Given the strong research focus of project principals, findings from the ICDL experience are being [well documented and made publicly available](#).

Acknowledging that information access via small mobile digital devices (like smart phones) is going to become increasingly important, the ICDL team [released a free application for the iPhone](#) as a way to explore what this particular form factor, with its various affordances and design challenges, might mean for children's reading. Challenging many preconceived notions, Bederson noted that "Mobile is a place not only for consumption, but also for creative expression" and so earlier this year the ICDL also released a free iPhone app called StoryKit that allows children to author stories right on their (or presumably their parent's!) mobile phone. (Bederson demonstrated that yes, this is indeed possible -- and not all that difficult!)

While much of the audience in China was captivated by the technology discussed, Bederson concluded by noting that, while technological innovation in this area will continue to occur (quite rapidly), what is already available today (and becoming increasingly less expensive) can be harnessed to very useful ends, if only we are prepared to think in new ways about how and why it can be used, and by whom. He finished by challenging the thousand or so educators in the audience, saying that "All the tools are here. Trust the learners. Start with your own creativity."

For more information:

- All presentations from the 13th UNESCO-APEID International Conference on Education and World Bank-KERIS High Level Seminar on ICT in Education, including Bederson's keynote address, are being uploaded to the [conference web site maintained by UNESCO](#).

- The International Children's Digital Library is available online at www.childrenslibrary.org. Recommended sections of the site are the [simple search feature](#) and the collection of [presentations and papers](#) about the project.

Note: The image at the top of this blog entry of a kindergarten class in Potsdam, Germany comes from the Deutsches Bundesarchiv was obtained [via Wikimedia Commons](#) and is used according to the terms of its Creative Commons Attribution ShareAlike 3.0 Germany License.

40. A Talking Book for Africa

SUBMITTED ON FRIDAY, 11/27/2009 - 18:55



school in rural Ghana

How do you provide vital information and literacy training to people with limited access to either -- especially if they are located in rural parts of Africa? Cliff Schmidt, the founder of [Literacy Bridge](#), recently stopped by the World Bank to discuss his work in northern Ghana to help investigate answers to this question. Most groups seeking to harness the power of information and communication technologies in developing countries in support of such objectives pilot test their 'solutions' where it is easiest to do so -- often in (reasonably) well-off urban or suburban settings (often building off prior experience using such technologies in OECD countries). Literacy Bridge is notable in that it prioritizes helping people with the greatest challenges, rather than focusing on the easiest to reach.

The '[Talking Book](#)' is a low-cost audio device with recording capabilities -- imagine a rubbery MP3 player about the size of a grapefruit -- rather ingeniously engineered (and re-engineered) to meet specific needs and usage scenarios in very poor communities in Africa. It is designed for use in local languages, using locally produced content, as tool to promote literacy among primary school children (to cite just one goal and target group). One way to think of the device, Cliff said, is as a 'small portable computer without a display'. While the project is still in its pilot stages, it is notable for its express interest in investigating solutions that are low cost and *scalable* from the beginning, and in rigorously monitoring and evaluating the impact of its interventions.

(Note: Some initiatives targeted specifically towards those with various visual impairments also refer to their products as 'talking books' -- this is something different.)

Cliff discussed the animating principles behind the project, the results from a recent pilot introduction in Northern Ghana in 2009, future plans, and demo'ed the device. Literacy Bridge began, he said, with the idea that the most effective approach towards ending global poverty requires empowering people with better access to knowledge, and that those in greatest need are impeded by illiteracy, disability, and inadequate infrastructure. (Here's video from [a talk Cliff gave at Google](#) about the project's goals and approach to development.) The project is operationally very lean, supported financially by hundreds of individual donations and by thousands of volunteer hours.

It was a fascinating talk, and my comments on the presentation and discussion could easily fill multiple blog posts. Listening to Cliff speak, I was particularly struck one thing:

I have heard literally hundreds of presentations from vendors, development organizations, NGOs and researchers on the application of various types of ICTs to development challenges in developing countries (in education and other sectors). I have never heard a presentation from a project proponent about the development of an ICT device (of whatever sort) meant to be used by poor people that contained so many comments like what I heard from Cliff: "our users told us"; "we learned from our users that ..."; "what we found out when speaking with and observing our users caused us to radically change how we were thinking, and so we re-designed ..." etc. The iterative, user-centric design process the Literacy Bridge has been engaged in to develop the Talking Book stands in stark contrast to that demonstrated by most (almost all?) of the 'ICT for development' initiatives in the education sector that come through our offices here at the World Bank. (This design approach is much more similar to that used by the more forward-thinking mobile phone companies in the design of their products marketed specifically to users in developing countries than what one usually sees from manufacturers of traditional computer hardware products ... perhaps a topic for a later discussion.)

During the Q&A session, someone asked whether the Talking Book device has been tested in the United States. The answer was 'no'. I got the impression that a number of people in the room were disappointed by this. I actually see this as a strength. Most ICT devices used in education are built for OECD learning

environments, and then people seek to adapt them to learning scenarios and societal contexts in developing countries. The Talking Book is an example of an ICT product built from the ground-up specifically targeted to such scenarios and contexts. Larger pilots are scheduled for Ghana in 2010. This is definitely a project to watch.

- For more information about Literacy Bridge and the Talking Book, see the organization's [web site](#) and [blog](#).
- Cliff Schmidt's presentation, as well as that of World Bank senior education economist Peter Darvas outlining challenges in the education sector in Ghana, are available in the ICT & education section of the [World Bank Education web site](#).

Note: The image used at the top of this blog entry comes from the World Bank Photo Archive and is used according to the terms of its Creative Commons license (Attribution-Noncommercial-No Derivative Works 2.0 Generic). (Photographer: Curt Carnemark; obtained via Flickr)

DECEMBER

- 41. Comparing ICT use in education across countries*
- 42. How do you evaluate a plan like Ceibal?*
- 43. Can eBooks replace printed books in Africa? An experiment*

41. Comparing ICT use in education across countries

SUBMITTED ON FRIDAY, 12/04/2009 - 16:33



still lots of questions ...

At a fundamental level, attempts to answer many of the pressing policy questions we have about the use of ICTs in educational settings around the world -- and the impact of such use -- are complicated by the fact that we still do not have reliable, globally comparable data in this area. As hard as it may be to believe -- especially given the large investments being made in this area and the increasing strategic importance of this topic in many countries -- basic answers to many basic questions about the use of technology in schools around the world remain

largely unanswered. Such questions include:

- How many schools are connected to the Internet (and what is the quality of that connection)?
- How many teachers have been trained to use ICTs?
- How many schools have access to sufficient reliable power?
- How many computers are being used for learning purposes in schools?
- In what subjects are computers meant to be used, and to what extent?

This is about to change.

In Montevideo (Uruguay) this week, the UNESCO Institute for Statistics (UIS) convened representatives from statistical bodies from around the world to review results of a 25-country pilot project exploring just what types of national-level data related to ICT use in education can be reliably collected.

Recent World Bank technical assistance related to ICT use in education has highlighted the fact that internationally comparable data related to ICT use in education do not exist -- and that this absence is a problem.

The full set of indicators proposed, considered and tested as part of the UIS-led pilot process are available in a very useful [Guide to Measuring Information and Communication Technologies \(ICT\) in Education](#) that was released by UIS on Wednesday. These indicators include both a 'core' set that will make their way into regular global statistical collection processes and additional 'extended' indicators that countries may choose to collect, based on their specific needs.

Building on the consensus reached at this meeting, it is expected that cross-national data related to ICT use in education will begun to be collected in late 2010 as part of the general statistical gathering that UIS coordinates with all countries in the world.

No doubt there will be criticism of just what data are being collected -- and what are not. It is of course *much* easier to criticize individual indicators and related questionnaire items (or the absence of such indicators and items) than to suggest options in their place. One participant voiced the (widely-shared) opinion that "It is a mistake to separate out technology infrastructure from pedagogical practices." Fair enough. But getting data on the former is (relatively) easy; the latter is quite difficult. The UIS-led process should be seen as a very important first step in the process of truly global data collection activities on this topic, a process that will no doubt be refined and expanded in the coming years.

Achieving consensus around a proposed data collection effort of this magnitude is a herculean task. Discussions around definitions (and translations of these definitions) of individual indicators and questionnaire items, viability and cost of data collection, potential utility of such data to decisionmaking, etc. were fundamental to the Montevideo meetings, and indeed to the five-year global consultative process that UIS has led in this area.

Participation in a workshop for statisticians of course brings with it its own peculiar joys. I found the (often rather technical) discussions this week of specific proposed questionnaire items to be particularly insightful, as they highlighted both the diversity of individual country contexts and the greatly varied institutional (reporting & operational) arrangements.

Here's just one example:

Many countries recommend an average number of hours per week for the delivery of classes using ICT. At first glance, it might appear to some that, generally speaking, the more hours of recommended hours per use of computers might correlate well with how 'advanced' a country is in its use of ICTs in schools. In fact, the opposite is often the case. In countries considered 'advanced' in ICT use, especially in 1-to-1 computing environments (like Uruguay, for example), laptops are (essentially) always available, but use is not officially prescribed/recommended for a specific period of time. Rather, it is left for teachers to decide what is useful and appropriate, and what is not. In Malaysia, another middle income country seen as a leader in the use of technology in education, computers are meant to be used by teachers of mathematics, science and English during every class period, but this use typically only happens for 20% of the class time. In countries just embarking on widescale use of computers in schools, strong recommendations are often made related to specific numbers of minutes that computers are meant to be used each week. Such recommendations are meant to help with the integration of ICTs into the normal teaching and learning process. The result of this is, in many cases, that less developed countries where ICT use in relatively new may well report that ICT use is recommended more than in more 'advanced' countries where ICTs are more mainstreamed in education.

(Just to complicate things further: In many countries, both rich and poor, where ICTs are used for educational purposes, this predominantly happens *outside* of school!)

This does not mean that data in this area should not be collected. ***Rather, it highlights the fact that that simple conclusions drawn from such data can be quite dangerous.*** No doubt some enterprising professor somewhere will attempt to build a global comparative 'index' of ICT use in schools in countries around the world based on the UIS data, with some countries ranked 'high' and others 'low'. In many areas, such lists and rankings are often quite popular, and can appear at first glance to provide valuable insights in very simple, easy-to-understand ways. (Think of the [ranking of universities published by Shanghai Jiao Tong University globally](#), or [U.S. News & World Report in the United States](#) -- or even, in another sector, the popular [Doing Business](#) rankings published by the World Bank.) That said, the building of a universal index related to ICT use in education is especially problematic, given the the number of assumptions and value judgements that would need to be made about the importance or weight of individual indicators -- and that cross-national data collection in this area is still in its infancy. Let's hope this impulse can be avoided.

National data collection systems are typically slow to adapt or change, *but* the fast changing nature of technology requires regular adaptation and change. How to capture this and remain relevant -- especially when educational and societal contexts are changing at the same time -- was a question much discussed during the week. The explosion of mobile phone use in many countries (to cite just one example) raises questions about the usefulness of only collecting data around the use of 'computers' (and indeed what a 'computer' is in an educational context). There are no easy answers to such questions. If the past is any guide, we will no doubt need to keep re-orienting ourselves to make sense of the data we currently have (while highlighting the data we still don't have). As we do so, the fact that the UIS will be collecting basic data on where things stand today in all countries in the world will greatly contribute to our collective ability to track developments and changes in this increasingly vital and strategic area of investment for governments and societies around the world.

42. How do you evaluate a plan like Ceibal?

SUBMITTED ON FRIDAY, 12/11/2009 - 17:53



I'd like to teach the world to code ...

If you have had your fill of *theories and promises* about what the widespread diffusion of information and communication technologies (ICTs) might mean for teaching and learning practices across an entire education system and want to see what *actual practice* looks like, a trip to Montevideo (or better yet, one of the regions outside the Uruguayan capital) should be high on your list.

Under Plan Ceibal (earlier blog post [here](#)), Uruguay is the first country in the world to ensure that all primary school students (or at least those in public schools) have their own personal laptop. *For free.* (The program is being extended to high schools, and, under a different financial scheme, to private schools as well). Ceibal is about more than just 'free laptops for kids', however. There is a complementary [educational television channel](#). Schools serve as centers for free community wi-fi, and free connectivity has been introduced in hundreds of municipal centers around the country as well. There are free local training programs for parents and community members on how to use the equipment. Visiting Uruguay last week, I was struck by how many references there

were to 'one laptop per teacher' (and not just 'one laptop per child', which has been the rallying cry for a larger international initiative and movement). Much digital content has been created, and digital learning

content is something that is expected to have a much greater prominence within Ceibal now that the technology infrastructure is largely in place.

There has been much hype around large scale deployments of OLPC XO laptops of the sort used in Uruguay in various countries around the world, and assertions of large numbers of units deployed have been bandied about for a few years, but many people have questions about how just how many of these little green machines are actually in the hands of children worldwide. There is no doubt about the numbers (over 380,000) in Uruguay -- the laptops are not sitting in boxes under an awning at the Ministry of Education collecting dust. You see them everywhere you see school children.

Notably, and tellingly, Plan Ceibal rolled out first in rural and poor communities, with schools in the capital city of Montevideo reached only in the final stage of deployment. This stands in stark contrast to the way educational technologies make their way into schools and communities pretty much everywhere else in the world, where urban population centers and wealthy communities are typically first in line (and in many places, the line may end with them!). Perhaps this is one reason why there appears to be such a strong political consensus across Uruguay in support of the program.

I have visited schools using educational technologies of various sorts in over 50 countries around the world, but never have I been in schools as saturated with portable computing devices to the extent of what I saw in Uruguay. Individual classrooms: Yes, in Korea, in the United States, in Singapore, in Iceland and in numerous other places. But whole schools, in a country where such schools are *the norm*, and not special outliers? No (although admittedly I have not been to [Maine](#) for awhile).

Standing amidst the computer-enabled hubbub of activity that now characterizes the standard learning environments in Uruguayan schools, there can be no denying that something new and different is happening in a big way. *Every student in every classroom in every school* (and, just as importantly, *in every home*) is different by multiple orders of magnitude.

Just what this difference will mean -- for young Uruguayans and their families, for teachers and schools and communities, for the country itself -- is anyone's guess at this point. Preliminary results from one study underway shared with a group of international experts who [met in Uruguay last week](#) apparently show that, as a result of increased access to technology in the two years since the rollout of Ceibal commenced, eight-year old children now have the same level of computer literacy that 18 year olds demonstrated just a few years ago. (One hopes that this finding will be released, and explained, in the planned upcoming official release of initial evaluation

results from Ceibal.) What might the consequences be if young people in Uruguay have what is essentially an 'extra' ten years of technology literacy -- what might happen during those ten years (and beyond) as a result? No one knows, but it will be quite interesting to watch.

All of this comes with a cost, of course: a steep cost. Is it worth it? And how will we know?

Initial informal results of a first stage of evaluation work around Plan Ceibal were released at an event in Uruguay earlier this week, and a formal publication is expected within the next month or so. (This blog will cover the findings once they have been officially released.) Also this week, [the Inter-american Development Bank announced](#) a *Support Program for the Consolidation and Expansion of Plan CEIBAL*, which notes, among other objectives, that "It is therefore an objective of this second stage, the establishment of the institutional framework and Ceibal generation capabilities, tools and methodologies for managing, monitoring and evaluation Ceibal Plan". (You can read the project document [here](#). [pdf])

These evaluations, and other research projects in preparation, will investigate a whole series of potential impacts of this ambitious program and its successor initiatives. What is the most useful frame of reference for assessing the impact of Plan Ceibal in and on Uruguay? Standardized test scores? Something broader? How about its larger societal and community impact? All good and valid questions. In many ways, Ceibal can, and perhaps should, be seen not so much as an education project, but as a larger societal transformation project (of the sort often associated with e-government initiatives), with the education system as the primary and initial dissemination vector.

"Daring" is the word the Minister of Education used last week in a speech at a [UNESCO event](#) to characterize her country's investment in Plan Ceibal. (The translation in my headset was initially "risky", which the interpreter quickly corrected.) *Fortes fortuna adiuvat*, I learned back in my school days, and it will be exciting to monitor what is happening in Uruguay to see if indeed *fortune favors the bold*.

For more information:

- The official Plan Ceibal web site is available at www.ceibal.edu.uy.
- Here's an [official TV spot about Plan Ceibal](#) that is airing in Uruguay.

This is the first in what will be an occasional series of posts about the emerging Uruguayan experience.

Please note: The image used at the top of this blog post comes from A.K. Mahan of LIRNE.NET via Flickr and is used according to the terms of its Creative Commons License (Attribution-Noncommercial 2.0 Generic).

43. Can eBooks replace printed books in Africa? An experiment



Johannes Gutenberg isn't the only person interested in the answer

SUBMITTED ON FRIDAY, 12/18/2009 - 01:01

In the United States and Europe and a number of other places, sales of [e-Book readers](#) are growing by leaps and bounds, and many people hope to find shiny new portable electronic reading devices under their Christmas tree later this month. (Many of those who don't celebrate this particular holiday would be quite happy to receive them as well, of course.)

At the same time, organizations like the World Bank are being asked to help finance very expensive, large-scale purchases of printed educational material in many countries. (And because of the success of [Education For All](#) in many places, such purchases are bigger than ever before.)

Should poor countries in Africa be exploring investments in things like eBook readers for use in schools?

Well, one way to find out would be to set up an experiment to test various approaches and solutions in pursuit of an answer to this question.

Up front, let us stipulate that a few things are clear:

Reading digital content on portable electronic devices is the wave of the future -- and the future is coming faster than many people would have predicted only a few years ago

- Printed books are not going away any time soon, even in the most technologically advanced societies
- The markets for books and contexts for publishing and reading in OECD countries and in poor countries in Africa, in schools and at home, are very different in many ways
- The means and methods of production and dissemination of reading content in OECD countries and poor countries in Africa are very different in many ways
- Rolling out e-Book readers at scale would probably require complementary investments in related activities and industries (like, for example, digital content production)

There are lots of reasons why this might be a stupid (or at least quite premature) question to ask. But why might this not be such a dumb question?

Let's say, for the sake of discussion, that a researcher had an agreement with a country to do a small, randomized control trial to compare how the use of eBooks might impact educational attainment against some pre-agreed measures compared with the use of old-fashioned books, and to determine and document what the related costs would be.

What would be important factors to control for in such an experiment, and what additional pieces of information would be important to consider? Are similar types of experiments already underway?

More practically:

- What companies could and should be approached, and what products considered, to participate in and contribute to such an experiment?
- Are there emerging devices that are perhaps 'below the radar' or only recently introduced that would be ideal candidates for deployment in such an experiment?

Your comments (either below, or via the [contact link](#) for this blog), are most welcome.

(Please note that this blog gets enough comment spam already, we do not mean to invite more here with this post. This is especially true for spam masquerading as a comment that is, in the end, just an attempt by marketers to have the URL of their company, product or service published -- and, by having that their content linked to from a page on a worldbank.org domain, raise their Google rank ever so slightly.)

Depending on what we hear, we may have a preliminary answer to this question to share with you by this time next year.

Note: This was a topic discussed, in a presentation at the World Bank earlier this year, and as part of the online EduTech Debate sponsored by infoDev and UNESCO:

- [eBooks & Affordable Access to Digital Content for Teachers, Health Care Workers & Agricultural Extension Agents in Southern Africa:](#)
- [Lessons from the IADP Affordable Access Initiative, Partnership with African Universities](#)
- [Creating Electronic Educational Content: Can eBooks Satisfy? Creating Content for ICT-enabled Classrooms](#)

Please note: The image used at the top of this blog entry was obtained [via Wikimedia Commons](#) and is in the public domain.

About the author



Michael Trucano, Sr. ICT & Education Specialist, The World Bank

Mike Trucano is the World Bank's Senior ICT and Education Policy Specialist, serving as the Bank's focal point on the topic within the [education sector](#). In this role he provides support to World Bank education projects with ICT-related 'components', and is involved in a variety of research activities. Current areas of focus include policy development, the use of [mobile phones in education](#), [ICT and education indicators](#), ['new economy skills for Africa'](#), and evaluations of low-cost devices. He is also a principal contributor to the World Bank's [EduTech blog](#) and oversees the organization's internal knowledgebase wiki on ICT/education topics.

He previously served as the ICT and Education Specialist at [infoDev](#), the multi-donor 'ICT knowledge shop' housed within the World Bank's Global ICT Department (GICT), where he coordinated activities related to information and communication technologies and the Millennium Development Goals ("ICTs for MDGs"), especially as they related to education. He also led *infoDev's* work exploring the use of various [low-cost ICT devices](#) to meet developmental objectives in the social sectors, an initiative he continues to help lead from within the World Bank education sector. Highlights during his time at *infoDev* include [Knowledge Maps: ICT and Education](#) (what we know, and what we don't, about ICT use in education in developing countries), over 75 country-level surveys of ICT and education in [Africa](#) and the [Caribbean](#), a handbook on [Monitoring and Evaluation of ICT in Education Projects](#), and the [ICT in Education Toolkit for Policymakers, Planners & Practitioners](#) (with UNESCO, used in over 25 countries to date).

Mike brings experience working in a variety of capacities with on-the-ground ICT/education initiatives in several regions of the world, including feasibility studies, evaluation and assessment, teacher training and professional development, appropriate technologies and targeted policy advice, especially related to uses of ICTs in education and community telecentres. He joined the World Bank Group in 1997, first with the IFC, and then serving on the Education and ICT for education teams at the World Bank Institute, where he was a core member of the team that developed the World Links for Development Program. You can follow him on Twitter [@trucano](#) or on the World Bank EduTech blog, <http://blogs.worldbank.org/edutech>.



A World Bank Blog on ICT use in Education

*Exploring issues related to the use of information and communication technologies
to benefit education in developing countries*

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